5.4.1 Goals and Strategy for Industrial Development: *Primary Industry*

(1) Sector Goals for *Primary Industry*

One of the major and underlying issues pertaining to the primary industry in Cambodia is the limited livelihood in the rural area. The overall goals for this sector thus relates to this.

- To raise the rural communities above the subsistence level and increase the surplus for trading to increase cash income,
- To ensure food security to meet the demand of the increasing national population as well as the increasing urban population caused by migration from rural areas.
- To accelerate the market economy in the agricultural sector of the Study Area through: (i) reform of rural finance and credit, (ii) facilitation of free and easy movement of goods and services, and (iii) Promotion of land registration and titling.

While the strategies to achieve these goals differ in sub-areas, the institutional issues are common to all the three sub-areas.

For institutional development in the Study Area, the following strategies are applicable.

- To improve the overall efficiency of the existing financial institutions, restructuring of existing financial institutions should be made and banking practices geared to meet the needs of the rural families should be adopted. Savings and credit groups should be set up through an evaluation of the past or on-going village revolving funds. A micro finance system to service the needs of rural families should also be set up to supplement the existing financial services by banks.
- To facilitate services for movement of produce, market information should be provided including price and traded volume using a commodity market intelligence system. In addition, development or renovation of market facilities and market access roads, especially in the hilly areas, should be promoted step by step.
- To enhance free market activities, controls and regulations that hinder the free and easy movement of goods and services should be gradually removed.
- Land registration and titling now undertaken at a slow pace, should be accelerated. In addition, peoples' involvement should be strengthened to enhance transparency of those processes.
- To provide adaptive technology to each area, supply of improved seeds and plantings, establishment of demonstration plots and training should be made on

an area- based strategy.

(2) Area-Specific Sector Strategy for Primary Industry

For the development of the Primary Industry, the following sector strategies are established.

1) The Greater Capital Area

Most farmers have concern for food security and tend to feel reluctant to introduce new crops. In order to enhance farm income, crop diversification should be promoted particularly in the flat plain areas as a first priority. The potential crops are fruits and vegetables for consumption in Phnom Penh. In addition, the hilly areas not used for paddy should be utilized as possible areas for diversification as well as combined agriculture with livestock and fishery.

The crop diversification and combined agriculture with livestock and fishery should be realized through supply of improved seeds and plantings, establishment of demonstration plots and training as well as development of adaptive technology on crop diversification.

The above crop diversification and combined agriculture with livestock and fishery needs more manpower to properly maintain the fields. In the future, on the other hand, larger scale integrated agriculture needs to be introduced to enhance and stabilize farm income. In this situation, mechanized farming will be required in order to decrease production costs and increase work efficiency.

Agricultural marketing should be promoted through provision of better market access, market information and services, removal of market distortions and provision of facilitation and regulatory services, where necessary, in the interest of trade and market expansion.

The strategy for the Greater Capital area is thus summarized in the following.

- To maintain or accelerate the pace of market-driven changes in the agricultural sector of the Phnom Penh plain through: (i) introduction and expansion of crop diversification including cash crops; (ii) introduction and expansion of intensive farming with livestock and inland fishery; and (iii) enhancement of crop yields with irrigation and proper farm management.
- To enhance the value of agricultural products for enhancing and stabilizing farm income by providing reliable market information, establishment of a market system and improvement of post-harvest activities.

2) Intermediate Area

Food Security (Paddy)

The shortage of paddy and increase of paddy/rice consumption, coupled with population growth could be met by increased unit yield as a first priority considering

necessary cost and quick return. Measures to be taken for increasing unit yield include; i) a rehabilitation program for existing irrigation schemes, ii) identification and distribution of improved varieties of rice seed suitable for the area specific conditions; iii) strengthening the extension service to improve farmers' cultivation and water management technology; and iv) supply of more credit for purchasing of farm inputs.

On the other hand, expansion of paddy area will be necessary on the long term basis. The expansion should be promoted through introduction of new irrigation schemes, considering the economic feasibility of such investment.

Commercial Agriculture

To increase cash income in Intermediate Area, the following scenario will be applied.

To diversify the income sources, the use of existing resources should be considered as a first priority. The forest resource will be utilized through agro-forestry development including use of non-timber forest products (NTFP) and cultivation of fruits trees. The livestock, inland fishery or cash crop development will be considered through an area based approach where necessary resources and experienced farmers are available. Those resource developments should be realized through extension, credit schemes and research works.

To increase cash income, small cottage based agro-processing or community activities for the agricultural market should be promoted to increase the value of agricultural products, if access roads to the market are available. Agricultural exports in the national border area should be considered through expansion of vegetables or fruits, since a sizable market is available. For realization of these activities, strengthening of extension and credit services are needed in an integrated manner. With the former service, dissemination of technologies that are already developed in the past research activities will be given a priority.

In addition to the above improvements, it is necessary to accelerate the integration of the remote area into a market economy through: (i) improvement of farm to market roads; (ii) acceleration of participatory land use; (iii) implementation of farmer demand driven extension; (iv) introduction and expansion of rural finance; and (v) market information delivery on a long term basis.

The strategy for the Intermediate Area is thus summarized in the following.

- To ensure food security to meet the demand of the increasing national population through the improvement of unit yield of paddy and the expansion of the irrigated paddy area.
- To accelerate the integration of remote areas into the market economy considering access to markets, proper land use and rural finance.
- To diversify income sources and enhance farm income through: (i) farming

diversification; (ii) agro-forestry development; (iii) introduction and expansion of non-timber forest products (NTFP); (iv) introduction and expansion of combining farming with livestock and inland fishery; (v) development of cottage based agro-processing and (vi) promotion of agricultural export in the national border area.

3) Sihanoukville

Ocean Fishery

To increase cash income for fishermen, technology improvement of capture fishing should be promoted through a proper training program and improvement of capture equipment. In addition to technology improvement, establishment of fish markets with appropriate cold storage and inviting fish processing factories should be realized to increase the value of fish products.

To promote sustainable use of ocean fishery resources, implementation of fish farming should be realized through extension, credit schemes and research works. Natural resources in the coastal area should be considered through mangrove development and establishment of protected areas prohibiting fishery activities.

- To promote fishery activities through: (i) technology improvement of capture fishing; (ii) establishment of fish markets; and (iii) inviting fish processing factories.
- To promote environmentally sound and sustainable use of ocean fishery resources through: (i) implementation of fish farming, and (ii) protection of natural resources in coastal area.

5.4.2 Strategy for Industrial Development: *Secondary Industry*

(1) Sector Goal for *Secondary Industry*

The primary goal of the industrial development of the Growth Corridor is to assume the leading role of industrial development as the driving force for Cambodia. The industrial sector should make a substantial contribution to net foreign exchange earnings both by export and by import substitution. This means that the secondary sector will have to achieve the fastest growth in terms of value-added and gross output value, with a rapid growth in employment.

(2) Development Strategies

1) Sustaining of the Competitiveness of the Garment Industry

The total employment of the garment industry in 2000 is 232,000 in the Growth Corridor Area. As most (75%) of the present Cambodian garment exports go to the U.S. market, diversification of export target markets will have to be pursued.

For this, diversification of materials from knitted fabric to a higher value added woven fabric should be meaningful. The short-term measure is "to develop the GSP market in countries other than the United States to exploit a niche". Considering Cambodia's present ability, it would not be practical to shift from the current lower end of the market to the higher one all at once. Active promotion is thus recommended for exporting to other regions. Technology improvement and quality control will add to the competitiveness of the industry, for which promotion of vocational training will be important.

Provision of a freer environment for importation of material fabrics and auxiliaries and exportation of the finished goods and the development of human resources will be necessary. Enhancement of domestic enterprises in production garment and related peripheral industries will play a key role in sustaining the garment industry beyond 2005.

The medium-term target of the garment industry is for substantial growth from the current dominance of low price products. To boost the value-added of products to make them competitive in the middle-price market, development of relevant industries for the manufacturing of ancillary materials, such as ribbons, buttons and collar stays and other garment accessories will be important. Support for business incubation with Cambodian initiatives will be essential to widen the Cambodian garment industry base and start anew a process of industrial accumulation. Departing from the present contract-base manufacturing to direct access to export markets will require strengthening of the marketing capability, for which the human resources development in trade promotion will be crucial.

Local production of the upstream materials such as fabric is worth considering, since Cambodia imports a lot of material for garment production. The upstream industry, however, is generally capital-intensive and tends to be governed by economy-of-scale, and sometimes it includes industries with significant environmental load. The upstream industry to be considered in the short-term should therefore be limited to those requiring a manageable level of capital or technology intensity and suitable for small-scale production.

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

The shoemaking industry is considered to be a prospect, as it is known to be highly labor-intensive though its present export value is only US$ 38 million, or one-fiftieth of the export value of garments. Foreign investors entering Cambodia for shoemaking are motivated by inexpensive labor costs and the quota with a MFN status to the export market in the EU, similar to the case of the garment industry. There are 15 shoemakers at the moment, mostly Taiwanese, Taiwanese Chinese origins, and Malaysian.

In the short term, a focus should be placed on improving technology and quality control so as to grow 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 design, which is a key element for higher value-added shoes. Once the manufacturing technology reaches a certain level, the shoe design will become the key for farther sales promotion. Presently, as the Cambodian shoemakers still have ample room for technology improvement, technical guidance by parent companies or outside experts should mostly focus on quality control, but not yet on designing.

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. In either term, human resources development is highly crucial in Cambodia.

The shoemaking industry circle is generally not very good at taking cooperative actions, due mainly to confidentiality as to designing and manufacturing. Nonetheless, cooperating is essential between the public sectors and private sector to implement effective training for common issues such as basic technologies, quality control for mid-level employees, and safety awareness at the individual employee level.

In the long term, the shoemaking industry should change its GSP-driven structure to adapt open competition as in the case of garments.

3) Promotion Agro-fishery Resource Based Industry

The value of the imported agro-based commodities, mainly comprising processed food, accounted for about 3.1 % of the total import of manufactured goods in 2000. The largest market for the imported commodities is the capital area of Phnom Penh and Kandal province, population of which totaled about 2 million with a relatively high per capita income.

The staple industry in Intermediate Area is mainly 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 of the national total, such as vegetables with 43.0 %, sugar cane with 48.9 % and bananas with 52.6 %. Breeding cows, pigs and poultry is another main stay of this area, producing about one third of the national demand for meat. The Growth Corridor Area also produces fresh and saltwater fish. Processed fish from this area fulfills more than 40% of the national demand.

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

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

4) Promotion of Mineral Resource Based Industry

Though no large-scale survey for mineral resources has been carried out to date, occasional, 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, stones and gravel for 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 to substitute for imported products. Due to the capital and technology intensive characteristics and stagnant world demand/supply situation, however, development of a glass industry utilizing the silica sand resource or a cement industry utilizing the lime stone resources are considered to be a long-term perspective.

5) Upgrading of Small and Micro Enterprises

There exists a polarization of the enterprises in Cambodia, namely, a limited number of large and medium enterprises on one hand, and numerous small and micro enterprises on the other hand. Most of the large enterprises are run by foreign capital, international joint ventures or state enterprises, with good production facilities and technology. Though small and micro enterprises are plenty in number, mainly engaged in food processing including rice milling based on traditional technology, their contribution to the nation's production is very limited. Their market is chiefly domestic, except for wooden furniture. Almost all of these enterprises are owned by domestic capital. These Small and Micro Enterprises (SME) are faced with serious shortages in most of the industrial requirements, in particular information, finance and capable human resources.

Development of SME is essential from the following viewpoints.

- To help these small and micro enterprises improve their productivity and competitiveness and raise the income of the employees.
- To accumulate the domestic capital to contribute to the sustainable growth of industry.

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

Among a large proportion of SME, the main focus is considered to be the food and agro processing industry, which utilizes domestic agriculture resources in

substitution for imports, particularly in consumer goods such as beverage, oil, processed food, etc. Specific strategies for upgrading small and micro enterprises are:

- Promote further vitalization of the existing financial support facilities for SME including the Mekong Project Development Facility.
- Provide assistance for securing finance and introduce financial statements, accounting and book keeping standards for SME.
- Provide support to accessing needed information about technology and marketing.
- Assist the formation of business associations/networks and circles in the industrial sub-sectors as a vehicle for exchanging technology, information, procurement of inputs and marketing.
- Foster the nurturing of the managers and marketing experts.
- Promote the capacity building of mid-level government officials concerned with SME upgrading in terms of technology, management and marketing.
- Promote researches on new seeds of business, and support businesses business incubation
- Establish a joint government and private sector body to play the leading role in bringing the above strategies into actions.

6) Promotion of High Value-Added Industry

While the neighboring countries including Thailand and Vietnam have been actively developing industrial estates, mainly to provide attractive infrastructures and services to the foreign investors and export processing firms, little has been done in Cambodia to date.

To promote foreign investment for manufacturing for exports and service providers for logistics and trading, provision of well-equipped industrial estates and free zones/promotion zones are indispensable. In the Growth Corridor, Sihanoukville and Phnom Penh should be given the first priority, considering the international port at Sihanoukville and the international airport in Phnom Penh. In particular, a free zone should be established with good infrastructures and services with special and competitive investment incentives. The FZ should initiate the modernization and diversification of the industries to non-traditional and raise the value-added component of the products and promote exports. Assembly and possibly manufacturing of parts for machinery is a typical high-value added industry to be located in FZ.

7) Promotion of Recycling Industry

A large volume of used machinery, particularly automobiles, are disposed of or discarded in the advanced countries particularly in Japan. The volume of solid waste

is increasing year by year while the capacity for disposal is limited. The used machinery would have value if selection, tuning and extraction of usable parts could be conducted properly and effectively.

Cambodia, in particular the Growth Corridor Area, can receive the used machinery and automobiles if a suitable recycle industry is established. With quick and transparent service for required procedures for import and export, the planned FZ in Sihanoukville will provide the best place to establish this new type of industry. The recycle industry should include tuning and reassembling of machinery and displaying and sales of re-tuned and refurbished machinery and selected usable parts.

Consideration needs to be made to adopt an environmentally safe and friendly method in dealing with the used machinery. As this type of industry tends to impose nontrivial impact on the environment, location may need to be limited to an industrial estate with good facilities for solid waste and waste water treatment. Basic principle to apply will be the PPP (Polluter Pay Principle), and the manufacturing entrepreneur will be required to process the waste to a level acceptable for the treatment plant therein. Caution needs to be exerted to ensure effective enforcement of related laws and regulations to protect environment.

This new industry will bring about not only employment and generate foreign exchange earnings, but the following beneficial effects.

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

If successfully managed with active marketing efforts, Sihanoukville FZ could become the gateway for Indochina, of tuned and recycled automobiles and machinery at an economical price.

(3) Area Specific Strategies for the Manufacturing Industry in the Growth Corridor

The Growth Corridor Area is composed of three distinctive sub-areas, with different characteristics. Industrial development strategies were formulated for each sub-area by development phase in consideration of area-specific characteristics and state of infrastructure and resources as summarized below.

Table 5-14 Area-Specific Strategies for Industrial Development for the Growth Corridor

Sub-Area	Present (2002)	Development Goal	Short-term (Up to 2008)	Medium to Long-Term (Up to 2015)
Greater Capital Area	• Garment and footwear (labor intensive industries) • Supply of agricultural products for urban consumption	Creation of economically active suburbs with sustainable environment	• Development of agro-processing industry • Airport based industry (high value added, labor intensive industry) • Electric appliance /transportation machinery assembly	• Enlargement of agro-processing industry • Development of import substitution industries • Electric appliance /transportation machinery assembly and production • Development of IT industry • Logistic center
Sihanouk-ville Area	• Garment and footwear (labor intensive industries) • Beverage production • Marine products processing • Improvement of port facility • Beach resort for domestic visitors	Promotion of strategic development of industries to diversify export	• Development of agro-fishery processing industry • Port based industry (Garment; used machinery reuse; light manufacturing) • Enlargement of beverage industry • Port-oriented industry (ship repair; boat building) • Coastal tourism for domestic visitors	• Development of agro-fishery processing industry • Development of import substitution industries • Electric furnace semi-assembly/ production • Enlargement of used machinery reuse and recycling industry • Export of beverage products • Coastal tourism for international visitors
Inter-mediate Area	• Cottage and handicraft industry • Vegetable and fruit production • Cattle farming • Fishery	Establishment of stable and sustainable rural society	• Enhancement of suburban agriculture for import substitution • Modernization of cottage industry • Promotion of village tourism • Agro-fishery processing	• Further improvement of agro-fishery processing for export

1) Greater Capital Area

The Greater Capital sub-area has the largest urban area along a sizable domestic market and an accumulation of production and export facilities. The area is provided with a relatively well developed infrastructure as well as a good transport network. This area is located in the central portion of the East-West corridor connecting the metropolitan areas of Bangkok, Phnom Penh and Ho Chi Minh City.

Appropriate types of industry to be located in the Greater Capital sub-area are:

- Garment industry, which in the long-term should be upgraded to higher value-added products with a target on the medium-level-price range
- Daily consumer products and urban type goods and services including printing
- Agro-fishery processing for import substitution as well as for export
- Higher value-added categories of industries including the assembly of electrical furnaces and transport machinery
- Airport based industry of a high value-added, labor intensive type
- Information technology industry including software development in the

medium to long terms

The garment industry should continue to operate and be upgraded in terms of quality and design as well as price competitiveness with higher value-added products even without privileges of GSP/MFN.

Import substitution and urban type industries should be promoted to cater to the demand for consumer goods in the Greater Capital sub-area. The agro-fishery based processing industry should be strengthened for import substitution as well as for export.

With universities and research institutes and relatively well-developed infrastructure and industrial accumulation as well as good human resources, high value-added industry such as electric appliances and machinery assembly should be established starting in the short-term and strengthened in the medium to long term. In the medium to long term, information technology industry including software could 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 tailor-made high quality garments should be among these. Aiming at boosting the airport-based industries, it is recommendable to establish an EPZ near the international airport.

2) Intermediate Area

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

(a) Takaev Province

At present, there exists no manufacturing industry except for small-scale food processing industry to cater to local demand. Since this area is extensively cultivated and produces many agricultural products and livestock with latent potential for processing, promoting the agro processing and animal feed production industries is recommended.

In this area, silk used to be produced from locally woven threads. This form of cottage industry for silk production should be restored. Silk products that need to be promoted and enhanced include traditional Khmer cloths and hand-made silk souvenirs for foreign tourists.

Though this province is presumably endowed with silica, its utilization for the glass industry is subject to further study, considering the capital and technology intensive nature of the industry.

(b) Kampot Province

The processing of marine products operates in medium scale businesses and has potential for future expansion. Marine fisheries yield more variety of fish than the inland freshwater fisheries and provides a wider range of processed products and frozen prepared foods.

Besides the fish processing industry, the agro-processing industry is also a prospect for this province.

Limestone resources exist in this province and some trials were made to produce cement, though not successfully. Cement is not a prospect in the short-term due to excess production capacity worldwide, but it may be worth consideration in the long-term. The province also has phosphate resources though its utilization for producing fertilizer is also subject to a detailed study.

(c) Kampong Spueu Province

Due to its proximity to the capital area, Kampong Spueu Province is suitable for the food industry including agro-processing, meat preparation and processing of fishery based products. If large-scale farming and livestock breeding is realized on its hilly terrain, this area has a possibility for locating relatively large-scale food industry including dairy farming.

In addition, the province has the potential for supplying building and construction materials to the capital area. Tapioca is also grown and there is a plan for expansion. Relevant industry such as glue production using tapioca starch is a good prospect. The province has phosphate resources, though its potential for utilization for producing fertilizer is subject to a detailed study.

(d) Kaoh Kong Province

Kaoh Kong Province is a handicapped location due to the long distance from the country's trunk road network. With a large part of its territory in the mountain area, the population of Kaoh Kong Province is small. An advantage of the province is its close proximity to neighboring Thailand.

Industries locating in this province should take into account local resource utilization and proximity to the border with Thailand. Available local resources include fishery products, fruits, salt pan, clay, etc. If the existing fishing port could be improved, fishery resource based industry might be a prospect.

Currently, an EPZ is planned in Kaoh Kong town near the border. If this is materialized, labor intensive and export oriented industry will be located together with fishery resource based industry.

The province presumably has silica sand, though its utilization for the glass industry is subject to a further study considering the capital and technology intensive nature of the industry.

3) Sihanoukville Area

Sihanoukville is the only international deep sea port in Cambodia equipped with container handing facilities. Most of the garment products are exported from this port to the USA and the EU via Singapore. Concurrently, most of the raw materials are imported from China, Taiwan, and other countries through this port, and delivered to garment factories in Phnom Penh, Kandal as well as Sihanoukville.

Sihanoukville also has a fishing harbor that is the largest in the country in terms of gross output. Industries processing marine products such as mackerel and sardines are located in the area. It is expected that the industrial potential could be increased by improving fishery infrastructure including the fishing port, cold storage and distribution system. As a large-scale beer and beverage factory is located in the area, 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 establishing the manufacture of tapioca as well as palm oil for soap production. Though the municipality presumably has silica sand, the potential for establishing a glass industry is subject to further study considering its capital and technology intensive characteristics.

In order to make the best use of its international trading port, it is recommended to establish a Free Zone and Promotion Zone with adequate infrastructure and a one-stop service, as well as strong investment incentives. The FZ should produce non-traditional and higher value-added export products, while the PZ should promote establishment of more traditional types of industries and factories that can be operated in relation with the firms in the FZ. Details of the FZ and PZ conception will be given in Chapter 6 and 7.

(4) Prospective Categories for the Manufacturing Industry in the Growth Corridor

1) Methodology for Industrial Category Selection

The selection process is illustrated in **Figure 5-15**.

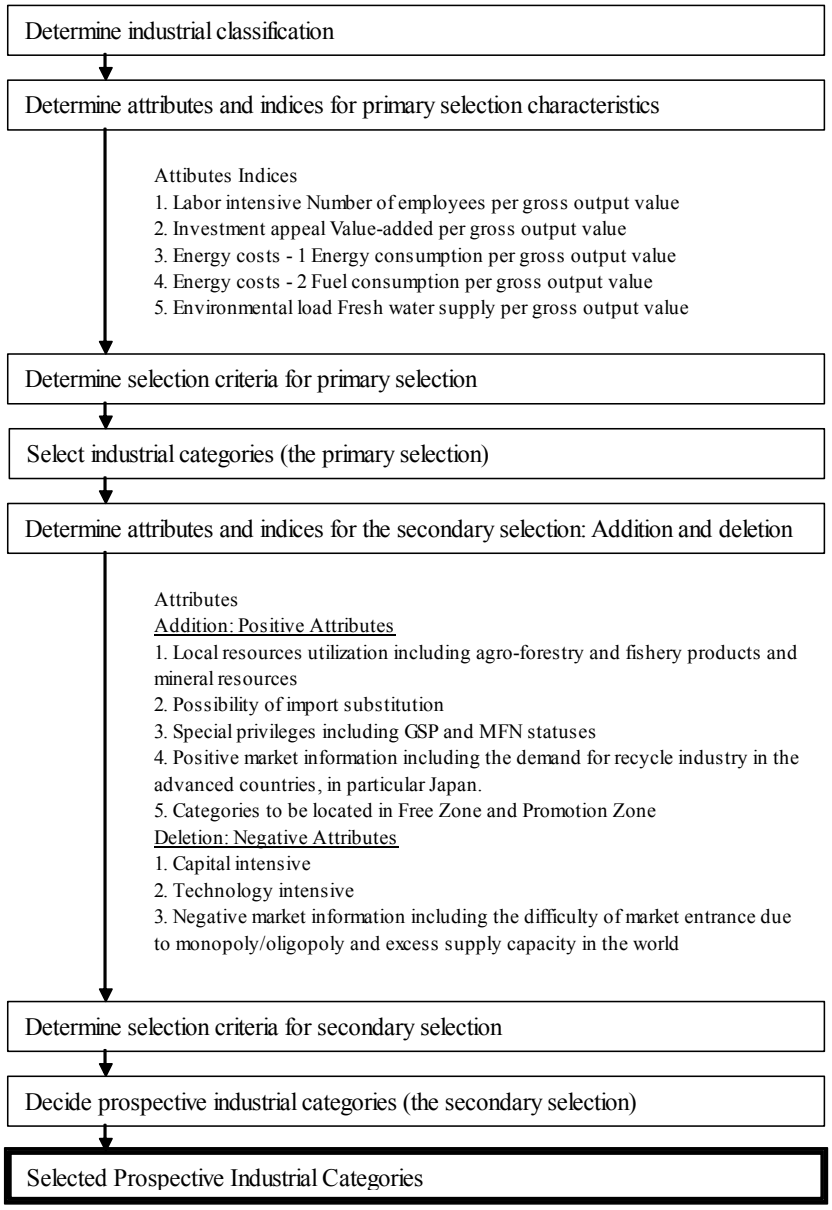


Figure 5-15 Selection Process for Prospective Industrial Categories Selection Flow Diagram

2) Selected Prospective Industrial Categories and Their Characteristics

Through the primary and secondary selection process, prospective industrial categories selected for the Growth Corridor except those to be located in the FZ and PZ, were given in **Appendix Section B.6**. In total, 70 prospective industrial

categories were selected. Details of the selection of the prospective industrial categories for the FZ and PZ are explained in **Section 6.3.2**.

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

(a) 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 products; prepared frozen food; and livestock products such as ham, sausages and dairy products.

The food industry tends to locate where the raw material is available and thus is categorized as a local resource utilization type. Besides, proximity to the market is considered an important factor in many cases of prepared frozen food. Getting raw material is an important factor for the food industry, and sometimes freezing and refrigerating facilities are needed.

It should be noted that the dairy products industry is rather capital-intensive for maintaining quality and requires a stable supply and facilities for collecting raw materials.

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

(b) Animal Feed

It is becoming increasingly important to supply animal feed of adequate quality and safety as the raw materials for meat and dairy production. In Japan, feedstuff is generally produced from imported raw materials such as corn, rye, bean cake, cornstarch, and molasses, in large-scale facilities. Although it is difficult to introduce such feedstuff production into Cambodia right away due to a lack of large-scale cattle breeding there. If the country plans to develop livestock and dairy products as in the future, however, it is recommended to first start developing the feedstuff industry at a small-scale.

Producers and consumers are getting more and more apprehensive about the use of animal-based feed due to epidemic diseases such as BSE (Bovine Spongiform Encephalopathy, or mad cow disease). Considering this, it is worth considering introduction of “Cambodian safe brand feedstuff” produced from locally available organic materials such as maize, molasses, rice bran, and cassava starch. For the time being, trials should be started with small-scale practices, and cater to local needs first.

(c) Pulp and Paper

Under the category title "Pulp and Paper", prospective products for Cambodia and the Growth Corridor are converted paper and paper ware. In the category of converted paper, corrugated fiberboard has been selected as a prospective industrial category; while in the category of paper ware, products for the school and office as well as the table have been selected. In addition, paper containers may be a promising category.

These products are manufactured from raw materials by processing and cutting, and have a positive location factor due to the market proximity. Sihanoukville and the Greater Capital area are expected to be markets for packing and cushioning materials.

(d) Ceramics, Clay and Stone

This group includes building materials and electric machinery parts, mainly for insulation, and tiles for roofs and walls. In most cases, raw materials and products have a relatively heavy weight and large volume. They locate in areas where the materials are available, or in areas with good accessibility to transport such as near port districts.

The manufacture of concrete secondary products, such as slabs, pipes, pillars, gutters, etc are often located in the outer area slightly away from large cities, as they do not favor long-distance transport and a certain size of land is required. In the case of developing countries, micro-enterprises producing bricks and roof tiles are often scattered in the rural area where they have markets.

The manufacture of cement, which is characterized as a raw material industry, is often located in the rural area. A large amount of fuel is needed for manufacturing cement. The number of cement factories utilizing industrial waste, such as scrap tires, as fuel substitute is increasing in Japan and other countries. Generally affected by the economic climate, the cement industry tends to have an excess supply capacity over demand, and therefore it is considered that it would be difficult to develop a cement industry in the short-term in Cambodia.

The glass industry is entirely capital-intensive and technology-intensive. Industrial and building glass is in an oligopoly state in the global market. In terms of glass for small containers, tableware and craftwork, there are a number of small-scale producers. Silica sand, the raw material for glass, exists in many places in the Growth Corridor. It is also possible to utilize scrap-glass and scrap-bottles for glass production, if sufficient volume is secured. Though currently nonexistent in Cambodia, the glass industry could be a prospect if proper products are selected.

(e) Metal

Metal products have a wide variety of fields, including those relevant to various machines, container manufacturing, construction materials, etc. This industrial category mostly locates in places where an adequate scale of industrial accumulation has 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; and labor supply. Some possible industrial categories belonging to the 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, immediate establishment is difficult, although some categories that require only low-grade technology have the possibility to be established, if industrial accumulation is formed in the Phnom Penh and Sihanoukville SPZ areas.

(f) Machinery

The machinery industry includes general machinery, electrical machinery, transportation machinery and precision machinery, often called the metal processing industry. The principal location factors are: land, water supply, traffic access, labor force, and industrial accumulation. These location factors tend to run hand in hand with good infrastructure on site. As the machine industry often requires so-called high technology, the required labor force cannot be satisfied with unskilled labor. In addition, it has location factors such as proximity to a university of science and an area of high technology, testing and research institutes, and a supply of skilled labor.

The machinery industry in general is deemed to be difficult to establish in Cambodia in the short-term from the above-mentioned reasons, but some specific kinds of products may have a possibility. For example, the agricultural sector will require an increasing number of small pumps, small electric-generators, and small engines. If it is not possible to immediately set up plants for the complete manufacture of goods, it may be possible to start with knockdown or semi knockdown, although this method sometimes requires extra costs for packaging parts for transportation.

For the electric machinery group, the prospective categories are considered as follows: assembling wire harnesses for automobiles, wiring accessories, switches, relays, connector, and printed circuits. The wiring harnesses are highly labor-intensive. As Laem Chabang in Thailand evolves as an automobile manufacturing base, it is hoped that Cambodia will provide related production services and receive some outreaching effects.

(g) 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 materials, steel tools for construction, and repairing parts.

From the 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 sandpaper by attaching abrasive. The possible categories may also include the manufacture of so-called eco-material sheets from cassava starch for agricultural use, food preservation bags, garbage bags, dishware, packaging and cushioning materials, and seedling pots.

In terms of reuse, which is becoming more important in recycling-oriented societies, a prospective category is the manufacture of retreated tires. They are produced from second hand or used tires imported from developed countries such as Japan.

In addition, the following product categories are also deemed as prospective: buttons, ribbons and collar stays relevant to the garment industry; wigs, which are considerably labor-intensive but need a certain level of technology. These can all be located in rural areas; sports goods including soccer balls; and Halal food for Muslims in Malaysia and other countries.

Table 5-15 Prospective Industrial Categories

Class	Category	Product	
		(Target Year: 2008)	(Target Year: After 2008)
Food	Livestock products	Meet products (ham and sausages)	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 cakes	Bread, cakes, and biscuits	
	Others	Prepared food	Prepared frozen food
Beverage and food	Carbonated drinks	Carbonated drinks	
	Alcoholic beverage		Fruit wines
	Foodstuff	Compound animal feed	Organic feed
Textile	Cloth		Cloth (liner, etc)
	Lace		Lace
	Embroidery		Embroidery and fancy sewing
	Net making and nets		Net making
Apparel	Woven garments	Men's wear, ladies' wear, and sports wear	
	Knitwear		Outer garments, shirts, infant's wear, and corrective orthosis
	Others	Clothing ornaments, neckties, handkerchiefs, gloves	
Wooden products	Plywood, architectural products	Wooden containers	
Furniture	Furniture	Wooden furniture	
Pulp and paper	Converted paper		Corrugated fiberboard
	Paper ware	Consumable paper products, and school paper ware	
	Paper containers		Brown wrapping paper, paper bags, and corrugated fiberboard containers
Publication and printing	Printing	Bookbinding	Printing (Contracted work)
Chemical	Fat and fatty oil processing	Soap, paint, ink	
	Others	Pyrethrum coils and flypaper	Gelatin and adhesives
Plastics	Plastic sheet	Plastic connectors	
	Reinforced plastics	Reinforced plastic containers	
	Plastic formation material	Reclaimed plastic	
	Others	Convenience goods and containers	
Rubber	Footwear	Plastic and rubber footwear, rubber hose	
	Rubber hose	Rubber hose	
	Others		Rubber-coated cloth and retreaded tires
Leather	Footwear	Footwear	
	Glove		
	Others		Bag and hand-bag
Ceramic, clay and stone	Glass containers		Scrap bottle and drink container
	Cement		Cement
	Concrete	Concrete secondary products	
	Building clay products	Bricks	Fire brick and clay pipes
	Ceramic ware		Sanitary ceramic ware, electric ceramic ware, tile, table, and kitchen ceramic ware
	Grinding material	Grindstones	
	Aggregate	Masonry	
Iron and steel	Surface treatment	Galvanized iron sheet	
	Others		Steel cutting and scrap iron processing
Metal	Tin cans		Tin can
	Table ware / cutlery		Table ware / cutlery
	Plate working and sheet metal processing		Plate working and sheet metal processing
	Architectural metals	Architectural and construction metals	
	Metal presses	Metal presses	
	Nails	Nails	
	Bolts and nuts	Bolts and nuts	
General machinery	Pumps		Small pumps (SNK)
	Electric generators		Small electric generators (SNK)
	Engines		Small engines (SNK)
	Agricultural machinery		Agricultural machinery
Electric machinery	Generator and wiring accessories		Small generators, wiring accessories and their attachments
	Electrical components		Wire harnesses
	Electric bulbs and lighting fixtures		Electric bulbs and lighting fixtures
Electrical machinery	Electronic parts		Connectors, switches, relays, and printed circuits
Transportation machinery	Automobiles and parts		Motor bike assembling and parts fabrication
	Bicycles and parts		Bicycle assembling and parts fabrication
	Shipbuilding and repair		Repairing small ships
Others	Jewelry processing		Jewelry processing
	Sporting goods	Sporting goods	
	Toys		Toys
	Accessories and buttons		Accessories and buttons, wigs
	* Eco-materials Development		Example: Utilizing cassava ● Starch for forming and film ● Bags and sheets ● Dishware and seedling pots

5.4.3 Strategy for Industrial Development: *Tertiary Industry*

(1) Overall Sector Strategy for *Tertiary Industry*

1) Tourism

The Growth Corridor Area includes Phnom Penh and Sihanoukville, both of which are designated by RGC as high priority tourism development areas in Cambodia.

The growing revenue from tourism, particularly form foreign tourists, accounted for 7.3% of GDP in 2001, which contributed to the development of the regional economy and provided employment opportunities[3]. The tourism related service sector including hotels, restaurants and travel business enterprises does and will continue to attract foreign direct investment (FDI) from the private sector.

2) Urban Services

Development of a Special Promotion Zone (SPZ) in Sihanoukville and in the suburbs of Phnom Penh will induce various demands for urban services. New employment will be required for retail, transportation and various daily services. Factories require transportation and soft services such as catering, carpentry and cleaning. Most of the service providers are either SME or the self employed.

Thus, a large demand is presumed to accrue from the SPZ for supporting and downstream soft services.

Based on the foregoing, the overall sector goal strategy for the *tertiary industry* development is set as follows:

Overall Sector Goal for *Tertiary Industry*

- Development and enhancement of tourism
- Development and enhancement of the service sector for supporting the regional economy and industrial activities

In order to achieve the aforementioned overall sector goal for *tertiary industry*, the following overall sector strategy for the *tertiary industry* is set as follows:

- To increase the number of domestic and foreign tourists into the two RGC's tourism priority areas, Phnom Penh and Sihanoukville by improvement and development of tourist sites and resources, and maximizing existing tourism potentials in partnership between the public and government sector
- To attract more foreign direct investment from private investors for commercial businesses in the tourism sector, which will generate new employment

[3] The Master Plan for Tourism Development in the Coastal Zone of Cambodia (2003-2017) is being prepared by the Tourism Authority of Thailand and the Thailand Institute of Scientific and Technological Research (TISTR). The Master Plan area covers the coastal areas of Kaoh Kong, Sihanoukville, Kampot and Kaep.

opportunities and contributes to support regional economy in the Study Area

- To support and strengthen the tourist, commercial and service sectors for proposed the Special Promotion Zone and urban areas in/around Phnom and Sihanoukville in cooperation with the private sector

(2) Area-Specific Sector Strategy for Tertiary Industry

1) Sihanoukville

Improvement and development of marine/beach areas for tourism and promotion of eco-tourism

Sihanoukville is a coastal resort area in Cambodia with various types of beaches and is a popular weekend destination, chiefly for domestic tourists and expatriates resident in Cambodia. The number of tourists visiting Sihanoukville is also increasing ever year.

In the short term, Sihanoukville should continue to develop and promote the marine/beach resorts primarily for domestic visitors in an environmentally sustainable manner by enhancing the amenity at the beaches and establishing additional hotels/guesthouses. To support and foster small and medium enterprises (SMEs) for tourist services, the existing supportive instrument of MPDF[4] should fully be utilized, or otherwise similar supporting measures should be developed.

In the mid to long term, Sihanoukville should be developed as an attractive marine/beach resort destination, not only for domestic but also for foreign tourists coming to Cambodia. In the year 2015 the number of domestic and foreign visitors to Sihanoukville is estimated to be 201,000 and 306,000, respectively[5]. To serve the increasing number of foreign tourists in Sihanoukville, upgrading of the existing accommodations and development of mid to high standard hotels is required. In addition, efforts need to be made for the development of tourist facilities such as a roadside rest area along NR No.4, improvement of the transportation network (by air, boat and road), establishing new attractions and information services. Offshore islands and Ream National Park in Sihanoukville will remain unexploited natural and marine resources, which need to be promoted for eco-tourism.

Development and improvement of service industries and businesses to support the urban sector

As will be discussed in the sub-section on urban planning, Sihanoukville is a "boom town" with a high rate of population growth. Provision of various types of urban services such as commercial, transportation and construction/ carpentry services will

[4] MPDF is an acronym for Mekong Project Development Facility, to which ten donor nations including Japan contribute funding.
[5] Estimation follows from TISTR Master Plan, op. cit.,

be required. These service providers, most of them being SME or self-employed, could be located in the vicinity of the existing downtown area near the central market. It is also necessary to provide financial and technical support through supportive measures in order to serve a growing demand for urban service in Sihanoukville.

Support of service and commercial industry for the SPZ

The FDI seeking location in the proposed SPZ in Sihanoukville will require relevant and downstream services for their operations, such as packaging, workshops for tuning and adjustment, printing, carpentry, transportation and logistical services.

In this regard, it is necessary to support service and commercial industry in the SPZ by providing vocational training for local staff working at foreign enterprises in the SPZ and sufficient technical support and financial resources for enterprises located in the SPZ. Some of these services are essential to the promotion of the FDI, and may be placed in a specially designated area for provision of service to the SPZ.

Upgrading of roles and activities of SME

Service providers in Sihanoukville are either SME or the self-employed doing business directly in trade, hotels, restaurants, transportation and communications. Existing SME have a lack of management and operational skills, and limited financing so that improvement and support of SME, such as providing training courses for SME and provision of a financing facility are indispensable in order to upgrade the roles and activities of SME

2) Greater Capital Area

Improvement of tourist destinations in and around Phnom Penh

Phnom Penh is the center of the growing economy of Cambodia, and serves as a gateway for foreign tourists to Cambodia, primarily visiting the ruins of Angkor Wat. Presently, an increasing number of foreign tourists, however, visit Angkor Wat on a direct flight to Siem Reap. Phnom Penh needs to attract more foreign and domestic tourists and increase the length of stay by improvement of existing tourist resources, facilities, and creation of new tourist attractions and products.

Phnom Penh has various types of cultural and historical sites and resources, including the Royal Palace and the National Museum. Besides, Phnom Penh has latent untapped tourist resources, including a number of examples of French colonial architecture that add color to the city. One of the monumental pieces of colonial architecture is probably the historical Grand Market[6] building in Phnom Penh, which serves as the city's central market today. Refurbishing the Grand Market with

[6] The Grand Market building was constructed in 1937, and survived the desolation and destruction during the Khmer Rouge regime. For details, refer to the sector report for Urban Planning.

its unique outlook could serve as the city's souvenir center geared primarily to foreign tourists.

In addition, there are some tourist sites and resources in the surrounding areas of Phnom Penh along NR no. 1 and 6, such as Oudong and Kean Svay. Those tourist sites should be promoted as optional tour destinations from Phnom Penh in cooperation with the private sector.

Enhancement of information and telecommunication technologies (ITC) for tourism and related activities

A number of services, commercial, tourist and financial businesses are concentrated in the center of Phnom Penh. They need to have appropriate and advanced information and telecommunication technologies (ITC) for effective operation. In the tourist business, on-line mail order type of tourist product sales can be developed for handicrafts and souvenirs on websites, as some of the NGOs are already implementing on an experimental scale. Additionally, a more advanced tourism information network and database system needs to be developed by MOT in cooperation with the private sector.

Upgrading of roles and activities of SME

In the Greater Phnom Penh Area, various types of commercial and service businesses are located and operated, which are either SME or the self-employed. Existing SME and smaller companies have little management and operational skills, and limited financing means. In Phnom Penh, a training center for tourism and service should be established in order to improve the capacity of human resource for different levels and types of service.

To support and foster small and medium enterprises (SMEs), existing supporting measures by MPDF should be fully utilized and otherwise similar supporting measures such as providing training courses for SME, establishment of an SME investment fund, and training of local employees should be developed.

3) Intermediate Area

Enhancement of existing tourist destinations

The Intermediate Area is mostly rural with a limited extent of commercial and economic activities. Two national parks, Kirirom in Kaoh Kong Province and Bokor in Kampong Spueu Province have abundant assets in the form of natural environment and resources, which should be enhanced and promoted as nature tourism and eco-tourism for foreign and domestic tourists.

In the short term, it is necessary to formulate a protection and management plan by the Ministry of Environment in cooperation with relevant ministries and provincial governments. Other natural and historical resources, such as Khmer temples and the

mountains in Takaev Province along NR2 are attractive tourist destinations, which need to be properly preserved and maintained with information signboards.

Most of access roads to tourist sites in the Intermediate Area are unpaved and in a poor condition. To attract more visitors to tourist sites in the mid to long terms, selected important rural access roads should be improved. Additionally, public rest areas and tourist information facilities will be necessary to develop along NR2, 3 and 4.

Introduction of village tourism

Khmer silk cloths and handicrafts sold at Phnom Penh are produced in some villages in Takaev and Kandal Provinces. These villages, such as on the island of Kaoh Dack ("Silk Island") in Kandal Province north of Phnom Penh should be selected as a pilot project to promote village tourism of Khmer silk weaving in cooperation with NGOs. Other handicraft, metal carving for silver and copperware is found in Kaoh Cheng near Oudong in Kandal Province. These sites are still a minor tourist destination for exceptional tourists, but may be promoted as a village tourist destination by travel agencies in cooperation with local government. Tourist facilities such as rest areas and souvenir shops will be required at the sites.

Upgrading of commercial and service business functions and activities in Provincial centers

Commercial, transportation and service businesses in the Intermediate Area are concentrated in provincial urban centers and along the arterial roads such as NR. Nos. 2, 3 and 4. Most of them are small scale companies and shops, and are mainly self-employed. Provincial centers and some areas close to the outskirts of Sihanoukville and Phnom Penh and along the NR. Nos. 2, 3 and 4 will be expected to have an increasing demand for commercial and service businesses, creating many opportunities in accordance with the development of the SPZ and IZ in Sihanoukville and Phnom Penh. Commercial and business service providers will be promoted in the regional urban centers.

Additionally, existing markets at provincial centers in the Intermediate Area need to be modernized with the establishment of a wholesale market and a distribution center, which will diversify the market function and improve commodity distribution channels to central markets in Phnom Penh and Sihanoukville, and to local producers.

5.4.4 Strategy for Investment Promotion

(1) Sector Goal

The primary goal for investment promotion is to attract more FDIs through implementation of reforms and improvements in Cambodia for the promotion of

investments, and substantiation of a Special Promotion Zone with good infrastructure and a preferred system for smooth import/export.

(2) Sector Strategy

Promoting investments into Cambodia depends on and is subject to a number of factors. In the decision-making process for investments, the basic viewpoint is whether the money invested will make a sizable profit or not; whether the money invested will be safe and protected; and in short, whether it is worthwhile to invest in Cambodia or not.

The condition of the investment promotion in Cambodia is not the brightest, particularly after the political unrest in 1997, which cooled the investment boom that was in the making at the time. The general condition is picking up with the sustained peace and political stability in the last few years.

The RGC has been launching reforms and improvements for the business and investment environment, by pursuing transparency in laws, regulations and procedures; enhancing private sector involvement; and reestablishing internationally recognized and accepted principles of law in Cambodia.

There are two different approaches and emphasis about the implementation of reforms and improvements in Cambodia for the promotion of investments in Cambodia. One argument emphasizes the overall and nationwide reforms to rectify the underlying problems altogether, which is a thorough, essential but time consuming process, as the problems hindering investments are interrelated and deeply rooted in the administrative and business practices.

An alternative approach is to stress short-term results within a restricted and controlled area where the best and most preferred business practices could be extended without running into trouble. The area should have clearly delineated boundaries and a solidly stipulated legal and institutional system. The conditions rendered in this restricted area could be thus easily controlled and would not harm the nationwide and overall reforms in progress.

The Study Team refers to the area specially delineated for FDI promotion as the Special Promotion Zone (SPZ), following the 1994 Law on Investment (LOI)[7]. Implementing the SPZ with a set of conditions and substance attractive to FDI, before 2005 when the GSP quotas are dismantled, will be necessary for Cambodia. Displaying success in a small area will have a substantial impact on the nationwide and overall reforms that are in progress, as it shows how such improvements could happen.

[7] The 1994 Law on Investment has an article for SPZ (Article 12), allowing full incentives to the investment projects located in SPZ (Article 14.4). The amendment of the 1994 Law is in progress, where the concept of SPZ remains, but most of the incentives will probably be removed.

(3) Area Specific Strategy

As discussed in **Section 5.2**, Sihanoukville is one of the most strategically important locations to accommodate FDI. Establishing an SPZ at Sihanoukville will require a number of clarifications and implementation of relevant systems and institutions, such as the provision of a legal framework, managerial capacity building and human resources development. The endeavor to develop a successful SPZ in Cambodia will thus pave the way for subsequent projects to further enhance the promotion of FDI into Cambodia.

Phnom Penh has a unique position in Cambodia as the nation's capital. It has a rapidly growing suburbs and concentration of the nation's best human resources. Development of the SPZ at Phnom Penh will require sizable investments. This could be achieved when the small scale pilot project in Sihanoukville is on track.

In the Intermediate Area, the nature and size of investments may differ from those in the above two areas. Small investments capitalizing on locally available resources such as fish, fruits and textiles may locate in the Intermediate Areas, which will provide livelihood to rural residents.

The area specific strategy for industrial development, as well as demand projection, will be described in depth in **Section 5.5 and 5.6**.

5.4.5 Strategy for Legal and Institutional Framework

(1) Establishment of SPZ

The establishment of an SPZ has been discussed but has not yet been realized in Cambodia. During this period, the AFTA framework and the Chinese-led FTA concept between ASEAN and China have emerged and are now in progress. Under such circumstances, there has been gradually diminishing time left for Cambodia to become capable of competing in the export markets within ASEAN or within such FTA scheme and stay abreast of the other member countries of ASEAN.

Considering the current situation in Cambodia, as reviewed before, and learning from the past experiences in other countries, adopting a non-traditional, new concept for the SPZ may be advisable to Cambodia, as a strategic tool to win the FDI attraction race.

This approach seems especially important when the government expects to initiate regional development through industrial development. The key point would be to examine how to promote FDI, as a core sector, and invite local private sector investments, which would become receivers of technology transfer from and suppliers of necessities to the core zone. One of the possible answers may be the implementation of a concept of an area-wise SPZ, which houses FDI and export industries mainly in enclosed Free Zones and invites mainly local industries to the non-closed area of PZ (Promotion Zones), by providing sufficient infrastructure,

improved administrative control, better labor relations and enough fiscal and non-fiscal incentives.

In Cambodia, the legal system is fragile and there is no prevailing system for proper enforcement of laws and regulations. Administrative control is often discretionary and non-transparent. In the area designated as the SPZ, such problems will be solved entirely by the following measures:

- All the issuance of licenses, approvals or permits and administrative controls in the SPZ will be carried out under the firm initiatives, guidance and supervision of a newly established and independent Authority.
- The investment approval will be issued effectively in the manner as stipulated in the Draft LOI.
- The proper enforcement of laws and regulations will be closely monitored.
- A transparent and non-discretionary administrative control system, including different, simplified, predictable and transparent customs clearance procedures, will be introduced.
- The fiscal and non-fiscal investment incentives, although they may differ in nature and degree, will be provided both to the areas in and out of the Free Zones in the SPZ.
- All the necessary charges and fees to locate and engage in business or production will be clearly established and openly disclosed to the public.
- The SPZ Authority will be responsible to create amicable labor relations and to assist in settling the labor disputes.

The first SPZ is recommended in Sihanoukville, in view of its strategic location with the only deep-water sea port in the country.

(2) Enactment of the SPZ Law

According to a review of the Draft law on Industrial Zones (LIZ), the proposed provisions are deemed to be insufficient to establish an area-wise SPZ that contains different customs territories and wherein the SPZ Authority as expected to act as an independent and flexible agency regulating and managing the private investment projects, mainly by the FDI.

The intended SPZ Authority has to be more independent from the existing governmental sections in order to secure transparency in policy making and management of operations. It has to ensure accountability and provide the prospective investors with accessibility to the needed information. It shall be equipped with simpler and transparent structures and offer time saving and less costly institutional procedures.

In order to set up such new SPZ Authority, the enactment of a new SPZ Law, which aims to give wider coverage and introduce new management systems, will be required. The new SPZ Law will have to maintain consistency with the existing policy and legal frameworks and so the relation between the Draft LOI and the new SPZ Law has to be carefully examined.

In this context, the scopes of fiscal incentives to be provided to the investors will be the subject for discussion. The Draft LOI proposed to eliminate the introduction of preferential corporate tax rates and considerably limit the scope of fiscal incentives, while the SPZ Law will be expected to provide as much incentives as possible for the spatially delineated SPZ. Such incentives may include a preferential rate of corporate taxes, tax holidays, accelerated depreciation, exemption from remittance tax, deduction of training expenses from the taxable incomes, etc.

The new SPZ Law shall provide a clear definition of the two different areas of the SPZ, namely the Free Zones as a different customs territory and other non-free zones areas of the SPZ.

It will also stipulate the structure of the SPZ Authority and the basic principles of administrative procedures and management.

The basic structure of the SPZ will be the following;

- All the investment made in or out of the various zones and /or areas in the SPZ shall be entitled to investment incentives.
- FZ: Free Trade Zone: A free market place for the domestic and imported goods for export or re-export. May be equipped with exhibition facilities, light processing facilities, various types of bonded warehouses and financial service functions.
- PZ: Promotion Zone: A place for manufacturing and/or processing firms and related service/logistic providers to establish businesses to cater to export-oriented goods by utilizing mostly the foreign capitals and technologies or sometimes combining those with the domestic capitals and products. The PZ will be a mechanism to facilitate the effect of FDI inputs into the FZ to be distributed across Cambodia, and enhance backward linkage.

(3) The reform of the CDC

1) Integration of the Evaluation and Incentive Project Department and the Inter-ministerial Coordination Department

In case of promulgation of the Draft LOI, the roles of the Evaluation and Incentive Project Department will be considerably reduced and the importance of the Inter-ministerial Coordination Department seems to increase. Under the Draft LOI, the approval for investment projects and the provision of incentives will become automatic. There will be no need to evaluate the proposed investment projects and to

weigh and calculate the tax holiday period. The Department may become a mere window to receive the investment applications and check the completion of necessary documents. At the same time, there will be no inter-ministerial "One-stop" meeting because there will be no evaluation required for approving the investment projects. The more important functions that the CIB is expected to carry out will be the "One-stop" shop for arranging the approvals, licenses and permits necessary for the investors to operate. Hence, it is proposed to create, by integrating these two departments, the "One-Stop Investment Service Center" to serve the investors continuously from receiving the investment application and providing the necessary licenses and permits to consultation during the follow-up period.

2) Abolishment of a Master List

Although the approval time for a Master List amendment has been shortened to 3 working days, it will be better if such unpractical measures can be abolished. It has to be changed to an on-the-spot application system with automatic approval, if the application is appropriate. For this modification, the CED's computerized system will have to be utilized. This enables the CIB to check the actual import/export records of the investors-exporters on the computers and, to issue the import permits without delay.

As the vast majority of Cambodian exports are garments, most of the routine duty-free imports appear to be materials such as fabrics and auxiliaries for garment production. If a 0% rate of import duty is applied for these commodities, the benefits will not only lessen the work volume of the Project Monitoring Department but also reduce the workload of the CED and CAMCONTROL at the port site for import inspection.

The garment manufacturers can freely import necessary materials at any time without applying for the duty-free import to the CIB. This will enable the garment manufacturers to pursue the timely and flexible production of garments and to avoid excess inventory of the materials and, therefore, enhance the competitiveness of the Cambodian garment industry significantly.

Since PSI is not applicable to the fabric imports, the customs clearance procedures may become simpler and easier, which may result in less unofficial cost. If the flow of material fabric and auxiliaries becomes free with no duty payment obligation, so-called "textile converters" may find it easier to locate their offices and keep the stocks in warehouses located in the SPZ. If the Advanced Import System, under which the exporters can export the fabrics and auxiliaries before they receive orders, is allowed in the country, it will provide more promising opportunity. Besides, the possible negative impact on domestic industries would be minimal, as there are only nominal domestic garment industries in existence at this time. On the contrary, as the fabric or other auxiliary materials for garments become available freely and at cheaper prices, the promotion of garment manufacturers formed from domestic

capital may become feasible. With all of these strengths, Cambodia may become a major garment-manufacturing center in the region. What the RGC may loose for this would be only about half a million dollars per year, which was the amount said to accrue on the customs duty on textiles in 2000.

Even if the material flow becomes freer and cheaper, however, the reform of customs clearance procedures and the removal of unofficial costs will be the minimum requirement for establishing a QR system in the country.

3) Strengthening of the Monitoring Capacity of the Project Monitoring Department

As reviewed before, the Project Monitoring Department lacks sufficient capability for monitoring the Investment Enterprises currently achieving a coverage of only 60%. Expecting a possible reduction in its workload due to the enactment of the Draft LOI and the proposed abolition of Master List control of duty free import of fabrics, the Department has to concentrate on monitoring works over the Investment Enterprises or projects by introducing more IT equipment. In this way, it can collect and provide more effective information t be used for administering the non-active Investment Enterprises or projects and formulating the country's policies towards FDI promotion.

4) Establishment of a Conciliation Board

In the Draft LOI, the CDC is expected to provide effective and efficient conciliation functions to the investors, especially for FDI. Under the current structure of the CDC, the Legal Department of the CIB is supposed to be in charge of providing conciliation services. As mentioned before, it is uncertain if the Legal Department can provide services with the currently limited number of staff. The CDC may have to address the possibility of setting up a more solid and powerful conciliation board with a wider base, in order to gain the confidence of the investors.

5) Establishment of Synthesis Commercial Registration Office

According to the investment application procedures, the Legal Department of the CIB will give approval to the company memorandum and the articles of association of the prospective investors, although the investors have to register such investment company with the MOC. There is a duplication of the process that may cause discrepancies in interpretation of company memorandum and the articles of association between the Legal Department of the CIB and the MOC. The process had better be modified so that a neutral organization can give the final interpretation. Establishing a new, neutral and independent organization in charge of all sorts of commercial registration, including the registration of trademarks or intellectual rights, is recommendable.

(4) Reform and Strengthening of the Garment Exporters Association

Current procedures applied to the garment exports are complicated with duplication of mandates of job assignment among the governmental agencies. Due to this, unnecessary physical inspections are carried out, providing opportunities for the demand for unofficial charges or fees.

In past experiences in Japan, the textile manufacturers and traders established the textile exports association for controlling the textile exports in quantity and quality. Such association also provides the quality guarantees. Likewise, in order to avoid going through the complicated and time consuming current procedures for export licensing, forming of an organization of a similar nature is recommended under the initiative of the existing Garment Manufacturers Association of Cambodia.

The representatives of MOC, CED, CAMCONTROL, MIME (if necessary) and garment manufacturers-exporters will form an export association, which will be responsible for monitoring the quality, compliance with export contracts and managing diligent trade behavior, and issuing necessary licenses and certificates. Only with the permits and certificates of such an export association can the export cargoes go through the green lanes at a port without any physical inspection. Thus, the customs clearance will be expedited and the cost becomes cheaper. Instead, the export association shall be responsible to make up and maintain the profile database of the member companies and assure the legitimacy of the garment exports and material imports by the members.

(5) Removal of Exports Restriction

Having vast territorial seas, rivers and lakes, fishing seems to have a bright future among the natural resource based industries. According to the Department of Fisheries of MAFF, the current annual fishery produce of Cambodia is said to be about 400,000 tons, of which 350,000 tons come from fresh water and the remaining 50,000 tons from seawater.

Due to informal estimates, current seawater fishery may reach 100,000 tons total per year, but half the total quantity is exported directly and informally to Thailand and Vietnam. Although it is pointed out that the lack of high-speed boats and insufficient fish port facilities are the reasons for such informal exports, the low margin level of fishermen's income may be another reason.

In a formal export channel, intermediate margins of traders and distributors plus 10% export tax will be deducted from the gross export price and the remaining will be the net income of fishermen. The fees, formal and informal, for an export license will be included in the intermediate expenses and deducted from the income of fishermen. In order to promote the fishery industry and official exports of fish from the country, the margin level for fishermen must be increased.

The first measure for achieving this shall be to delete the requirement for an export license or the export tax of 10%. MAFF says that the purpose of requiring export licenses is the prevention of excessive fishery and protection of fish resources and the CED also says the purpose of levying an export tax on fish is to protect fish resources. Institutional duplication has to be dissolved so as to help increase the net income of fishermen.

(6) Improvement of Customs Clearance Procedures

The most vital thing to be introduced for improving the customs clearance process would be the implementation of One-stop Inspection. Currently, the CED, CAMCONTROL and Border Police carry out their own physical inspections at their discretion, which causes time delays and additional unofficial costs. By implementing the One-stop Inspection scheme, there will be much improvement in shortening the clearance time and less opportunity for unofficial charges. PAS is now examining the establishment of the "One-stop Inspection" building at the port yard, which will house the CED, CAMCONTROL, Border Police, KAMSERVE and PAS. The importers and exporters will be expected to go through the same building only once for customs clearance.

Such efforts may bring much improvement in customs clearance procedures but the expected effect will be a limited one unless the duplicate mandates among the relevant organizations will be eliminated. For physical inspection, one-time inspection will have to be realized.

Second, the powers of PAS have to be strengthened more so that the CED and CAMCONTROL will have to obey the orders issued by PAS. Since PAS was designated as an autonomous port by the Prime Minister's Sub-Decree, it may make sense that PAS should control all the governmental agencies stationed there, at least in the field of loading and unloading of cargoes, and customs clearance works.

Third, PSI made by SGS has to be given more authority so that, as long as the seals on containers remain unbroken, the cargoes must divert to the green lanes. This enhancement of authority of SGS's PSI can only be attained by the decision or order of high ranked government officials.

Fourth, to supplement the weakness of the CED's capacities the introduction of a computerized customs clearance system has to be realized, to prevent illegal behavior such as smuggling and under-value or under-quantity declarations, improve the flow of cargoes in the ports, reduce the amount of documentation required and expedite the document flow. This system will have to be geared for enabling the implementation of PCA, which will become possible only by building up of the profile database, and expanding the access to the green lanes. The computerized customs clearance system not only serves the above objectives but also the overall improvement in investment and trading of the country, by enabling simpler control of

duty-free import or VAT refunding. For this, the RGC may consult with international donors for funding and dispatch of experts in the concerned fields.

(7) Improvement of Taxation Scheme

Among the tax-related problems in Cambodia, the reform and redistribution of the current taxation system would be the most urgent matter. The range of taxpayers and the taxation basis have to be widened beyond the existing system, which relies heavily on the customs duty and VAT. Although the governmental tax-related agents tend to concentrate tax collection efforts on large-scale taxpayers, efforts will have to be expanded to medium sized firms and individual persons. A reshuffle of the whole tax system must be sought in order to adjust the balance of tax burdens among various taxpayers and reassess the appropriate tax rates. Such reform has to be planned in view of the promotion of FDI and domestic investment at the same time.

Some of the possible measures to raise tax revenue may be as follows:

- VAT collection has to be strengthened.
- Through the implementation of a new Accounting Law, the corporate tax has to be collected beyond the differences of tax regimes.
- The minimum amount of personal income that is exempt from tax, and the applicable rate of tax have to be re-examined.
- Taxation on personal capital gains has to be implemented.

Problems regarding the VAT refund may be solved by the introduction of computerized customs clearance systems. When planning such computer systems, the Tax Department of MEF will be encouraged to participate positively.

Concluding double taxation preventive agreements has also to be sought with as many countries as possible.

(8) Improvement of Labor-related Regulations

Considering the possible termination of the Multi Fiber Agreement at the end of 2004 and the possible emergence of FTA between ASEAN and China, Cambodia would have to be cautious on the implementation of the labor policies that had been aimed at meeting the conditions for widening the garment exports under the export quota and GPS scheme. For maintaining its competitiveness, which mainly comes from rather cheaper labor cost, there shall be a certain ceiling to be set for wage increases and pro-laborer frameworks. Although it may be difficult to lower the level of the current remuneration arrangement in the garment and footwear industries, there must be thoughtful consideration taken before any more raises in the standard of working conditions is implemented.

Labor Inspectors seem to have excessive rights to control and interfere with normal business practices. In this context, some of the stipulations of the Labor Law, which

do not have significant substance, may be deleted to lessen the bureaucratic procedures.

5.5 BASIC STRATEGIES FOR URBAN AND SOCIAL DEVELOPMENT

This sub-section describes the basic strategies for urban planning and social development, encompassing urban planning, human resources development, rural development and environment. The strategies for urban and social development are summarized in **Table 5-16** and **Figure 5-16**.

Table 5-16 Development Strategies for Urban and Social Development of the Growth Corridor

Development Goal		Formulation of Axis of Development for Cambodia	Promotion of Strategic Development of Industries	Creation of Economically Active Suburbs with Sustainable Environment	Establishment of Stable and Sustainable Rural Society
Strategies for Urban and Social Development	***F. Urban Planning***	Effective Instrumentation of Urban Planning to Accommodate and Stimulate Economic Development	Formulation of pilot Master Plan for Sihanoukville	Formulation of Greater Capital Area Urban Master Plan	Capacity building for decentralization of planning functions
			Enhancement of urban planning and enforcement mechanism		
	G. Human Resource Development	Provision of productive& formal employment to the increasing number of young Cambodians who will contribute to industrial development of Cambodia	Provision of trained workers and clerks required in SPZ Development of future managers Development of factory supervisors and managers	Provision of IT engineers through fostering amicable relationships with Thai Institute Development of highly and practically educated engineers	Strengthening provincial government officials' capacity in entrepreneurship support
	H. Rural Development	Reduction of Poverty Additional Income Generation	Promotion of participation in community development at informal settlements	Provision of on-farm income generation opportunities Promotion of products with better market access Support for the vulnerable people	Speedy fulfillment of needs for small scale rural infrastructure Promotion of participation Promotion of health education
	I. Environment	Effective Enforcement of Environmental Legislation	Establishment of Strict Pollution Control System Improvement of Solid Waste Management System Investigation of Potential for Establishment of Zero-Emission Model	Reinforcement of pollution control Introduction of Waste and Wastewater Reduction Incentive Policy	Conservation and Sustainable Utilization of Natural Resources Improvement of Domestic Waste and Wastewater Management System

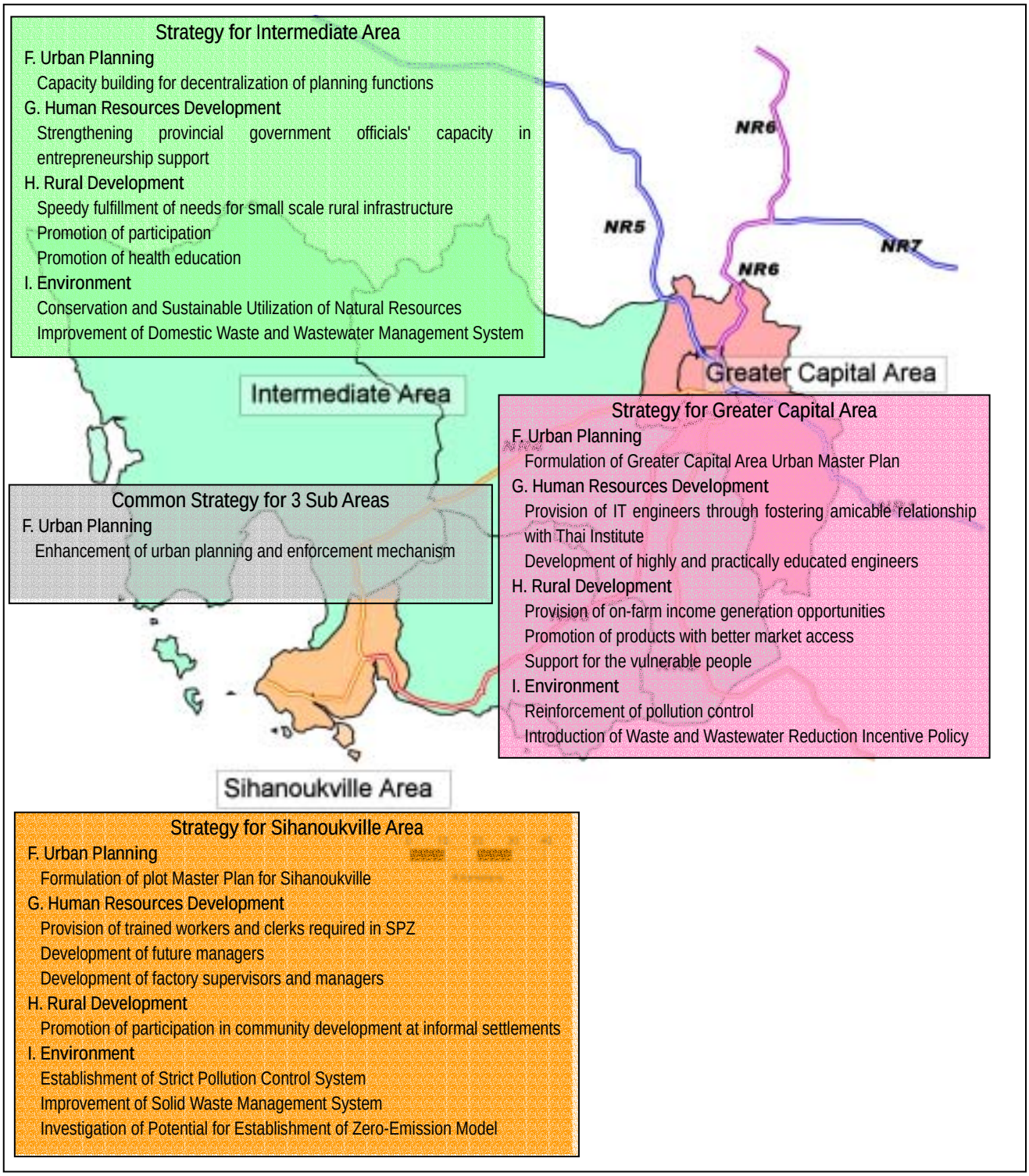


Figure 5-16 Development Strategy for Urban and Social Development of Growth Corridor

5.5.1 Projection of Future Urban Population in the Growth Corridor Area

Table 5-17 shows the projected provincial and urban population in the Growth Corridor Area for the period of 2000 – 2015.

Table 5-17 Total Population Projection in the Study Area

Total	Population in Thousand Persons					Growth Rates		
	1998	1998r	2000	2008	2015	98-00 Growth Rate	00-08 Growth Rate	08-15 Growth Rate
Greater Capital Area	2,075	2,178	2,317	2,937	3,511	3.1%	3.0%	2.6%
Phnom Penh	1,000	1,044	1,136	1546	1932	4.3%	3.9%	3.2%
Kandal	1,075	1,134	1,181	1391	1579	2.0%	2.1%	1.8%
Intermediate Area	2,050	2,169	2,265	2,704	3,121	2.2%	2.2%	2.1%
Takaev	790	836	865	996	1114	1.7%	1.8%	1.6%
Kampong Spueu	599	634	665	811	956	2.4%	2.5%	2.4%
Kaoh Kong	132	140	156	229	300	5.6%	4.9%	3.9%
Kampot	528	559	579	668	751	1.7%	1.8%	1.7%
Sihanoukville	156	165	180	249	318	4.5%	4.2%	3.6%
Study Area Total	4,309	4,511	4,761	5,890	6,950	2.7%	2.7%	2.4%
Other Cambodia	7,129	7,621	8,007	9,631	11,138	2.5%	2.3%	2.1%
Cambodia Total	11,438	12,132	12,769	15,521	18,088	2.6%	2.5%	2.2%

Only in Sihanouk Municipality, with 43 per cent was less than half the population classified as rural. The total rural population in these areas was approximately 300,000.

Table 5-18 Urban Population Projection in the Study Area

Urban	Population in Thousand Persons					Growth Rates		
	1998	1998r	2000	2008	2015	98-00 Growth Rate	00-08 Growth Rate	08-15 Growth Rate
Greater Capital Area	628	654	673	787	895	1.4%	2.0%	1.9%
Phnom Penh	570	582	592	654	713	0.8%	1.2%	1.3%
Kandal	58	72	81	133	182	6.3%	6.4%	4.5%
Intermediate Area	143	169	187	290	386	5.1%	5.6%	4.2%
Takaev	40	50	56	93	128	6.6%	6.5%	4.6%
Kampong Spueu	41	49	54	85	115	5.3%	5.8%	4.3%
Kaoh Kong	29	31	32	42	51	2.1%	3.2%	2.9%
Kampot	33	40	45	69	93	5.5%	5.7%	4.2%
Sihanoukville (Mittakpheap)*	67	71	78	108	138	4.5%	4.2%	3.6%
Study Area Total	732	895	938	1,185	1,419	2.4%	3.0%	2.6%
Other Cambodia	868	1,174	1,104	1,451	1,774	-3.0%	3.5%	2.9%
Cambodia Total	1,600	1,940	2,042	2,636	3,193	2.6%	3.2%	2.8%

Note; The urban population of 1998 was adjusted to that of Mittakpheap.

(1) Greater Phnom Penh Area

The growth of the urban population in the Greater Capital Area will be driven by the rapid urbanization in Kandal Province, which relates to expansion of the urban areas from the metropolitan area of Phnom Penh outwards to suburban areas. In 2015, the Greater Phnom Penh area will merge into a large urban center with an urban population of 900,000, surrounded by rural and semi-urban areas with the total population of 3.5 million.

With the rapid growth of urban areas, focus will have to be placed on balanced development and preservation of natural land particularly in the suburban areas on the outskirts of Phnom Penh.

(2) Sihanoukville

Sihanoukville is, and will be the "boom town" of Cambodia throughout the projected period. The urban population in Sihanoukville grows rapidly at a rate much higher than the national average. Consequently, urban areas shall expand in the areas near the Port and in the hills. In 2015, Sihanoukville will have an urban population of 138,000.

(3) Intermediate Area

The Intermediate Area has only small urban centers with urban populations of about 30,000 to 40,000. The city of Takaev, located along national route No. 2 shall grow the fastest, reaching the 100,000 mark around the year 2010. It should be borne in mind that the Intermediate Area has a large rural population; 2 million in 1998 that is projected to reach close to 4 million in 2015. The small urban centers are, and will be, the gateways to the larger urban centers such as Phnom Penh and Sihanoukville.

5.5.2 Strategy for the Urban Planning Sector

(1) Goal of Urban Planning Sector

The cities in Cambodia provide the locations in which a substantial portion of production and service activities take place, stimulating the national economy to grow, and thereby delivering to the nationals the fruit of development.

The Greater Phnom Penh Area houses various economic activities pertaining to the capital of Cambodia, while Sihanoukville provides the unique function of the only deep seaport of Cambodia providing sea lane connections. The Intermediate Area has a latent potential as a hinterland of the two urban centers with agricultural production, serviced mainly by small to medium sized regional cities.

Planning for urban areas in terms of land use in harmony with control and regulation of infrastructure development will provide the cities with a sound environment for urban livelihood and provide a basis for economic activities.

The overall urban sector goal therefore rests on:

Overall Urban Sector Goal

- Establish and enhance the mechanism and instrumentation tools to regulate and administer urbanization to cater for the economic development of the Growth Corridor Area as a whole

(2) Approach for Urban Planning

The imperative task of urban planning in Cambodia resides in the enhancement of the planning and enforcement mechanisms. Though the Law on Land Management, Urban Planning and Construction provides the basic framework for urban planning, specifics and enforcement procedure are still widely open for substantiation.

It is important to establish guidelines for the development master plan and land use plan for the cities in Cambodia. Much of the knowledge and capacity required to prepare the guidelines shall be obtained through actually formulating an urban plan for a specific city. In the sphere of enforcement, it is important to establish autonomous criteria for the provision of construction permissions for developers/investors. In order to achieve this, the zoning needs to be established clearly.

The approach for urban planning in the Growth Corridor area will thus be comprised of the formulation of a pilot master plan for Sihanoukville, followed by application of the knowledge and methodologies learned therein to a larger, more complex urban center such as Phnom Penh. Subsequently urban plans will be formulated for small scale provincial urban centers in parallel with the capacity building of government staff in charge of formulation and enforcement of the urban plans.

1) Sihanoukville

Formulation of a Model Urban Master Plan

The most important strategy of urban planning in Cambodia is to facilitate a good model for urban planning, combining the local and expatriate expertise. The urban master plan shall include the development master plan and land use plan, as stipulated in the Law, together with a guideline for enforcement of the master plan, particularly in regard to construction permission.

The model urban master plan not only to formulates a solid urban planning base for a specific city, but also establishes methodologies, assumptions and procedures for urban master plans nationwide that will follow. It will also serve as the first draft plan to be contemplated by the National Committee for a formal approval. Formulation of the urban master plan shall involve the Department of Urban Planning and the relevant regional offices of the MLMUPC, Municipality/Province and relevant agencies/organizations.

As the urban master plan will have significance as a forerunner, the Study Team considers that Sihanoukville City provides the most suitable candidate.

The objective of the proposed Urban Master Plan for Sihanoukville is the following.

- To establish the vision of the city and an urban development framework for the city of Sihanoukville,
- To formulate the Urban Master Plan for the city of Sihanoukville comprising of the land use plan (zoning by type of land uses) and urban development plan that covers specific infrastructure development, disaster management and environmental management,
- To promote capacity building of the counterpart staff by jointly establishing methodologies, assumptions and procedures of urban planning, which will be the basis of urban planning in Cambodia.

Formulation of the Urban Master Plan for Sihanoukville shall involve Department of Urban Planning and the Sihanoukville regional office of MLMUPC in collaboration with Municipality and relevant agencies/ organization.

2) The Greater Capital Area

Formulation of the Greater Capital Area Master Plan

As mentioned earlier, the Greater Capital Area, encompassing Phnom Penh Municipality and Kandal Province, is one of the most important and complex urban centers in Cambodia. In the face of the rapid and extensive urbanization, formulation of the Greater Capital Area Master Plan is essential in providing the infrastructure in time and effectively, and for retaining control of quickly growing suburbs and maintaining the economic and social vitality of the city as a whole.

The Greater Capital Area Master Plan will be a complex and multi-facetted planning exercise involving a variety of expertise. Expatriate assistance should be considered for this task. It should be started after the master plan of Sihanoukville, in which the planning methodologies would be established.

3) The Intermediate Area

Capacity Building for Decentralization of Planning Functions

The subsequent task of urban planning pertains to the proliferation of good urban planning practices throughout the nation. The capacity building of staff will be the key for successful implementation. Opportunities for collaboration on the previously stated tasks shall be maximally utilized to build the capacity necessary to conduct urban planning practices independently. Supplemental documentation in Khmer describing the processes and procedures of urban planning may be helpful.

5.5.3 Strategy for Human Resources Development

(1) Approach for Human Resources Development for Industrial Development

Progress in technology and information systems requires qualified human resources. Many countries pay attention to the quality of the labor force as a key to economic development. While Cambodia has made certain progress in the provision of primary education, there are a number of issues to be solved in order to develop a labor force that will be responsive to the market needs.

Due to the political instability during the past two decades, the education system in Cambodia deteriorated. Currently, the major employers of labor force in Cambodia are the export processing firms that have been established by FDI. These FDIs alone cannot provide jobs to all the new entries to the labor market every year.

Two aspects of the labor force are relevant to promoting FDIs to Cambodia; size and quality. Slightly more than 1 million people are expected to engage in industrial production in 2015. In terms of the size of labor force, Cambodia cannot and will not be able to compete with Thailand. In terms of quality, Cambodia is not in a favorable condition today. In the future, intensive advocacy in education and human resources development may raise Cambodia's competitiveness substantially higher than the present levels.

Unless the Cambodian government takes measures on human resources development and creation of employment, there will be too many underemployed and unemployed young Cambodians with unstable livelihoods and low salaries.

The sector strategies for human resources development are;

- To improve the capabilities of the increasing number of young Cambodians by improving relevance and quality of education, and
- To provide productive/formal employment opportunities to the increasing number of young Cambodians

(2) Area Specific Development Strategy

The Study Area is diverse in its character. The development strategies prepared below take into consideration the characteristics of the three areas.

1) Sihanoukville

Urgent strategy

Development of Cambodian Supervisors

Sihanoukville will become a major industrial center of Cambodia with establishment of the proposed Special Promotion Zone (SPZ). Until the establishment of the SPZ, the major employers in Sihanoukville will continue to be garment and footwear factories. Human resources development for provision of Cambodian supervisors to replace the expatriates will be the immediate task in view of the following aspects.

- To facilitate better communication between workers and supervisors/ managers
- To eliminate labor disputes arising from misunderstanding of Cambodian laws and regulations
- To reduce the personnel cost of foreign supervisors, and
- To accumulate production management skills

Medium Term Strategy

Multi-purpose training facility within the SPZ

In addition to the immediate task of replacing supervisory-level foreign workers at garment and footwear factories, continued provision of training opportunities for workers and clerks will be required.

Due to a financial burden for workshops, equipment and materials, it will be useful, meanwhile, to establish a multi-purpose training facility within the SPZ. Enterprises in the SPZ can utilize the basic facility available in the training area. Direct participation of the employers (FDIs) in training program design is a useful instrument to carry out demand-driven skills training.

Establishment of an Engineering University in Sihanoukville

In addition to the training facility, a technical and science university or college in Sihanoukville would contribute to solving the problem of urban-rural disparity in higher education. It is worthwhile inviting a private university to Sihanoukville, which is the other pole of the growth corridor.

2) Greater Capital Area

Development of Human Resources for Sophisticated and Diversified Needs

Phnom Penh is the most populous area in the Growth Corridor, where many educated and trained personnel live. There are a number of educational institutions of various levels in the Greater Capital Area, providing opportunities to those wishing to improve their skills and knowledge. Thus the best and brightest people in Cambodian are found in Phnom Penh.

As detailed below, there are three major tasks to be undertaken; spin off from the garment and other FDI factories, the service sector and construction sectors.

Spin-off from FDIs to Entrepreneurs

The first category is the garment and footwear industry located in the outskirts of Phnom Penh and in Kandal province. These factories may continue recruiting a sizable number of young workers, mostly unskilled workers common in Cambodia with a low educational profile, but there are many foreigners at the supervisor level. Most foreign supervisors have little knowledge about Cambodian customs and laws, particularly the Labor Law, which often leads to labor disputes. Recruitment of foreign supervisors may persist because Cambodians who can substitute for them are difficult to find.

It is thus necessary to develop a labor force that can replace foreign supervisors. The Garment Training Center (GTC) run by GMAC provides training for supervisor candidates. As the current training program focuses on technical aspects, additional training on managerial aspects would be effective for promoting Cambodian workers to managerial positions. With good supervisory and managerial skills, some of the capable Cambodian workers in FDI companies may even spin out and set up their own business, which has potential for expanding the industrial base in Cambodia.

Urban Service Sector Employment

The second category of employment opportunity is the service sector (some 360,000 were employed in this sector as of 2000), including commerce, tourism, real estate, telecommunications and other business services. There are several large-scale retail shops and a number of smaller outlets in town. It is necessary to upgrade these retail shops to deal with the newly introduced Value Added Tax (VAT) and cater to the growing demand for various services. Similarly, introduction of Point of Sales (POS) systems in the shops will be advocated in a few years. Familiarity with relevant machinery and devices will be required in the retail sector. In this regard, more workers with at least secondary level education will be required in order to shift the current practices to those of modern businesses.

The tourism sector, including the hotel industry needs improvement in its labor force. Some of the private universities already have courses on tourism adapting to the market needs. A first class hotel like Hotel Le Royal also runs a training school for hotel employees candidates. The hotel has a substantial impact on employment and the economy. A hotel with 300 rooms, for example, requires more than 400 workers and purchases a quantity of local foods such as fresh fruits and vegetables around the year, utility and telecommunication services.

Other service sectors like real estate services recruit relatively well-educated young Cambodians. Likewise, telecommunication services attract educated young personnel. In this regard, computer literacy will be an advantage. Education and training on information technology (IT) may contribute to development of various service industries including travel agencies, logistics and the IT industry itself.

Project Management for Construction and other Development Projects

The third group is the construction industry. A number of foreign construction companies are in operation in Cambodia, mostly involved in larger-scale works. These foreign companies say that they have to recruit foreign engineers because there are no competent Cambodian candidates for project managers. Domestic construction companies often participate in projects as subcontractors. They are often disqualified from bidding because of lack of a past record, and shortage of qualified engineers in civil, mechanical and electric fields.

In addition, skilled workers are also in shortage. Thus, a number of Vietnamese workers are brought to Cambodia as masonry workers and carpenters. It will be effective to develop this category of workers to produce skilled or semi-skilled masonry worker or carpenters who can work in various construction sites in Cambodia or abroad.

Engineers and technicians are required in most sectors. For example in hotels, good engineers and technicians as maintenance staff are in constant need. In spite of the general image of the hotel business, which consists primarily of receptionists and sales clerks, maintenance staff constitute nearly 10% of the total of hotel employees.

Local NGOs - alternative path to starting up a business

In addition to the above-mentioned three categories, NGOs attract many of the young and bright personnel of Cambodia by offering decent salaries and training opportunities. There are some 12,000 Cambodians working in international and local NGOs. Those working in NGOs can be candidates for entrepreneurs as well. They can be the future entrepreneurs of Cambodia once necessary orientation and training are given, for example, at universities.

3) Intermediate Area

Goal: Achieve nine years of basic education by 2015 and increase vocational and literacy education

There are strong signs of demand for specific education and training programs in urban areas (e.g. management, computers, accounting, foreign languages), though it is difficult for private schools to invest in rural areas. As described in Sub-section 4.5.6, the issue in this area is skills development for the marginalized and disadvantaged.

On the demand side, there are few employment opportunities other than agriculture, fishery, mining, the informal sector and self-employment. Many school dropouts and the unskilled go to work in Sihanoukville and to Phnom Penh, and engage in casual or manual work. Otherwise, they are left as surplus agricultural workers.

In the short-term, quality literacy programs mostly offered by NGOs are effective to improve farming productivity and food processing and other resource based industry.

In the medium to long term, it is indispensable to improve the enrolment ratio to secondary schools. It is thus necessary to improve access to education. The target for 2015 is that 100% of the children complete the six years of education to make them literate and provide numerical skills.

There are many school dropouts in the intermediate area. In addition to the supply side factors such as lack of schools and long distance to schools, motivation for education seems to be weak in this area. In other words, people tend feel that schooling for a few years is enough for their life work. There are few employment opportunities requiring 12 years of schooling. School dropouts and repeaters are considered as "wastage[8]" from the viewpoint of education provision. This is common in countries in an early stage of industrialization. Supply of educated people comes first and demand from industry follows in many cases, of which Cambodia is no exception. It is necessary to improve enrolment ratios and to reduce the number of dropouts first. Then the assistance for creating employment opportunities other than subsistence farming will be effective in rural areas.

Assistance for Employment Creation in Rural Areas

A few government agencies, NGOs and international donors are involved in promoting rural entrepreneurship development. Among the projects for this purpose, the Technical and Vocational Education and Training Department

[8] Wastage is defined as "dropouts or premature departure from schools" and "repetition or retardation". This phenomenon is observed in many countries in their early stage of industrialization.

(TVET) of the Ministry of Education, Youth and Sports (MoEYS), which has the main responsibility for vocational training, mostly through its Basic Skills Project (ADB), plays the most important role.

Training for entrepreneurship is the only way to learn skills that can help the disadvantaged young rural people to make a decent living. No matter how many classrooms are built, there are even more poor children, in particular girls, who are unable to attend school unless there are incentives such as scholarships and subsidies for the family. Poor children, particularly girls, tend to drop out of the school system because they have to help their families by earning some extra income.

No adequate study with a focus on rural entrepreneurship development has been carried out so far. Current assistance programs mostly focus on technical skills development. There is a need to advocate entrepreneur development programs among rural young people to enhance sustainability and viability of income generating activities. Roles of Provincial governments can be further expanded to motivate people, provide basic skill and facilitate training for the rural young.

5.5.4 Strategy for Social Development in Rural Area

(1) Overall Strategy for Social Development in Rural Area

Some tangible results have been achieved in poverty reduction and rural development by the ongoing efforts of the RGC in collaboration with development partners. Currently, the RGC recognizes poverty reduction as the overall goal of SEDP II (Target year: 2005), and sets the following objectives for social development.

Table 5-19 SEDP II Objectives

SEDP II Objectives
Overall Goal
Poverty Reduction
Social Development
Health and Nutrition
Improvement of the infant mortality
Improvement of the maternal mortality rate
Improvement of nutrition status of children under 5 years old
Edcation
Increases in primary education attainment and functional literate and numerate
Physical infrastructure and utilities
Improvement of access of the people to safe drinking water
improvement of access of the people to sanitation facilities (toilets)
Expansion of irrigated areas

Source: SEDP II, P.49,72.

Following the policy directions of the RGC in principle on the issue of social development, the following overall strategies are adopted for social development in the rural portions of the Growth Corridor Area.

1) Reduction of Poverty

Poverty reduction is still the most important and urgent issue in the area. Poverty should be reduced through enhanced development of small scale, basic rural infrastructure, inadequacy of which poses a heavy burden on the poor and keeps the poor in poverty.

2) Additional Income Generation

Existing opportunities for generating additional income have not been fully capitalized by the poor farmers in the area, due to the low level of skills, limited access to market information and/or, lack of a collective producer organization.

(2) Area-Specific Sector Strategy for Social Development in Rural Area

Effective approaches for rural development in the Growth Corridor Area are defined as follows, based on the situation and problem analyses in previous chapters. The following are the area-specific strategies for social development in rural areas.

1) Sihanoukville

As Sihanoukville is a quickly growing city with a number of on-going construction and development projects, promoting community participation in community development is an all effective means of adaptation to development particularly in informal settlements.

The community participation can be rendered through the establishing and building of a Committee for Community Development (CCD), consisting of representatives of the residents, officials of the municipality in charge of community development and NGOs. This aims at catering to and securing the development needs of the respective communities as well as facilitating the self-help efforts of the residents.

2) Greater Phnom Penh Area

The rural areas in the outskirts of Phnom Penh and in Kandal Province are other areas going through rapid urbanization. The comparative advantage of rural areas in the Greater Phnom Penh Area is the proximity to the large and active city.

Instead of increasing off-farm job opportunities at factories or in the city, on-farm income generation opportunities are an important instrument for the farmers in this area to improve livelihood. Enhancement of on-farm income generation could be realized through providing farmers with relevant market information,

and upgrading their technologies and skills. In addition, encouraging farmers to establish a producer organization by specific commodities will be effective in the medium term in sharing information and initiating necessary training and marketing.

Supporting the empowerment of the vulnerable people will be indispensable, through providing training in skills and opportunities for income generation. Collaborating with existing NGO activities will be desirable, in order to secure effective and timely progress, and devising the constant support necessary for the vulnerable.

3) Intermediate Area

Betterment of the quality of life in the rural villages, which are laden with persistent poverty, is urgently needed. One approach for this issue is the implementation of small-scale rural infrastructure development in response to the basic needs prioritized through a participatory process. This should be accompanied with measures for increasing the cash income and raise the agricultural productivity. The design of infrastructure should be such that would require less financial and technical resources for maintenance and operation, while participation of the rural people in the operation and maintenance in the villages should be encouraged to promote sustainability.

Empowerment of rural people through health education for preventing diseases and improving the general health conditions is also necessary.

4) Strategy Common for All Areas

An aspect common to all the three areas is the role and capacity of the government. The underlying strategy for this common issue is the following;

- Accelerating efforts for rural development by shifting emphasis of allocation of the government budget away from the urban areas and more to the rural areas.
- Enhancement of the efficiency of program implementation through concentrating available resources to small-scale development programs and projects, thus raising the speed of the development, and strengthening coordination among development partners. Coordination with Seila, which conducts a project for capacity building at the commune councils at the administrative core of the rural areas, is considered important.
- Encouraging the participation of the people, particularly the youth, at the commune and village levels in regard to gender issues, to implement appropriate projects more effectively to facilitate their self-help efforts, and to ensure sustainability.
- Supporting the on-going efforts by the RGC in cooperation with

international donors for clarification and registration of land titles.

(3) Scenario for Social Development in Rural Areas

In consideration of the persistent poverty in the Intermediate Area, quick remedy of the situation is the most urgent and central task of the rural development. The issues of the other two areas also need to be addressed in parallel as the poverty is equally serious in these areas. Thus, the budgetary and program prioritization for each area should be contemplated in the short, medium, and long terms, according to the relative urgency and effectiveness of the projects.

In addition, weak capacity of the government agencies in charge of social development, in terms both of the finance and human resources, needs to be strengthened. An increased focus should be put on the capacity development of local government agencies as the social development generally requires the local agencies to be the main administrative actor, capable of reflecting local situations in their responses.

The scenario for the social development in rural areas is given below.

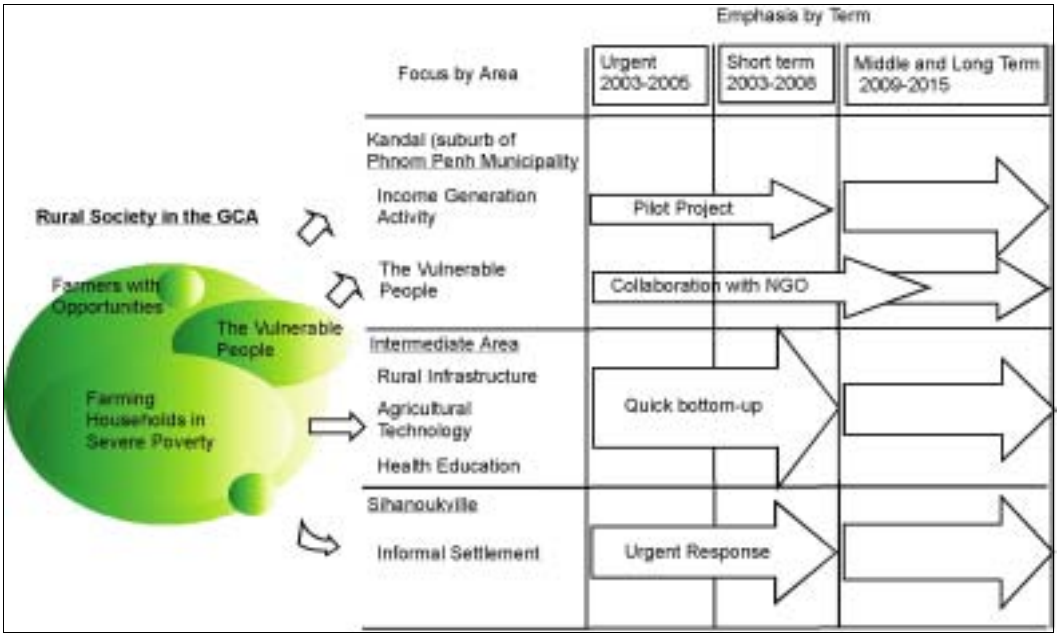


Figure 5-17 Development Scenario

First, support for the income generation activities in the rural part of the Greater Capital Area will be initiated immediately as an urgent project. Upon completion and evaluation thereof, similar kind of projects which reflect the evaluation results should be continued on a larger scale in the medium and long terms, for example, making groups of farmers to produce value-added vegetables or handcraft suitable for the people living in urbanized Phnom Penh City..

Second, the quick improvement of the rural livelihood in Intermediate Area requires additional resource allocation in the short term. Along with the

immediate basic rural infrastructure remediation, activities aimed at raising the agricultural productivity and health education shall be implemented in the short and medium terms. The design of rural infrastructure should be decided from a view point of the appropriate and payable level of maintenance cost for beneficiaries, in order to securing sustainability of the infrastructure. Immediate improvement of basic rural infrastructure with the above consideration shall contribute largely to the betterment of rural livelihood.

Third, recognizing the urgency of development of economic and social infrastructure in Sihanoukville, participatory community development should be begun immediately. As the effects of self-help development take time to materialize, the project needs to be conducted in a continuous and sustainable way, gradually adjusting the scope of work in the course of betterment in economic condition on the commune levels, ranging, for example, from providing grants to upgrading infrastructure in the community to lending loans for improvement of individual housing.

Finally, support for the vulnerable group should be implemented effectively and constantly in the short and medium terms, as they are most subject to adverse effects arising from limited official support and on-going social change. Collaboration with selected qualified NGOs should be pursued in due course, focusing on small scale projects. During the medium term, preparatory activities for the introduction of an official "safety net" by 2015 should be carried out, such as a protection and empowerment project for street children at a provincial town..

5.5.5 Strategy for Environmental Management

(1) Sector Goal for Environmental Management

1) Concurrent Attainment of Industrial Development and Environmental Conservation

In the study area, extensive industrial development and the resultant population increase/urbanization are anticipated, especially in Sihanoukville and in suburbs of the Greater Capital Area. On the other hand, the study area is rich in natural resources and has a number of protected areas, where a variety of habitats exist, each with their own characteristic wildlife communities. Careful consideration needs to be given to this point, and all feasible efforts should be given to mitigate negative impact inflicted by industrial development on the surrounding environment. Therefore, the overall goal will be concurrent attainment of industrial development and environmental conservation. As a basic condition to achieve this goal, administrative capacity needs to be reinforced both at central and provincial levels. Specific strategies will be considered to accomplish this goal, as in the following.

2) Long Term Goal: Zero-Emission society

There are a number of environmentally related issues that need to be solved to accomplish sustainable development of the study area. Volume of solid waste and wastewater is predicted to increase in all the provinces and municipalities of the study area. Increase of waste and wastewater is an imminent problem especially in Sihanoukville and the Greater Capital Area, where a high population growth is anticipated. Pressures for exploiting natural resources in and around the protected areas of the Intermediate Area will be intensified in the future in parallel with the anticipated increase of population in the areas adjacent to the protected areas.

Deterioration of environmental quality and depletion of natural resources will lead to a decline in the standard of living and hindrance of sustainable regional development. Thus, it is imperative that reduction of waste and wastewater and efficient utilization of natural resources are undertaken in the study area. To accomplish these tasks, the study area should aim at establishing a model case toward a "Zero-Emission" society as its long-term goal. Introduction of systems for reduction, reuse and recycling of wastes will be prerequisite for establishment of the Zero-Emission society. Zero-Emission means that specified industrial wastes or by-products are used as inputs for other industries or processes. As the first step toward Zero-Emission, active search need to be initiated to identify industrial processes that could use the wastes or by-products as inputs, giving priority to area specificity[9]. In the long run, the search leads to identify optimal clusters in which wastes or by-products from one industry are used as input for other industries.

(2) Overall Strategies

Effective Enforcement of Environmental Legislation

As environment related laws and regulations have already been in effect, institutional capacity building for effective enforcement of the environmental legislations is imperative to accomplish appropriate environment and natural resource management. To make law enforcement effective, several factors need to be satisfied.

Human resource development is one of the important factors to be accomplished, where technical transfer and guidance from the experienced environmental experts are essential. The capacity building of the staff for the environmental

[10] Activated sludge system called oxidation ditch batch type, a widely known traditional method for sewage treatment used in Okinawa Prefecture of Japan, is one of the zero-emission examples. Treated water and sludge can be used for agricultural inputs. The treated water, containing various micro organics as well as nitrogen and phosphate, can be applied as fertilizer. The treated sludge is odorless and can be used as substitute of multi to cover and protect surface of soil.

management at the provincial/municipal level has increasing importance in accordance with economic development at the local level, especially in the Greater Capital Area and Sihanoukville. Establishing procedures and guidelines for law enforcement, which are adaptive to and appropriate for the actual conditions in Cambodia is also important.

At present, several ministries are involved in environmental management, with the result of confusion and overlapping regarding the institutional arrangement and authority. Therefore, the MOE should be given more power for enforcing environmental laws and regulations once the organizational capacity is improved at a sufficient level to unify administrative management and to make environmental management more efficient and effective.

(3) Area Specific Strategies

1) Sihanoukville

Establishment of Strict Pollution Control System

Establishment of standardized and strict pollution control is one of the basic factors to achieve the effective enforcement of environmental legislation. To minimize negative impact caused by economic development, strict pollution source monitoring and control with the appropriate monitoring system is required especially in the areas where industrial development is or will be prominent. The MOE has been conducting inspection of stationary pollution sources in Sihanoukville only at a once a year interval.

Although the department of environment of Sihanoukville is responsible for regular inspection on the pollution sources, capacity and power to enforce environmental legislation are limited. Thus the pollution monitoring and control systems in Sihanoukville need to be reinforced. Increasing the number of factories subject for pollution source monitoring is the main task for strengthening pollution control, while capacity building of the staff responsible for implementing the system will be required.

Upgrading of Solid Waste Management

In Sihanoukville, the volume of solid waste has been increasing in parallel with the population increase and industrial development. Although the municipality has an eight ha landfill site, the site is not a controlled type landfill. The collection and disposal of solid waste is consigned to a private company, but only 30% of discharged waste has been collected. As the capacity of the company is limited at present, the improvement of the waste collection and management system cannot be achieved in the short run.

The amount of solid waste discharged in Sihanoukville was about 80 tons in 1998, and is anticipated to be about 220 tons in 2005 and 540 tons in 2008. To cope

with the rapid increase of solid waste volume and to provide for appropriate disposal, upgrading of the present solid waste management system, including construction of a controlled landfill site, is urgently required.

Investigation of Potential for Establishment of Area-Specific Zero-Emission Model

Reduction of increasing waste and wastewater both from industrial pollution sources and households is imperative in Sihanoukville, where extensive industrial development and the resultant population increase/urbanization are anticipated. To cope with this situation, area-specific zero-emission models for industrial activities and living environment of the local people need to be considered in the long run. As the first step toward establishing area-specific zero-emission model, active search must be initiated to identify potential models by learning from the precedent cases in other countries and regions.

2) Greater Capital Area

Reinforcement of Pollution Monitoring and Control

Monitoring of stationary pollution sources has been undertaken by the MOE, but the number of target factories and the frequency of monitoring is limited. With a small number of staff and no automatic measuring devices, it is difficult to increase the frequency of monitoring or the number of target pollution sources. Monitoring is done basically only on wastewater, while MOE does not have instruments for analyzing air quality at this stage.

Strict enforcement of environmental legislation based on accurate monitoring and reliable analysis results is imperative to prevent degradation of environmental quality. Thus, the present monitoring and control system of the MOE should be reinforced steadily by educating and training staff, taking measures to maintain experienced staff, utilizing the existing advanced instrumentation effectively, and introducing equipment for air quality monitoring.

Inspection on disposal of industrial solid waste should also be reinforced in the Greater Capital Area where an increasing number of large-scale factories are in operation. Further, capacity building is required to cope with the increase of hazardous or toxic materials contained in the waste.

Introduction of Waste and Wastewater Reduction Incentive Policy

It is difficult to substantially reduce discharge of waste and wastewater, merely by reinforcing monitoring and controlling systems. In addition, substantial reduction will not be achieved by increasing the ratio of reuse and recycling, if the total generation of waste increase rapidly. Thus, some types of economic measures, such as charging or taxation in proportion to the volume of

wastes/pollutants discharged, need to be introduced step by step to motivate polluters to reduce the discharge of pollutants.

Requiring the polluters to carry the responsibility of collection and appropriate disposal of industrial waste is another economic measure to reduce waste discharge and raise the recycling rate. The responsibility being discussed here is not a physical responsibility (i.e. responsibility for collection and disposal of waste) but a payment responsibility (i.e. responsibility for "cost" of collection and disposal of waste), and the polluters are able to transfer the physical responsibility to a third party by bearing the cost. In the Grater Capital Area, waste from garment factories has been disposed of with a similar measure mentioned above. This type of waste collection and disposal measure should be introduced widely..

3) Intermediate Area

Conservation and Sustainable Utilization of Natural Resources

The imperative task for preservation and sustainable utilization of natural resources is to establish an appropriate management system with the participation of local stakeholders and residents. A shortsighted abuse of natural resources leads to a loss of industrial bases and depletion of the income source of the local people in the long run.

In the case of marine fishery, management tools should be based on the maximum sustainable yield calculated from the scientific research on fishery resources. Local communities' involvement and income source diversification are especially important in the case of inland fishery management.

To conserve natural resources in the protected areas, the economic value of the protected areas needs to be enumerated by the stakeholders through the establishment of a community based resource management system. To prevent illegal activities in the protected areas, reinforcing the surveillance network is also important.

Improvement of Domestic Waste/Wastewater Management System

To cope with the increase of solid waste volume, an appropriate management system for collection, transportation and disposal needs to be established. Appropriate disposal of the waste is especially important to prevent negative impact on the public health. Promotion of systematic methods on reducing, reusing and recycling of waste needs to be considered in the medium term. As most of the municipal waste generated in provincial centers is composed of organic garbage, establishment of a composting and recycling system is effective.

Regarding domestic wastewater, sewage treatment systems need to be constructed or maintained at the provincial/municipal centers. Introduction of composting toilets or other area-specific and cost effective waste treatment measures should

be considered and introduced especially in the less densely populated areas. Both measures are expected to contribute to improving the sanitary condition of the rural areas.

5.6 BASIC STRATEGIES FOR INFRASTRUCTURE DEVELOPMENT[11]

The development of a region always necessitates infrastructure development. The infrastructure considered in this Study includes four sectors; *Transportation* that relates to road/rail, sea and air transportation; *Water Resources* that covers the utilization and management of water resources; *Electricity* focusing on the economical and stable supply thereof; and *Telecommunications* focusing on communication networks including ITC technology.

The goal for infrastructure development is as follows.

The Goal for Infrastructure Development

Establishing efficient and internationally competitive systems to support export activity and people's quality of life in the Growth Corridor**.**

The strategies to substantiate this goal for the 4 sectors related to infrastructure development are shown in **Table 5-20** and **Figure 5-18**.

[10] As the present study is an "issue-based" study pertaining to the industrial development of the Growth Corridor, it thus does not provide a comprehensive sector strategy for infrastructure development. Rather, the proposals in this chapter clarifies the necessary actions as to support the proposed industrial development strategies in the respective sectors.

Table 5-20 Development Strategies for Infrastructure Development of Growth Corridor

Basic Strategy		Formulation of Axis of Development for Cambodia	Promotion of Strategic Development of Industries	Creation of Economically Active Suburbs with Sustainable Environment	Establishment of Stable and Sustainable Rural Society
Infrastructure Development	***J. Transportation***	Development of Economical, Competitive and Sustainable Infrastructure	Support of SPZ by Modern Logistics Improvement of Urban Life by Better Transport	Suburban Development with Road Network Export Promotion Support by More Containerization	Support of Corridor Function by Road Network Improvement of Urban Function in Provincial Cities
	K. Water Resources		Stable industrial water supply Effective drainage and sewerage system to protect coastal environment	Stable and safer water supply for industrial municipal users Effective urban drainage and sewerage system	Improvement of water supply systems for provincial capitals Improvement of rural water supply Planning of Integrated water resources management
	L. Electricity		Securing power by locally available resources Securing reliable electricity supply to the growing industrial power demand	Provision of interconnection with neighboring countries Expansion of transmission and distribution network to suburban areas	Expansion of transmission and distribution network to provincial centers and major towns Promotion of rural electrification
	M. Telecom.-munications		Provision of IT services and human resources development		
			Provision of telecommunication services to cope with growing demand		

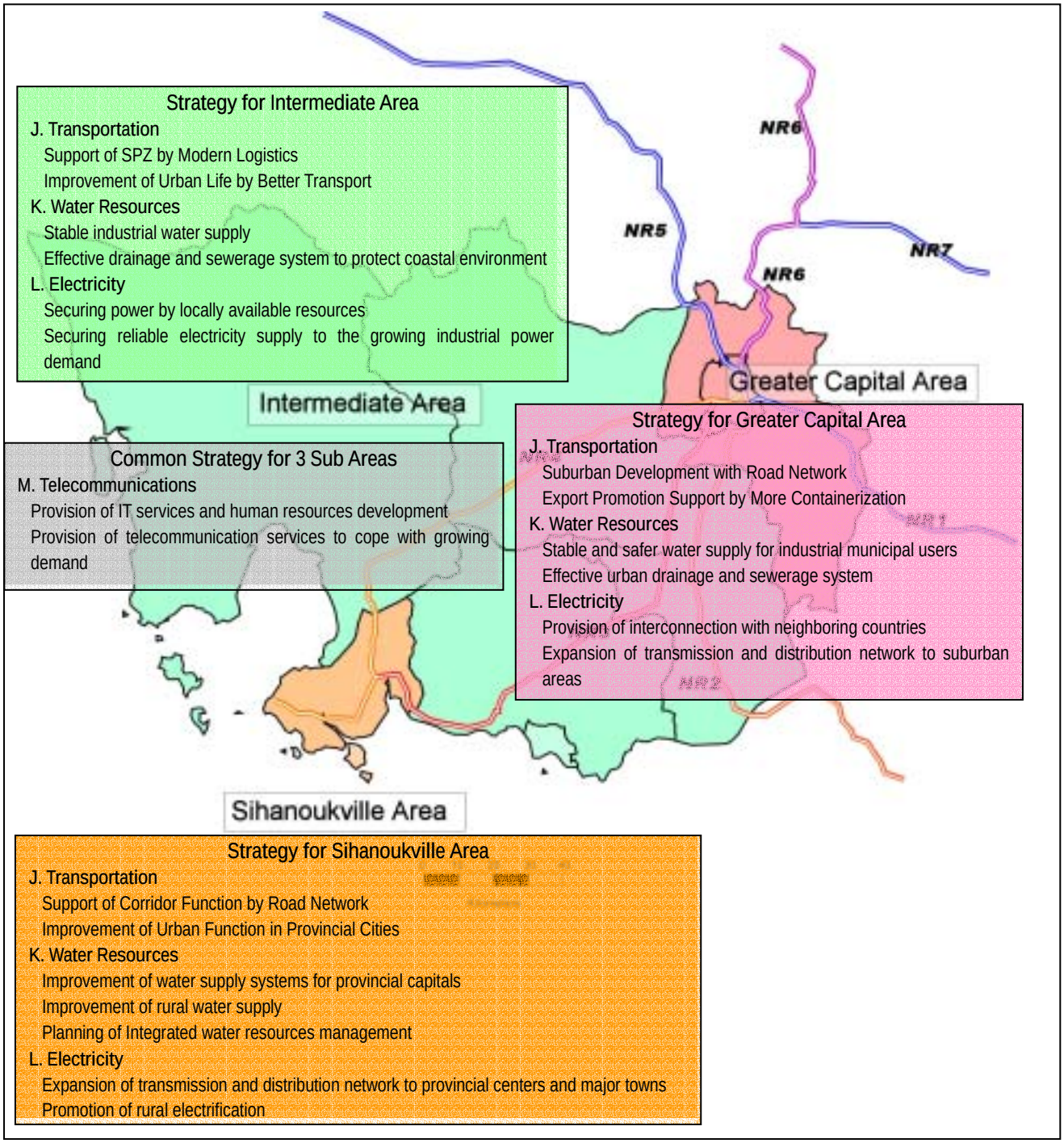


Figure 5-18 Development Strategy for Infrastructure Development of Growth Corridor

5.6.1 Demand Forecast

To consider appropriate approaches and scenarios, this section describes the demand forecast to each infrastructure as a baseline.

(1) Transportation

Table 5-21 shows the transportation demand forecast adopted for the Study Area. The growth rate of traffic volume on NR4 is expected to be as high as 10 to 15% per annum up to the year 2010, and 7% afterwards, reflecting the active economic expansion and relatively limited transport network within the Study Area. The container volume is forecast to grow at 10% annually.

Table 5-21 Transportation Forecast

Year	2001	2002	2004	2006	2008	2010	2012	2014
Container Volume	357	398	482	581	712	844	999	1,180
	(Growth Rate)	10%	10%	10%	8%	10%	8%	7%
Traffic Volume on Route 4	6,762	7,777	10,288	13,015	15,747	19,051	21,795	24,935
	(Growth Rate)	15%	15%	10%	10%	10%	7%	7%

Unit: Containers: TEU/day. Loaded and unloaded at Sihanoukville Port
Traffic: AADT. All traffic volume on Route 4 at Kampong Spueu
Source: Containers: PAS.
Traffic: ND Lea. *Cambodia Transport Sector Strategy Draft Final Report.* June 2002.

The Port Authority of Sihanoukville has a long-term development plan with the help of JBIC. The forecast volumes can be accommodated by the new facilities at the Port now under construction.

The traffic volume on Route 4 is growing more rapidly. In 2006, the current capacity of two-lanes will be tight between Phnom Penh and Kampong Spueu. It is appropriate to expand lanes within the existing PFI scheme.

(2) Water Supply

In Sihanoukville, a World Bank study[11] forecasts the future water demand in Sihanoukville to increase from 11,857 m^3/d (minimum shortfall for year 2015) to 55,800 m^3/d (maximum shortfall for year 2020). The capacity of water supply is required to increase rapidly for the coming decade.

A World Bank project is in progress, which aims at extending the capacity from currently 3,000 m^3/day to 8,000 m^3/day by increasing the capacity of an existing reservoir "Lake Boeng Prek Tup" and additional drilling of three wells. The planned house connection rate at the end of 2003 is 50% of the 4,000 total households in the service area.

[11] Cambodia Urban Water Supply Project, Sihanoukville Water Supply Authority, Draft Report on Long-Term Water Supply, Parsons, Jul., 1999.

(3) Electricity

The Study Team has reviewed the power demand and energy forecasts in the F/S report on Sihanoukville Combined Cycle Power Development, January 2002 (JICA) and Feasibility Study for Cambodia Rural Electrification and Transmission Project, March 2001 (WB), and adjusted them according to the current schedule of the grid connection. **Tables 5-22** and **5-23** show these demand and energy forecasts for the period of 2002-2016. The demand for SPZ and other planed industrial estates are not considered below, as they will be self standing in principle with regard to power.

Table 5-22 Peak Power Demand Forecast

(Unit: MW)

Item	2002	2004	2006	2008	2010	2012	2014	2016
Phnom Penh -Kandal	93	119	148	190	240	298	372	465
Sihanoukville	4.1	4.8	5.5	6.0	7.0	8.0	10.0	11.0
Kampong Spueu	2.0	2.5	3.2	4.2	5.5	7.2	10.0	14.6
Takaev	1.5	2.8	3.4	4.1	5.1	6.1	7.2	8.7
Kampot	2.0	4.0	9.0	12.0	14.0	20.0	25.0	30.0
Kaoh Kong	1.4	1.9	2.4	3.1	4.2	5.6	7.1	9.0
Total	104	135	172	219	276	345	431	538

Table 5-23 Generation Energy Forecast

(Unit: GWh)

Item	2002	2004	2006	2008	2010	2012	2014	2016
Phnom Penh -Kandal	498	622	757	935	1147	1377	1657	1989
Sihanoukville	14	16	18	21	24	27	31	35
Kampong Spueu	9	11	13	15	18	23	29	40
Takaev	8	12	14	17	20	24	27	33
Kampot	11	23	30	35	42	50	59	71
Koah Kong	7	10	13	16	22	29	37	47
Total	547	694	845	1039	1273	1530	1840	2215

(4) Telecommunication

For the purpose of demand projections for telecommunications, a relationship between the tele-density (number of telephones per 100 habitants) and the income (per-capita GDP) is estimated, based on the ITU data in 2001 that shows the cross sections of 185 countries and regions. The telephone demand in Cambodia is forecast based on this relationship and the GRDP projection for the indicative framework, as follows.

Table 5-24 Projection of Telephones, Whole country

Item	2001	2005	2008	2015
GDP/Capita (US$)	251	372	409	562
Population (thousand)	13,084	14,425	15,521	18,091
Tele-Density (per 100)	1.96	2.84	3.10	4.18
Number of Telephones	256,952	409,000	481,000	756,000
Rate of Fix/Mobile	0.8696	0.8696	0.8696	0.8696
Mobile	223,458	356,000	418,000	657,000
Fixed	33,494	53,000	63,000	99,000

Source: Study Team estimates.

Based on the projection of the whole country, the telephone demand in the study area was estimated. First, the same method of using a function between total tele-density and per capita GRDP was applied for the whole country. Second, the distribution function of the fixed phones in the region was formulated. Under the same assumptions[12], the Study Team adopted a combination of the said two methods. There is no data on the provincial mobile users so a regional breakdown of mobile phone subscribers is difficult[13]. In order to grasp the situation of telephone usage, the number of the mobile phone subscribers in the Study Area is calculated under the assumption that the number of subscribers is dependent on income. The projection of the telephone (fixed and mobile) is summarized as follows.

Table 5-25 Number of Telephones

	Area	Number of Fixed Phones	Tele-Density (Fixed)	Number of Mobile Phones	Population
2001	Phnom Penh*	28,207	1.18	-	2,386
	Intermediate Area**	774	0.03		2,315
	Sihanoukville	581	0.31		187
	TOTAL	29,562	0.60		4,888
2008	Phnom Penh	39,800	1.36	330,000	2,937
	Intermediate Area	6,700	0.25		2,704
	Sihanoukville	3,000	1.20		249
	TOTAL	49,500	0.84		5,890
2015	Phnom Penh	52,200	1.49	452,500	3,511
	Intermediate Area	10,800	0.35		3,121
	Sihanoukville	4,900	1.54		318
	TOTAL	67,900	0.98		6,950

Note: Unit of population: 1000. Number of Mobile Phones is only reference.
*: Phnom Penh and Kandal, **:Takaev, Kampong Spueu, Kaoh Kong, and Kampot
Source: MPTC (2001), Study Team estimates (2008, 2015).

[12] In 2015, the transmission lines constructed into the whole country and the regional structure of telephone usage will fit to the ITU-data-based formulation. In 2008, the trend of decentralization is applied. Please refer to the Appendix J.3.2 for Projection of Telecommunication Demand in 2015.

[13] Since the place of the registration is sometimes different from that of usage, the provincial data is not collected.

5.6.2 Strategy for the Transportation Sector

The baseline transport forecast in **Sub-Section 5.6.1** indicates active growth especially for the export sector. The growth rates will be more than 10% during the coming decade. In addition, the Intensive Case (**Table 5-11** and **5-12**) requires additional 1-2% growth on top of the baseline (See Appendix H of Transport Sector Report).

To accommodate this demand, the supply side of transport sector should be developed with a focus on export promotion for the first ten years. After 2010, the focus can be shifted from export promotion to rural development.

(1) Overall Strategies

Appropriate modal share among air, road, river and railways

The current transportation system heavily depends on roads while river and air are also indispensable modes in the region. In addition, railways will also be important as an alternative mode of transport to supplement roads in the future. Availability of different modes of transport and an appropriate mix will be imperative for the overall efficiency and people's convenience in the Study Area.

(2) Strategies for the Sihanoukville Area

1) Support of the SPZ by Modern Logistics

The new SPZ including a Free Zone will require modern logistics at the Sihanoukville Port as well as in other areas. Basically, the container cargo flow should be separated from passenger transport to reduce the traffic load. In the future when the capacity of the roads will come to a limit with the growing traffic load, transport of containers by rail will be an option for consideration.

Modern logistics include container related services and warehouses. Because of tax advantage, importers can save import duty until their cargoes are shipped outside of the Free Zone. Bonded warehouses may create a new demand for temporal storage of the goods to be consumed in neighboring markets such as Thailand by adjusting to the often fluctuating demands. Adopting modern logistics services in the SPZ will contribute to creating new business opportunity in the SPZ.

2) Improvement of Urban Transport

Sihanoukville is, and will be, a rapidly expanding city with a number of industrial, residential and resort developments. Although a limited number of arterial roads are in relatively good condition with a wide right-of-way provided for future expansion, secondary and smaller roads, particularly within the existing urban areas, are significantly weak, due mainly to the lack of an established urban plan and the consequent difficulty of securing space for the improvement and expansion of urban

roads. As a whole, the urban transport network in Sihanoukville is not capable of sustaining various economic activities taking place in the city.

As expanding industrial output will inevitably incur heavy traffic loads to the already weak road network in Sihanoukville, necessity for enhancement of urban transport, in parallel with formulation of a comprehensive urban plan for the city, will be indispensable for securing smooth flow of traffic in and around the city of Sihanoukville in near future. Enhancement of the existing network will be necessary, in which emphases will be placed on the improvement of urban secondary roads and provision of alternative routes to the arterial roads within the urban centers.

(3) Strategies for the Phnom Penh Metropolitan Area

1) Road Network Development in Parallel with Suburban Development

The suburban area of Phnom Penh is expanding rapidly despite the lack of a sufficient road network. The JICA Phnom Penh Urban Transport Master Plan Study (2001) proposed various projects, including a ring road and introduction of a public transport system. Implementation of the proposed projects is urgently required.

Additionally, industrial estates in the outskirts of Phnom Penh will increase the traffic volume on Route 4. Thus, it is necessary to provide a robust road network in the western suburbs in conjunction with Route 4.

As the development of new roads will be increasingly difficult, as the urban area expands, a future road network needs to be formulated in the suburban areas, taking into account the location and sizes of potential development. Necessary right-of-way for the road development needs to be secured prior to the commencement of the urban and industrial development.

2) Adaptation to Containerization of Cargoes

As a hub of the national and international distribution system, the Phnom Penh Metropolitan Area has a locational advantage encompassing the air, river and road transport. To support the existing and future industrial activities, the Area should provide more advanced logistics function for handling, storing and transporting freight, particularly the containerized cargoes. Especially, with rapid containerization of cargoes in progress, handling facilities for the ocean containers are important, both at the port head and on the city side. Container handling facility at the fringe of a city, often called a dry port, will be effective in reducing the heavy traffic penetration to the central city area and thereby reduce the congestion in the city.

In the future, measures to adapt to the increasing volume of air cargoes will also be needed in and around the international airport of Phnom Penh.

(4) Strategies for the Intermediate Area

1) Development and Maintenance of National Highway Network

Both National Routes 3 and 4 will have to be maintained in a good condition in the Intermediate Area. In addition, Route 48, which connects the border town of Kaoh Kong to NR 4 and, which will become an important alternate corridor between Sihanoukville and the Eastern Seaboard in Thailand via the costal areas will likewise have to be maintained in good condition. Development and maintenance of these three national roads will have immediate significance for the development of the Growth Corridor Region.

On the contrary, provincial and rural roads are generally in a poor condition and require large degree of public involvement. It is necessary to develop rural roads step-by-step with increased participation of local residents for construction and operation/maintenance. This will be important particularly for semi-arterial national highways (such as double digit national routes) and provincial roads.

2) Improvement of Small-Scale Transport Facilities in Provincial Cities

Coastal provincial centers such as Kampot and Kaoh Kong require small-scale but reliable port facilities for domestic and international trade, together with relevant essential infrastructure including bridges and urban roads.

Enhancement of local transport systems, such as improvement of arterial roads and rehabilitation/maintenance of rural roads, improvement of local sea and river ports need to be accelerated. The role of local transport systems is important for small scale shipment of products between regions and neighboring nations and supplement the transportation hubs such as the Port of Sihanoukville, as advocated by RGC in its Open Waters Policy.

5.6.3 Strategy for the Water Resources Sector

(1) Strategies for the Sihanoukville Area

1) Water Supply

Stable Industrial Water Supply

In addition to the existing water demand forecast, the construction of industrial development in the Sihanoukville area will require a large amount of water for factories. The Study Team estimates an FZ at Sihanoukville Port (*Site 1*) will require 1,700 m^3/d and subsequent industrial estates at *Site 2* to *7* will require approximately 10,000 m^3/d each (Please refer to Chapter 6 for details.).

As there is no large river in the Sihanoukville area, surface water may not be adequate unless an impounding reservoir is constructed to control the seasonal fluctuation. Ground water resources are not apparently adequate, although detail

investigation will be necessary to assess the potential yield. Careful consideration should be given to the selection of future water sources for Sihanoukville. For the industrial development for Sihanoukville, intensive water resources development will be necessary by investigating the available options including the development of ground and surface water sources, for which detailed proposals will be made in **Sub-section 5.7.1 (K. Water Resources).**

2) Flood Control and Mitigation

Effective Drainage System and Protection of Coastal Environment

In Sihanoukville, effective drainage of stormwater is a more important issue for flood control than the control of floodwater from watercourses. As the flat areas in Sihanoukville are narrow and scattered, a stormwater drainage system should be carefully planned so as to discharge the stormwater without causing inundation. A robust and reliable system shall be required for the pollution control in a way that the wastewater shall be treated within each site at the polluter's expense.

As Sihanoukville is a rapidly growing city with extensive industrial development in progress, stormwater drainage and wastewater collection and treatment systems need to be established in the industrial estates as well as in urban areas. A guideline needs for these systems to be established as part of the urban master plan. Proposals for stormwater drainage and wastewater treatment for the proposed industrial development in Sihanoukville will be made in **Sub-section 5.7.1 (K. Water Resources).**

(2) Strategies for the Phnom Penh Metropolitan Area

1) Water Supply

Stable and Safe Water Supply for Industrial and Residential Users

The Phnom Penh Water Supply Authority (PPWSA) will continue to supply water to users in the service area in Phnom Penh. Currently, PPWSA has a plan to expand coverage to nearly the entire population in the capital by 2005.

In addition, the planned industrial estates will create an additional increase in the water demand. The Study Team estimates that each industrial estate at *Sites 1 to Site-8* will require 10,000 m^3/d additionally (Please refer to Chapter 6 for details.). The current water supply system of PPWSA with its water source of Prey Pring Cheung is considered to be sufficient for the future demand including the above additional demand for industrial estates.

2) Flood Control and Mitigation

Effective Urban Drainage System

To support the urban function as well as industries, effective and reliable water drainage system is essential for the Phnom Penh Metropolitan Area.

In the Municipality of Phnom Penh, projects for drainage improvement have been implemented part-by-part with assistance from ADB and other international donors. A JICA Master Plan Study[14] for the entire municipal area has been prepared for the target year 2010, with the design scale of a 5-year return period for the trunk facilities and 2-year for the minor facilities. From the proposed drainage improvement projects proposed by the JICA Study, Tompun Watershed Drainage Improvement Project has been selected as the priority project and a feasibility study has been conducted.

It is also necessary to consider the flood control and drainage of Ta Khmav City in Kandal Province south of Phnom Penh in conjunction with the outer ring road of Phnom Penh.

Kampong Spueu Province is also a growing suburban area but its drainage problem is not as severe as in Phnom Penh. A master plan for flood protection and drainage/sewerage improvement in Kampong Spueu Province for the Prek Thnot River basin is necessary. A flood protection plan for the Prek Thnot River shall mainly comprise of constructing dikes along the river, while the flood control effect of a dam proposed in the upstream reach should be taken into consideration. A drainage and sewerage plan should be established, taking into account the future development of the area.

(3) Strategies for the Intermediate Area

1) Water Supply

Improvement of Water Supply Systems in Provincial Capitals

The water supply systems at four cities including Takaev have already been implemented in PFI schemes (See Sub-Section 4.4.2). Other cities, especially Kampot, require improvement of water supply systems, for which schemes with private participation could also be utilized. With given situation, where the current coverage ratio of safe water supply is very low (as observed in Sub-Section 4.4.2), it is necessary to establish and/or rehabilitate urban water supply systems to meet the growing water demand under the initiative of MIME.

14 The Study on Drainage Improvement and Flood Control in the Municipality of Phnom Penh. JICA. 1999.

Improvement of Rural Water Supply

Other than urban areas, many villagers depend on unreliable water sources. Those villagers are suffering from water-borne diseases due to frequent use of stagnant water. Therefore, it is needed to promote extensive groundwater development as new or additional water sources. Meanwhile villagers need to make efforts to learn how to maintain their water sources safely.

Significant improvement of rural water supply would not materialize unless sufficient funds were secured. To address the funding issue, MRD would be encouraged to take an initiative for fund raising with foreign donors taking interest in BHN aspect of rural areas.

2) Flood Control and Mitigation

Integrated Water Resources Management

Water resources are the most basic and essential factor for the development of a nation. The master plan of water resources will initiate assessment of the potential for and adjustment of different, and often conflicting, uses of water, and thus maximizes the value of the resources to the overall contribution to the nation's economy. Cambodia does not have a master plan yet.

In Cambodia, none of the water infrastructures, such as irrigation systems, potable water supply systems in urban and rural areas, sewers, flood control facilities, and hydropower generation stations, are adequately provided. For the future development of this country, it is important to establish a comprehensive solution on these interrelated problems with a long-term and multi-objective view. Actual implementation of projects will follow, according to the principles and directions established in the master plan, because individual and stopgap actions are often economically unsound.

Quantitative assessment of the water resources potential for each area must be conducted first. Based on the projection of future water demand, necessary measures need to be prioritized accordingly. Therefore, before implementation of individual measures, the formulation of a comprehensive water resources master plan focusing on development and management aspects is selected as the priority project for this sector.

5.6.4 Strategy for the Power Sector

(1) Strategy for the Phnom Penh Metropolitan Area

1) Stable Power Supply by Interconnecting Transmission Line with Neighboring Countries

To solve the power shortage and secure a stable power source in the Metropolitan area, an interconnecting transmission line between Phnom Penh and Vietnam will be

established to enable the importation of power up to 200 MW by 2006. The first priority should be given to the implementation of this transmission project.

Until the commencement of power import from Vietnam, the required power supply should be covered by the existing and newly installed generators in the Phnom Penh network. The Study team estimates at least 55 MW generations should be installed in the Metropolitan area by 2006 to secure the maximum power demand. In practice, MIME and EDC plan expansion of power stations, such as the new IPP (15MW), C-5 (extension 10MW) and IPP-Jupiter (extension 6MW), and these plans have to be implemented surely to avoid power shortage, such as occurrences of power shading (planned power cut-off), for a few years.

2) Expansion of the Transmission and Distribution Network to Suburban Area

The coverage area by existing transmission and distribution network is limited.

Thus, establishment of new grid substations and the expansion of transmission and distribution network from existing and new established substations in Phnom Penh area are necessary to distribute the electricity to expanding consumers.

(2) Strategy for the Sihanoukville Area

1) Securing Reliable Electricity Supply for the Growing Power Demand

Until the transmission line extends from Takaev to Sihanoukville around 2007 or 2008, the required electricity should be supplied by existing and expanded generators in Sihanoukville. As of 2007, the forecast power demand will grow to 5.9 MW while separately, there will be a demand of 3.3 MW for the free zone, which is proposed in this Study. The Study Team estimates that at least 5 to 6 MW of new generators should be installed in Sihanoukville against the increasing demand up to 2007, including of SPFZ. EDC and MIME intend to expand the existing power station in Sihanoukville until this time.

Though, the extension of generation capacity by diesel generators must be limited. Accordingly, high priority should be given to the development of transmission line to assure the power supplied from the national grid. In the second step, development of regional transmission and distribution networks in Sihanoukville area should be implemented for spreading the electricity to surrounding villages.

2) Securing Power by Locally Available Resources

A Combined Cycle Power Plant (180 MW) may commence operation in this area, contingent on the natural gas resource in Siam Bay. Besides, there are some potential sites for hydropower generation in southern Cambodia, and some thermal coal plants are proposed to MIME by foreign private companies. In addition, wind power generation is thinkable in the coastal and mountain areas. It is important

that these generations by utilization of locally available resources should be promoted furthermore to eliminate the use of costly diesel generations.

(3) Strategy for the Intermediate Area

1) Expansion of the Transmission and Distribution Network to Provincial Centers and Major Towns

The electricity supply facilities in the provincial centers of Kampot and Takaev will be rehabilitated and upgraded with small diesel generators by 2003-203 by under ADB loan project. Following by this ADB loan, establishment of grid connected substations along new interconnecting transmission line to Vietnam should be planned to ensure the stable power supply to these provincial centers, as well as Kampong Spueu where a new substation has been installed.

2) Rural Electrification

Isolated villages in the suburban and rural areas may remain without plans of connection to expanding transmission network. The following options can be thinkable for rural electrification in this area, and each method should be studied individually in consideration of location, project cost, and local resources:

(i) Extension of existing national transmission/distribution network (effective to regions near transmission route to be established)

(ii) Extension of distribution lines from neighbor countries, Thailand or Vietnam (effective to regions at borders)

(iii) Formulation of isolated small grid with generators using local natural resources, such as small-hydro, solar power, wind power and biomass/biogas generation, and their hybrid system with diesel generator (effective to regions, where have natural energy potential)

(iv) Formulation of conventional small grid with diesel generators

(v) Home use battery system (effective to personal demands)

(4) Planning of Future Development in the Entire Growth Corridor Area

Table 5-26 and **Figure 5-19** illustrate the expected generation projects and power demand and supply balance in the national power grid of southern Cambodia for the period of 2002-2016, considering the installation timing recommended by the Study Team.

Table 5-26 Expected Projects for Development of Generation

No.	Power Plant Name	Type	Capacity (MW)	Expected Start Year	Current Situation of MIME/EdC
1	IPP-Jupiter (Phnom Penh)	Diesel	5	2003	
2	New IPP (Phnom Penh)	Diesel	15	2004	EdC contracted with an Australian company in Sept. 2002.
3	EdC Kampot	Diesel	2	2004	The construction will be completed in 2004.
4	EdC Takaev	Diesel	2	2004	- ditto -
5	EdC C5 (Phnom Penh)	Diesel	10	2005	Request for GOJ as a grant aid
6	Import from Vietnam	Trade	200	2006 2007	To be financed by WB and ADB
7	Sihanoukville Combined Cycle	Thermal	2 x 90	2009 - 2015	This schedule depends on natural gas production.
8	Kamchay Hydro	Hydro	120	2010	F/S has completed with the assistance of CIDA in 2002.
9	Steung Atay Hydro	Hydro	110	2012	Not yet started.
10	Steung Russei Chrum Hydro	Hydro	125	2013	Not yet started.
11	Steung Metoek Hydro	Hydro	90	-	Pre F/S has been carried out.
12	IPP Coal thermal Plant	Thermal	300	-	Proposed by private company as IPP.

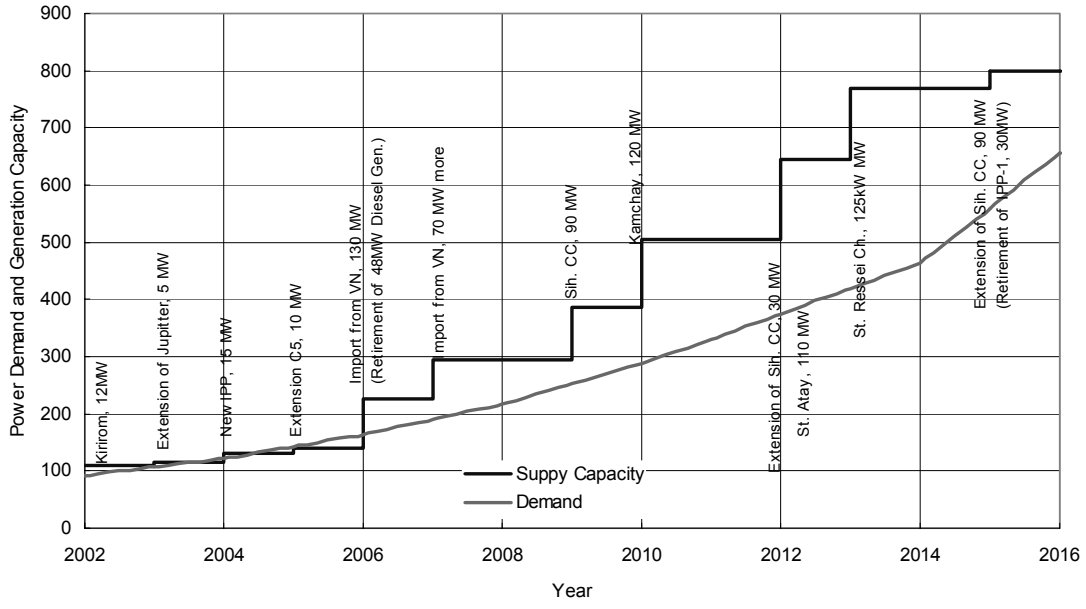


Figure 5-19 Power Demand and Supply in Southern Cambodia

5.6.5 Strategy for the Telecommunication Sector

(1) Strategy for the Sihanoukville Area

More than 2,500 telephone lines will be necessary for Sihanoukville, which is fourfold the present lines, in line with the increase of domestic demand and the industrial demand induced by the industrial zone development in Sihanoukville. To provide a preferable telecommunication environment in Sihanoukville, the development of an optical fiber cable (F/O) will be necessary between Phnom Penh and Sihanoukville, and provision of a telephone exchange with the capacity of 4,000 lines by 2005, as proposed by MPTC in the Five-Year Master Plan, will be indispensable.

After 2005, expansion of the exchange will be necessary to cope with the continuous increase of demand, although the ample capacity of F/O will accommodate the telephone demand even in the long run.

A new technology of IP network should be discussed as an alternative method to the exchange for the expansion of the telecommunication capacity after 2005.

(2) Strategy for the Phnom Penh Greater Capital Area

Though the development of the telecommunication network was conducted in Phnom Penh with international assistance, development and strengthening of the network should be conducted continuously to cope with the rapidly increasing domestic demand in line with the upgrading of the living standard, as well as and the additional demand in the proposed industrial zones in the vicinity of the airport.

Moreover, as information technology (IT) will be a key infrastructure for the Capital area, the fostering of IT experts through proper training is the primary task. Enhancement of IT education, establishment of a training organization and development of an IT qualification system will be necessary.

(3) Strategy for the Intermediate Area

In the intermediate area, the intensive development of the telecommunication network in the major cities such as the provincial capital and the development of the telephone centers in the remote area are the target of the telecommunication development. The network in the major cities along Routes 3 and 4 will be done by the development of F/O and exchanges in the respective cities. The telephone centers in the remote area will be connected with the major cities by wire or wireless transmission devices.

5.6.6 Approaches for Infrastructure Development

There are three alternative approaches for the development of basic infrastructure for the Growth Corridor area.

The first approach is to develop infrastructure with a clear focus on the key infrastructure that directly relates to trade facilitation. The key infrastructure includes the Port of Sihanoukville and the International Airport of Phnom Penh, Route 4, and utilities related to the industrial development. The financial sources of this approach depend on private sector through various PFI schemes. The current infrastructure policy of Cambodian Government is close to this approach. This will be cost effective, but may lack in effects for poverty alleviation. As the infrastructure development will be limited to key facilities, there will be a possibility for PFI schemes.

The second approach focuses more on the rural development in the Growth Corridor area. This approach emphasizes the infrastructure development in rural areas, such as provincial roads and rural water supplies. The governments at both central and provincial levels require a substantial budget allocation for the implementation of projects, but the direct and immediate financial return from such projects will be difficult to expect.

This leads to raising of the overall level of infrastructure in the rural area. Not only the living standard but also the agricultural distribution system will be improved under this approach. Consequently, this leads to the reduction of rural poverty.

The third approach is a combination of the previous two approaches in phases. Initially, *approach 1* is initiated to provide infrastructure services quickly and effectively. While PFI schemes are in operation, the central government should establish a fund that funnels the revenue from the concessionaires to the infrastructure development in rural areas.

For example, a Regional Road Maintenance Fund for provincial and rural roads in the Growth Corridor Region can be introduced from 10% of the revenue of Route 4 maintenance after 2007. If a nationwide funding system from fuel tax is established to cover expenses in the national and provincial roads, the system can be an add-on to this region-specific scheme.

This works as a virtual cross-subsidy from a profitable area to a less profitable one. When the rural areas reach a pre-set specific level, the cross-subsidies can be lifted, as the infrastructure access basically reaches all regions. The time to abolish the cross-subsidy is set for the year 2015.

Tables 5-27 and 5-28 illustrate the approaches above and their interrelationships.

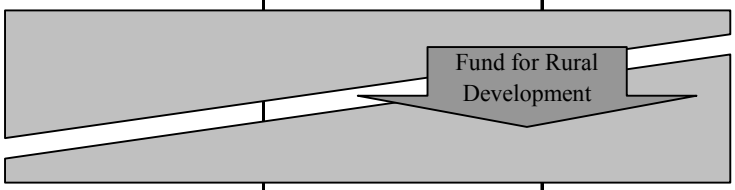
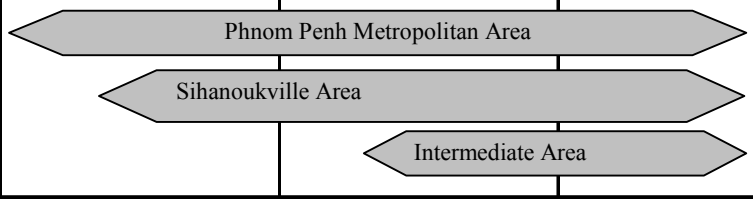
To provide infrastructure services in the region, this Study recommends the third approach, the incremental cross-subsidy approach, in view of its affordability and contribution to poverty reduction.

Table 5-27 Approaches 1-2 for Infrastructure Development

Approach 1 - Concentration on Key Infrastructure	Focus	Advantages	Disadvantage
Transportation	Port, airport, national roads, toll roads	Quick response Secure cost-recovery	Risk to expand regional disparity
Water Supply	Urban water supply, Industrial water supply		
Electricity	IPP, Power trade with Viet Nam		

Approach 2 - Accelaration of Rural Development	Focus	Advantages	Disadvantage
Transportation	Provincial and rural roads	Poverty alleviation Regional balance	Substantial public invovement Difficult cost recovery
Water Resources	Rual water supply		
Electricity	Rural electrification National grid		

Table 5-28 Approach 3: Mixed Approach

Approach 3 - Incremental Cross-subsidy	Urgent 2003-2005	Short Term 2006-2008	Middle and Long Term 2009-2015
Concentration on Key Infrastructure Acceleration of Rural Development			
Area Priority			

5.7 PROPOSED PROJECTS AND ACTION PLAN FOR THE GROWTH CORRIDOR MASTER PLAN

As have been presented in the previous section, the overall strategies and the sub-area strategies are established with a sector breakdown to address diverse development issues in the Growth Corridor Area that consists of areas with very different characteristics.

In order to substantiate these development strategies, a set of development projects and programs are proposed. These projects and programs are organized as shown in **Table 5-29, 30, and 31** in the corresponding structure of the matrix for development strategies as shown in **Table 5-13, 16, and 20** in the previous sections.

In the following sections, more detailed profiles of projects are presented by categories of sectors. Evaluation of urgency and implementation programs including time frames and implementing agencies are also explained. In each sector the sector-wise package of "Implementation Matrix" for action is presented. The details of each proposed project are shown in the respective project sheet attached in the **Annex1**.

The “Projects” in this Study include not only a project in the implementation phase that requires construction or procurement, but also a project in preparation phase, to which a technical assistance or dispatching of expertise is necessary.

The inclusion of proposed projects does not necessarily mean that any form of commitment has been made or that the funds will be committed, but the list rather forms a basis on which future donor coordination or project adoption could be done. The on-going projects with committed source of funds are excluded from the list.

The evaluation of the projects will be done in view of the 6 evaluation criteria.

- Conformity to Overall Goals: Whether or not the proposed project conforms with the overall development targets and basic strategies of the Growth Corridor regional development, as discussed in **Sections 5.2 and 5.3.**
- Conformity to Regional Strategy: Whether or not the proposed project conforms with the area specific development targets and strategies of the Growth Corridor regional development, as discussed in **Sections 5.4 through 5.6.**
- Relevance to Industrial Development: Whether or not the proposed project has relevance to the industrial development of the Growth Corridor.
- Sustainability and use of local resource: Whether the proposed project will provide sustainable use of the local resources.
- Admissibility: Whether the proposed project is admissible immediately, or needs to await completion of some other projects or tasks.

- Impact on the social dimension: Whether the proposed project will not raise concern or apprehension in the sphere of the social dimensions.

For each of the proposed project, an evaluation parameter ranging from A to C is given for respective evaluation criteria mentioned above, Evaluation parameters indicate the following assessment of the Study Team;

- A: Qualifying the evaluation criterion
- B: Qualifying the evaluation criterion on a certain condition
- C: Not qualifying the evaluation criterion

The implementation schedule of the projects is proposed in consideration of the evaluation parameters above, together with a logical sequence of related projects.

The following subsections will describe the proposed projects by sector. Additional information is given in the form of project sheets, attached in the Annex at the end of this report**.**

Table 5-29 Projects/Programs for Economic Development

Development Goal		Formulation of Axis Development for Cambodia	Promotion of Strategic Development of Industries	Creation of Economically Active Suburbs with Sustainable Environment	Establishment of Stable and Sustainable Rural Society
Projects/Programs for Economic Development	A. Primary Industry	A-1 Agriculture Reform Program	A-2 Fishery Market Development Project A-3 Mangrove Aquaculture Pilot Project	A-4 Outer City Agriculture Promotion Program	A-5 Cashew Plant Protection and Processing Project A-6 Agro-forestry Development Pilot Project A-7 Vegetable and Fruit Processing Project A-8 Border Trade Project A-9 Post-Harvest Loss Prevention Project
	B. Secondary Industry	B-1 Establishment of Cambodia Industrial Promotion Organization B-2 Establishment of Cambodia Food Safety Guidance Center B-3 Establishment of Cambodia Food Processing Technology Development Center B-4 Upgrading of Small and Micro Industries B-5 Mineral Resource Survey and Evaluation for the Growth Corridor Area	B-8 Development of the Environmental Friendly Industry: Indochina Gateway of the Tuning and Recycling Industry for the Used Machinery	B-6 Garment and Footwear Industry Revitalization Project	B-7 Community Business Development in Rural Area(Silk and handicrafts, in Takaev Province)
	C. Tertiary Industry	C-1 Training Center for Tourism and Service Business	C-2 Improvement and Support for Urban Service Businesses (Sihanoukville) C-3 Improvement of Beach Areas	C-2 Improvement and Support for Urban Service Businesses (Phnom Penh) C-4 Tourism Master Plan for Greater Capital C-5 Arts and Handicraft Center (Greater Capital) by Refurbishing Grand Market	C-6 Pilot Project for Village-Based Tourism
	D. Investment Development	D-1 Establishment of SPZ to Improve Investment Environment of Cambodia D-2 FDI Promotion for FTZ/EPZ in Sihanoukville and Phnom Penh	D-3 Development of the Sihanoukville EPZ/FTZ D-4 Development of GIE in the Sihanoukville SPZ D-5 Renovation of Fish Port with Supporting Infrastructure and Development of Fishery Processing Estate	D-6 Development of Phnom Penh EPZ/FTZ D-7 Development of GIE in the Greater Capital	D-5 Renovation of Fish Port with Supporting Infrastructure and Development of Fishery Processing Estate (Kaoh Kong and Kampot.) D-7 Koh Kong Special Border Economic Zone/IZ
	E. Legal and Institutional Framework	E-1 Computerization of Customs Clearance Procedures E-2 Dispatch of Specialists from Japan for Facilitating the Legal and Institutional Framework of the SPZ			

Table 5-30 Projects/Programs for Urban and Social Development

Development Goal		Formulation of Axis Development for Cambodia	Promotion of Strategic Development of Industries	Creation of Economically Active Suburbs with Sustainable Environment	Establishment of Stable and Sustainable Rural Society
Projects/Programs for Urban and Social Development	F. Urban Planning	F-1 Enhancement of Planning Enforcement Mechanism of Urban Planning F-2 Assistance of Capacity Building for Decentralization of Planning Functions	F-3 Pilot urban Master Plan for Sihanoukville	F-4 Greater Phnom Penh Capital Area Urban Master Plan	
	G. Human Resource Development		G-1 Establishment of Training Institute within Sihanoukville SPZ G-2 Establishment of University in Sihanoukville with faculties for Fishery and Marine Sciences, and Engineering G-3 Strengthening Sihanoukville Municipal Vocational Training Center	G-4 Upgrading of Preah Kossomak Polytechnic Institute with Cooperation from King Mongkut's Institute of Technology Ladkrabang (KMITL), Thailand G-5 Establishment of Faculty of Engineering in Royal University of Phnom Penh	G-6 Assistance for Rural Entrepreneurship Development
	H. Rural Development		H-1 Improving Living Standards in Urban Poor Areas in Sihanoukville	H-2 Income Generation Activities for Farmers in Kandal Province (Supporting a NGO project Income Generation) H-3 Income Generation Activities for Vulnerable People in Kandal Province (Supporting a NGO project) H-4 Income Generation of a Silk Weaving Village Through Tourism	H-5 Participatory Rural Development Project (in Kampong Speue Province or Other Provinces)
	I. Environment	I-1 Capacity Enhancement for Effective Enforcement of Environmental Legislation	I-2 Reinforcement of Pollution Source Monitoring I-3 Construction of Controlled Landfill Site I-4 Study on Area-Specific Zero Emission Model	I-2 Reinforcement of Pollution Source Monitoring	I-5 Establishment of Integrated Coastal Fishery Management Center I-6 Biodiversity Conservation Project (Community Forestry Project), Bokor National Park I-7 Recycling of Market Waste and Household Sewage Project

Table 5-31 Projects/Programs for Infrastructure Development

Development Goal		Formulation of Axis Development for Cambodia	Promotion of Strategic Development of Industries	Creation of Economically Active Suburbs with Sustainable Environment	Establishment of Stable and Sustainable Rural Society
Projects/Programs for Infrastructure Development	J. Transportation	J-1 Southern Railway Rehabilitation Project	J-2 Container Distribution Center Project J-3 Container Lane Project J-4 Sihanoukville Urban Transport Project	J-2 Container Distribution Center Project J-5 New Phnom Penh Port Project J-6 Phnom Penh Urban Transportation Project	J-7 Kampot Urban Infrastructure Development Project J-8 Rural Road Maintenance System Development Project J-9 Route 48 Upgrading Project
	K. Water Resources	K-1 Master Plan Study on Water Resources Development and management K-2 Improvement to Meteorological / Hydrological Network K-3 Strengthening of Database and Information Systems (Flood and Drought Forecasting and Early Warning System)	K-4 Improvement of Urban Water Supply (including Water Supply Development for SPZ)	K-4 Improvement of Urban Water Supply K-6 Flood Control and Mitigation K-8 Preak Thnot River Basin Development	K-4 Improvement of Urban Water Supply K-5 Rehabilitation of Irrigation Schemes K-6 Flood Control and Mitigation K-7 Community Enhancement of Water management K-8 Preak Thnot River Basin Development
	L.Electricity	L-1 The Sihanoukville Combined Cycle Power Development Project L-2 Kamchay Hydro Project L-3 Steng Atay Hydro Project L-4 Steng Russei Chrum hydro project	L-5 220kV transmission line between Sihanoukville and Kampot L-6 Project for Construction of new Power Plant and Extension of Distribution Network in Sihanoukville	L-7 Project for the Construction of 220kV Transmission Line between Phnom Penh and Vietnam L-8 Project for Capacity Extension 10 MW of EdC C5 Power Plant L-9 Project for Extension of Power Distribution System around Phnom Penh	L-10 220kV Transmission Line between Takaev and Kampot L-11 Cambodian Renewable Energy Promotion Project L-12 Provincial Power Supply Project
	M.Tele-communications	M-1 Nourishment of Qualified IT Related Human Resources(1000 IT Engineer Project)	M-2 Development of Optical fiber Cable Network between Phnom Penh and Sihanoukville(Growth Corridor IT Platform Development)	M-2 Development of Optical Fiber Cable Network between Phnom Penh and Sihanoukville(Growth Corridor IT Platform Development)	M-2 Development of Optical fiber cable network between Phnom Penh and Sihanoukville(Growth Corridor IT Platform Development)