## 7.3 ESTIMATION OF DEVELOPMENT COST OF THE FREE ZONE AND INDUSTRIAL AREA

The development costs of the free zone (FZ) and industrial area (IA) in Sihanoukville and Phnom Penh as proposed above were estimated on the basis of the following assumptions.

- The cost of all the necessary infrastructure of the zone and area was estimated.
- The cost of the buildings and structures to be developed by investors for manufacturing and trading was not included in the estimate.
- The cost for land acquisition was estimated on the basis of the land price data acquired during the site selection survey as discussed in **Section 7.1**.
- An engineering cost of 10 %, administration cost of 2 % and a physical contingency of 10 % of the construction cost estimate were added to the estimate.
- The VAT with a normal rate of 10 % was not included in FZ development on the assumption of VAT exemption, while the VAT was included in the development of IA.

The development cost of the FZ and the IA is summarized in **Tables 7.3-1** and **7.3-2**, together with the corresponding unit cost per salable area estimates.

**Table 7.3-1 Development Cost of the Free Zone and Industrial Area**

All Development Cost (Unit: 1,000 US$)

| Item | Sihanoukville Port Free Zone | Sihanoukville Industrial Area -Site 4- | Sihanoukville Industrial Area -Site 6- | Phnom Penh Industrial Area -Site 6- | Sihanoukville Port Industrial Area |
|---|---|---|---|---|---|
| 1 Land acquisition | 0 | 12,640 | 1,800 | 7,850 | 0 |
| 2 Construction | 14,190 | 44,560 | 44,610 | 33,960 | 15,170 |
| 3 Engineering cost | 1,419 | 4,460 | 4,460 | 3,400 | 1,520 |
| 4 Physical contingency | 1,560 | 4,900 | 4,910 | 3,740 | 1,670 |
| 5 Total | 17,169 | 66,560 | 55,780 | 48,950 | 18,360 |
| 6 VAT | 0 | 5,390 | 5,400 | 4,110 | 0 |
| 7 Grand total | 17,169 | 71,950 | 61,180 | 53,060 | 18,360 |

Note: Compensation and relocation cost of Sihanoukville Port Free Zone and Sihanoukville Industrial Area is not inclusive.
Price escalation is not inclusive.

Source: JST

**Table 7.3-2 Unit Development Cost of the Free Zone and Industrial Area**

Unit Cost (All Development Cost)

| Item | Sihanoukville Port Free Zone | Sihanoukville Industrial Area -Site 4- | Sihanoukville Industrial Area -Site 6- | Phnom Penh Industrial Area -Site 6- | Sihanoukville Port Industrial Area |
|---|---|---|---|---|---|
| 1 Development Cost (1,000 US$) | 17,169 | 71,950 | 61,180 | 53,060 | 18,360 |
| 2 Salable Area (ha) | 29.3 | 110.3 | 124.4 | 117.8 | 39.0 |
| 3 Unit Cost (US$/$m^2$) | 58.6 | 65.2 | 49.2 | 45.0 | 47.1 |

Note: /1 Compensation and relocation cost of Sihanoukville Port Free Zone and Sihanoukville Industrial Area is not inclusive.
/2 Price escalation is not inclusive.

Source: JST

Construction cost for Sihanoukville Port Free Zone (SPFZ) shown in Table 7.3-1 can be broken down into the following cost components:

**Table 7.3-3 Construction Cost for SPFZ Development**

| Item | Cost (1,000 US$) |
|---|---|
| a) Land Grading | 3,218 |
| b) Road | 1,672 |
| c) Water Supply System | 2,016 |
| d) Sewage System | 2,769 |
| e) Power Supply System | 1,182 |
| f) Drainage System | 1,849 |
| g) Telecommunication | 280 |
| h) Solid waste Disposal System | 561 |
| i) Others | 368 |
| j) Administration Cost | 278 |
| **Total** | **14,190** |

In case some part of the external infrastructure cost would be borne separately by an aid grant, the development cost of FZ and IA would be reduced sizably as shown in **Table 7.3-4**. The external infrastructure is assumed to be as shown below.

- Sihanoukville Port Free Zone (SPFZ): The wastewater treatment plant and outfall pipeline for treated discharge water; a solid disposal landfill
- Sihanoukville Industrial Area (Site 4 and 6): A water reservoir in Prek Toek Sap River

For the SPFZ, the two external infrastructure components are proposed additionally as the priority projects, N-1 Development of Wastewater Treatment Plant for the Sihanoukville Port Free Zone; and N-2 Development of Solid Waste Landfill for the Sihanoukville Port Free Zone. The total cost of the two projects is estimated at US$3.4 million. The details of the priority projects are included in the priority projects sheets given in Annex 2 at the end of this report.

**Table 7.3-4 Development Cost after Excluding External Infrastructure Cost**

Unit Cost (Development Cost except for External Infrastructure Cost)

| Item | Sihanoukville Port Free Zone | Sihanoukville Industrial Area -Site 4- | Sihanoukville Industrial Area -Site 6- | Phnom Penh Industrial Area -Site 6- | Sihanoukville Port Industrial Area |
|---|---|---|---|---|---|
| 1 Development Cost (1,000 US$) | 13,702 | 55,860 | 45,090 | 53,060 | 18,360 |
| 2 Salable Area (ha) | 29.3 | 110.3 | 124.4 | 117.8 | 39.0 |
| 3 Unit Cost (US$/$m^2$) | 46.8 | 50.6 | 36.3 | 45.0 | 47.1 |

Note: /1 Compensation and relocation cost of Sihanoukville Port Free Zone and Sihanoukville Industrial Area is not inclusive.
/2 Price escalation is not inclusive.

Source: JST

Compensation and resettlement costs for the 138 households in the SPFZ were estimated as shown in **Table 7.3-5**. Construction costs for infrastructure in the land where they will be relocated such as an access road, water supply, septic tanks, electric supply and a drainage system, are included in the estimate.

**Table 7.3-5 Compensation and Resettlement Costs of Residents Concerning the Sihanoukville Port Free Zone (SPFZ)**

(Unit: 1,000 US$)

| Item | Cost |
|---|---|
| 1 Land acquisition | 100 |
| 2 Infrastructure construction | 106 |
| 3 House construction | 276 |
| 4 Others | 49 |
| 5 Physical contingency | 43 |
| 5 Total | 574 |
| 6 VAT | 47 |
| 7 Grand total | 621 |

Note: Price escalation is not inclusive.

Source: JST

The detailed cost estimates are shown in **Appendix G.9**.

## 7.4 IMPLEMENTATION AND OPERATION PLANS FOR THE FREE ZONE AND INDUSTRIAL AREAS

### 7.4.1 Implementation Schedule

The implementation schedule for the proposed free zone and industrial areas is conceived to be as shown below and illustrated in **Figure 7.4-1**.

The Sihanoukville Port Free Zone (SPFZ) is an urgent pilot project, and will be commenced as soon as possible. Early commencement will help discourage the additional encroachment of illegal settlers. The Study Team recommends that the

decision for the development should be made by the middle of 2003 and that the construction work should be finished by the end of 2004. Activities for FDI promotion shall be undertaken in parallel with the construction work, so that construction of production and trading facilities shall start in 2004 and operation shall start in the year of 2005.

The Phnom Penh Industrial Area will also be developed shortly afterwards. A decision regarding the development shall be made in 2004 and the construction shall be concluded by the end of 2006.

Industrial Areas in Sihanoukville will be developed in accordance with the growth of demand for industrial areas after the SPFZ is successfully developed. The commissioning of the industrial areas at *Site 4* and *Site 6* is projected to take place in 2009 and 2014, respectively.

The Sihanoukville Port Industrial Area in the south of the SPFZ could be developed on condition that the resettlement of residents was totally resolved. Considering the extent of the necessary resettlement, the year for the commissioning is provisionally set at 2013.

The development schedule for the necessary external infrastructure is proposed in **Figure 7.4-2** paying due attention to collateral service to the urban area of Sihanoukville City.

### 7.4.2 Implementing Organization

For the purpose of the development of the FZ and IA's, an appropriate implementing body should be established as discussed in **Chapter 6**..

The Sihanoukville Port Authority, which has the land ownership of the site, may play a core role within the implementing body of the Sihanoukville Port Free Zone (SPFZ). Further, partnership with the private sector will be desirable in bringing in additional financial source in implementation and marketing and managerial skills in operation. A joint undertaking by the Port Authority and the private sector will be an important part of the implementation arrangement.

With respect to the development of other industrial areas in Sihanoukville and Phnom Penh, more emphasis shall be placed on public/private partnerships as a mechanism for quick implementation.

### 7.4.3 Resource for Implementation

The public support to the implementation of the SPFZ is essential, while the development of the SPFZ can be undertaken by a joint corporation established by the

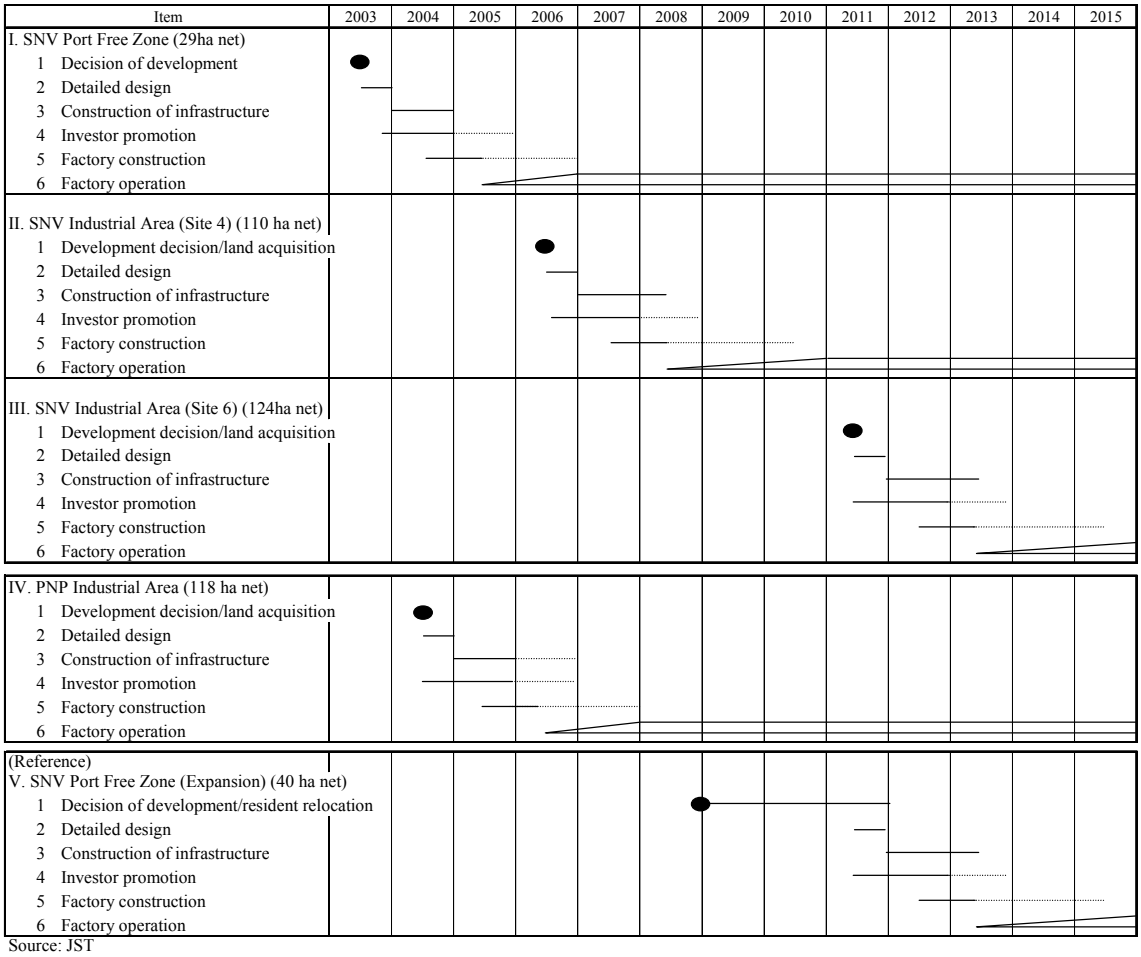
public and private partnership. The possible financial arrangement is proposed below.

The Port Authority of Sihanoukville will resume the responsible for the land arrangement including the resident resettlement. A joint corporation established by the private and public organizations could develop the infrastructure of SPFZ under an appropriate contract with CAPZA, and provide the facility for the one stop service center, operated by CAPZA. A public support will be essential for the construction of the environmental related infrastructure utilizing the international assistance, as the financial rate of return of the project will not be high enough for the project to be financed solely by the private sector.

**Table 7.4-1 Financial Resource Arrangement Plan for the Development of the SPFZ**

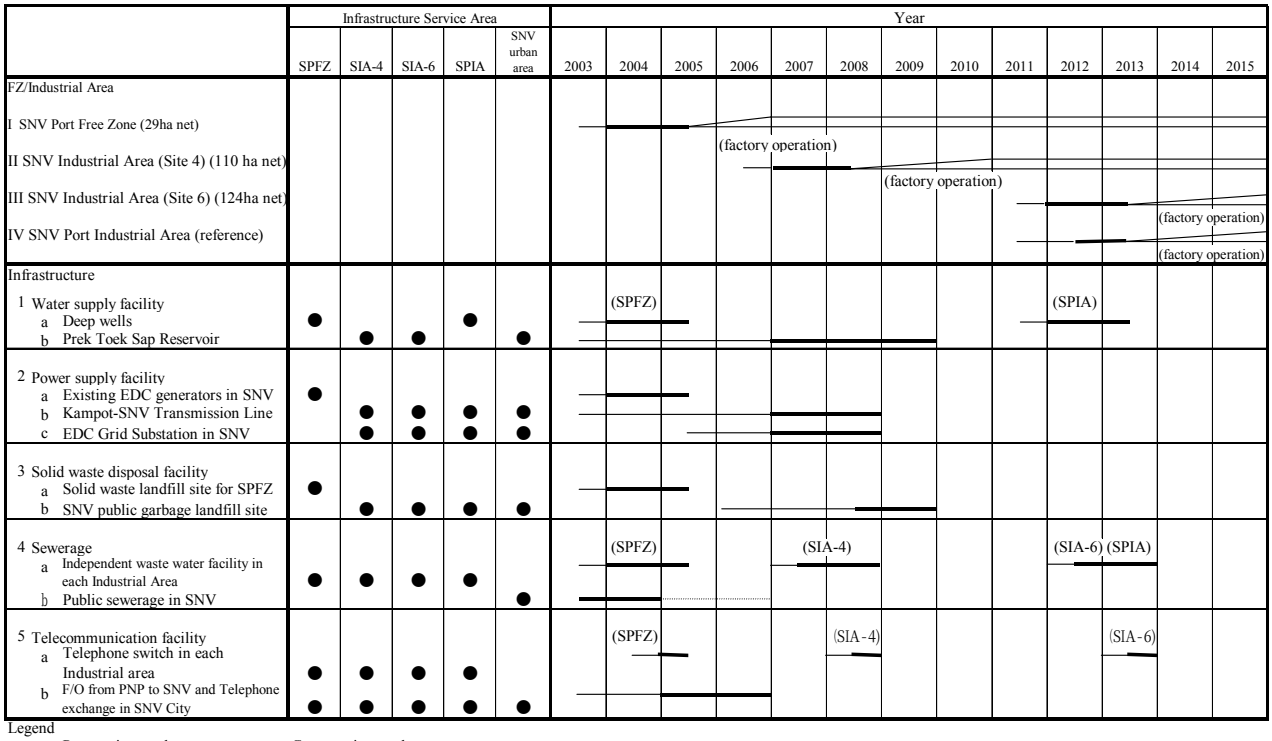
| Source | Land arrangement | Resident resettlement | Infrastructure and one stop center | Environmentally related utilities | | Factory building and structures |
|---|---|---|---|---|---|---|
| | | | | Sewage treatment plant /1 | Solid waste disposal /2 | |
| Sihanoukville Port Authority | X | X | | | | |
| Joint Corporation for Implementation | | | X | | | |
| Public Support (International Assistance) | | | | X | X | X |
| FDI | | | | | | X |

Note: /1 sewer and accessories is included in the infrastructure to be developed by the joint corporation.
/2 Construction of a sanitary land fill site near the existing garbage dumping site of Sihanoukville, procurement of garbage trucks are included.




Source: JST

**Figure 7.4-1 Development Schedule for the Free Zone and Industrial Area**




Legend
—— Preparation work ━━ Construction work

SPFZ: Sihanoukville Port Free Zone, SIA-4: Sihanoukville Industrial Area -Site 4-, SIA-6: Sihanoukville Industrial Area -Site6-, SPIA-E: Sihanoukville Port Industrial Area

Source: JST

**Figure 7.4-2 Development Schedule for Relevant Infrastructure Outside the Free Zone and Industrial Area**

### 7.4.4 Enhancement Measures for FDI Promotion

The expansion of the trades and creation of job opportunities are an urgent and essential task for Cambodia. For this purpose, domestic capital investments are too weak to facilitate a robust and lasting solution, and undoubtedly investments by FDI with their technology and skills for quality control will be the most effective measures with immediate effects.

In order to promote the FDI investments, it will be necessary to conduct thorough institutional improvement, development of the supporting infrastructure, and intensive promotion activities aiming to attract FDI.

Although MOIME participated in the FDI promotion seminars in Korea and Japan in 2001 and 2002 with the cooperation of UNIDO, the returns from their activities are not substantial yet.

For effective FDI promotion, Cambodia will have to make appropriate selection of the target categories of industry and the target country/region, prepare advertisement materials indicating the advantage and competitiveness of the investment environment, dispatch promotion missions and organize relevant seminars, and establish a promotional organization in the prospective countries/regions.

### (1) Target Countries

The conventional investor countries such as Malaysia, Taiwan, China, Thailand, the UK and Hong Kong (sequentially cited by the investment amount during the 7 years from 1994 to 2001) will be the primary targets for the FDI promotion. In addition, following the results of the questionnaire survey done by JST, in which Korea, Thailand and Malaysia showed strong interest in investment in the Sihanoukville Free Zone, those countries should be given full attention as potential targets. Further, as some industrial product categories of Thailand, Malaysia and Indonesia have graduated from the GSP privileges, such products and countries will also be taken into consideration in FDI promotion.

### (2) Target Category

The category of products that has graduated from the GSP privileges in the neighboring countries (as summarized below) will be aimed at as specific targets for FDI promotion.

| Country | GSP Graduation Category |
|---|---|
| Indonesia | Fats, oils, and waxes<br>Wood<br>Footwear |
| Malaysia | Cereals, mats and starch<br>Fats, oils, and waxes<br>Plastic and rubber<br>Wood<br>Clothing<br>Consumer electronics |
| Thailand | Fishing products<br>Tree, plants, cut flowers, edible vegetables and nuts<br>Plastic and rubber<br>Articles of leather and fur skins<br>Clothing<br>Footwear<br>Jewelry |

The results of the investment questionnaire survey done by JST show the following categories of industry by country with relative merit for Sihanoukville.

| Country | Prospective Category |
|---|---|
| Korea | Textile<br>Garment<br>Paper products<br>Cosmetics<br>Rubber products<br>Electric appliances |
| Malaysia | Food product (Frozen food)<br>Electric appliances |
| Thailand | Food products (Sea food)<br>Garment<br>Paper products |

In addition to the above, the toy industry in Thailand was found to be a prospect by the joint field trip by the Study Team and the Counterpart Group to Thailand (refer to **Appendix G.2**).

Those industry categories mentioned above should be targets of the FDI promotion activity.

### (3) Steps for Action

#### *1) Preparation of Promotion Materials*

Advertising material describing the advantageous environment of the Sihanoukville Port Free Zone (SPFZ) and persuasively referring to conditions such as available resources including the labor force and legal and institutional privileges applicable to the prospective FDI should be prepared.

#### *2) Promotion Mission*

Following a decision on the target countries and preparation of promotion materials FDI promotion missions should be dispatched. The missions should consist of high-level governmental officials as well as representatives of local enterprises/business associations capable of proposing joint investment. Industrial associations in the target countries, established usually in a category of industry such as garments, textile, shoes, toys, etc., would be the first contact for the missions. The missions should carry out introductory meetings with prospective investors/associations separately in addition to the formal promotional seminars.

#### *3) Organizational Development*

Considering that the results of the questionnaire survey indicated comparatively strong interest from Thailand and Malaysia and that those two countries have graduated from the GSP privilege in some categories of industry, promotion with a target in the Thai and Malaysian enterprises will be the most fertile. Therefore, the establishment of new organizations for FDI promotion is recommended in these two

countries, in close collaboration with the respective consular offices whose present duties include trade, tourism, and investment promotion.

*4) Follow-up Promotion*

Follow-up for prospective FDI should be continued after the return of promotion missions. Information technology (ITC) devices such as the Internet should be effectively utilized in conjunction with the promotion organization in the respective countries as proposed above.

*5) Receiving the FDI mission*

Once the FDI decides to visit Cambodia to investigate the investment environment, intensive assistance should be given to the FDI. The quality of the services provided by the One Stop Shop will be a core determinant in producing a positive decision for investment.

## 7.5 ECONOMIC AND FINANCIAL EVALUATION OF SIHANOUKVILLE PORT FREE ZONE

### 7.5.1 Economic Evaluation

The economic evaluation depicts the viability of the proposed project from the national economic efficiency point of view. For that purpose, all costs of facilities on and off site are taken into account. In the Sihanoukville Port Free Zone (SPFZ), the economic evaluation is made on the following assumptions.

1) The economic useful lifetime of the project is assumed to be 30 years.
2) All the costs are expressed at the constant 2001 prices using the official exchange rate of US$1.0 = Cambodian Riels 3,924 in 2000.
3) The estimated construction cost includes the administration cost, the engineering cost, the physical contingency and industrial estate construction cost (exclude factory construction cost)
4) The operation and maintenance cost (O/M cost) are estimated for water supply, sewage and solid waste (garbage) treatment and general maintenance.
5) Other costs consist of the compensation and sales promotion cost. The compensation for household resettlement includes construction cost of substitute housing areas and cost of infrastructure provision.
6) The opportunity cost for land is not enumerated, as the proposed site has not been used for productive activities.
7) The tax, subsidy and interest are considered as a domestic monetary transaction without any productive works. These transfer payments are excluded from

the project costs.

8) A standard conversion factor (SCF) of 0.9 is applied to the financial cost items in order to reflect their opportunity costs due to trade distortion.

9) The economic benefit from national point of view is estimated applying the value added per employee approach. The per capita GDP estimated as shown in **Section 5.2** of this study is used. GDP at factor cost(value add from national point of view) consists of compensation of employees and operating surplus as the result of economic activities such as investment and expenditure according to the concept and calculation of National Accounts. The per capita GDP for the manufacturing sector in Sihanoukville is estimated as US$ 1,380 in the year 2000 and US$ 1,690 in the year 2015. The estimated number of employees at the full operation of the SPFZ is 3,600. The calculation of yearly increase of value added is excluded in this estimation.

The results of the economic evaluation are summarized in **Table 7.5-1**.

Employing a cut off rate of 10% over a 30 year time horizon shows that the proposed project is recommendable from an overall economic point view with the following key indicators.

Net Present Value of Cost (NPVC) = US$ 18,162,000

Net Present Value of Benefit (NPVB) = US$ 45,330,000

Benefit and Cost Ratio (B/C) =2.496

Benefit and Cost Differential (B-C) = US$ 27,168,000

**Economic Internal Rate of Return (EIRR) = 21.58%**

### 7.5.2 Financial Evaluation

The financial evaluation is undertaken from the project investor's point of view. The objectives of the financial evaluation are as follows.

1) To evaluate alternative project configurations to determine the most attractive alternative.

2) To verify that adequate levels of profits will be generated to reward developer for committing equity and bearing risks for this project rather than elsewhere.

3) To develop a sound financing plan to cover expenditures during the implementation phase.

Major project expenditure components (cash outflow) include the construction cost, the operating and management cost (O/M) and other cost (sales promotion cost and etc.).

The estimated construction costs include the administration cost, engineering cost and the physical contingency but excludes compensation and relocation cost. The O/M cost comprises utility operation and general maintenance.

Major project revenue components (cash inflow) include land lease (US$ 55.0/$m^2$), water charge (US$ 0.3/$m^3$), sewage/garbage charge (US$ 0.5/$m^3$) and O/M charge (US$ 1.0/$m^2$).

Payment for land lease shall be made by lump-sum because Long term land lease can be regarded as substantially lot sales. Major cash outflow(construction cost) shall be balanced by the cash inflow of land lease payment to maintain sound financial management.

The financial internal rate of return (FIRR) for the project is calculated for 3 scenarios; namely the *Base Case* with all the expenditures covering the construction and O/M and the revenue from water, sewage treatment and solid disposal (garbage) services; and *Alternative1* where the costs and revenue for sewage treatment and solid disposal are excluded from the *Base Case*; and *Alternative2* which excludes only solid disposal related expenditure and revenue from the *Base Case*. The excluded cost and revenue items are presumed to be financed separately by a grant type of aid.

The results of the financial evaluation are summarized in **Table 7.5-2** for the Base Case, **Table 7.5-3** for Alternative 1 and **Table 7.5-4** for Alternative 2.

Employing a cut off rate of 10% and a 30 years time horizon, the calculated result from a financial point of view for *Base Case*, *Alternative 1* and *Alternative 2* of the proposed project are shown below.

| Case | Financial Internal Rate of Return (FIRR) |
|---|---|
| Base Case | 6.49% |
| Alternative 1; sewage treatment plant and solid disposal facility excluded | 10.57% |
| Alternative 2; solid disposal facility excluded | 6.68% |

The above results show that the Sihanoukville Port Free Zone (SPFZ) project is feasible to a developer if the investment cost for the sewage treatment plant and solid waste disposal facility is born externally by an other financial source (*Alternative 1*).

The FIRR reduces to 6.49% or 6.68%, if the cost for the sewage treatment plant and/or solid waste disposal facility is included into the total investment expenditure (*Base Case* and *Alternative 2 respectively*).

The sewage treatment plant and solid waste disposal facility are important infrastructure from the viewpoint of environmental management but the required cost is not trivial in the overall cashflow.

Taking into account the results of the economic and financial evaluations, if the main part of the project is to be financed by the private sector, it is recommended to construct the sewage treatment plant and solid waste disposal facility either from public funds or under an ODA scheme with a grant type of aid. Alternately, the entire project could be financed by an international soft loan with a low interest rate, in which case a relatively low FIRR in the range of 6 to 7% of *Base Case* and *Alternative 2* would be tolerable.

**Table 7.5-1 EIRR of SNV Port Free Zone Development**

(1,000 US$)

| | | Cost | | | | | | Benefit | | Balance |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Const. cost | | O/M cost | | Other cost | Total | Value Added | Total | |
| Year | | | 10%up | | 10%up | | | | | |
| 1 | 2003 | 1,364 | 1,500 | | | 581 | 2,081 | | | -2,081 |
| 2 | 2004 | 15,147 | 16,662 | | | 32 | 16,694 | | | -16,694 |
| 3 | 2005 | | | 304 | 334 | 22 | 356 | 994 | 994 | 638 |
| 4 | 2006 | | | 441 | 485 | | 485 | 3,974 | 3,974 | 3,489 |
| 5 | 2007 | | | 487 | 536 | | 536 | 4,968 | 4,968 | 4,432 |
| 6 | 2008 | | | 487 | 536 | | 536 | 4,968 | 4,968 | 4,432 |
| 7 | 2009 | | | 487 | 536 | | 536 | 4,968 | 4,968 | 4,432 |
| 8 | 2010 | | | 487 | 536 | | 536 | 4,968 | 4,968 | 4,432 |
| 9 | 2011 | | | 487 | 536 | | 536 | 4,968 | 4,968 | 4,432 |
| 10 | 2012 | | | 487 | 536 | | 536 | 4,968 | 4,968 | 4,432 |
| 11 | 2013 | | | 487 | 536 | | 536 | 4,968 | 4,968 | 4,432 |
| 12 | 2014 | | | 487 | 536 | | 536 | 4,968 | 4,968 | 4,432 |
| 13 | 2015 | | | 878 | 966 | | 966 | 6,084 | 6,084 | 5,118 |
| 14 | 2016 | | | 487 | 536 | | 536 | 6,084 | 6,084 | 5,548 |
| 15 | 2017 | | | 487 | 536 | | 536 | 6,084 | 6,084 | 5,548 |
| 16 | 2018 | | | 487 | 536 | | 536 | 6,084 | 6,084 | 5,548 |
| 17 | 2019 | | | 487 | 536 | | 536 | 6,084 | 6,084 | 5,548 |
| 18 | 2020 | | | 487 | 536 | | 536 | 6,084 | 6,084 | 5,548 |
| 19 | 2021 | | | 487 | 536 | | 536 | 6,084 | 6,084 | 5,548 |
| 20 | 2022 | | | 487 | 536 | | 536 | 6,084 | 6,084 | 5,548 |
| 21 | 2023 | | | 487 | 536 | | 536 | 6,084 | 6,084 | 5,548 |
| 22 | 2024 | | | 487 | 536 | | 536 | 6,084 | 6,084 | 5,548 |
| 23 | 2025 | | | 1,521 | 1,673 | | 1,673 | 6,084 | 6,084 | 4,411 |
| 24 | 2026 | | | 487 | 536 | | 536 | 6,084 | 6,084 | 5,548 |
| 25 | 2027 | | | 487 | 536 | | 536 | 6,084 | 6,084 | 5,548 |
| 26 | 2028 | | | 487 | 536 | | 536 | 6,084 | 6,084 | 5,548 |
| 27 | 2029 | | | 487 | 536 | | 536 | 6,084 | 6,084 | 5,548 |
| 28 | 2030 | | | 878 | 966 | | 966 | 6,084 | 6,084 | 5,118 |
| 29 | 2031 | | | 487 | 536 | | 536 | 6,084 | 6,084 | 5,548 |
| 30 | 2032 | | | 487 | 536 | | 536 | 6,084 | 6,084 | 5,548 |

Condition of Discount Rate:10%

| | | | |
|---|---|---|---|
| Net Present Value | 18,162 | 45,330 | |
| Benefit and Cost Ratio (B/C) | | | 2.496 |
| Benefit and Cost Difference (B-C) | | | 27,168 |
| Economic Internal Rate of Return (EIRR) | | | 21.58% |

Case1 Economic Internal Rate of Return (EIRR) (const. And O/M cost 10%up) 19.83%

**Table 7.5-2 FIRR of SNV Port Free Zone Development--- Base Case**

(1,000 US$)

| Year | | Expenditure/1 | | | | Revenue | | | | | Balance |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Const. cost | O/M cost | Other cost | Total | Land lease/2 (55.0$/m2) | Water charge/3 (0.30$/m3) | Sewage/ garbage charge (0.50$/m3) | OM charge/4 (1.00$/m2) | Total | |
| 1 | 2003 | 1,419 | | 3 | 1,422 | | | | | | -1,422 |
| 2 | 2004 | 15,755 | | 32 | 15,787 | | | | | | -15,787 |
| 3 | 2005 | | 338 | 22 | 360 | 3,223 | 44 | 73 | 59 | 3,398 | 3,038 |
| 4 | 2006 | | 490 | | 490 | 9,669 | 175 | 292 | 234 | 10,371 | 9,880 |
| 5 | 2007 | | 541 | | 541 | 3,223 | 219 | 365 | 293 | 4,100 | 3,559 |
| 6 | 2008 | | 541 | | 541 | | 219 | 365 | 293 | 877 | 336 |
| 7 | 2009 | | 541 | | 541 | | 219 | 365 | 293 | 877 | 336 |
| 8 | 2010 | | 541 | | 541 | | 219 | 365 | 293 | 877 | 336 |
| 9 | 2011 | | 541 | | 541 | | 219 | 365 | 293 | 877 | 336 |
| 10 | 2012 | | 541 | | 541 | | 219 | 365 | 293 | 877 | 336 |
| 11 | 2013 | | 541 | | 541 | | 219 | 365 | 293 | 877 | 336 |
| 12 | 2014 | | 541 | | 541 | | 219 | 365 | 293 | 877 | 336 |
| 13 | 2015 | | 972 | | 972 | | 219 | 365 | 293 | 877 | -95 |
| 14 | 2016 | | 541 | | 541 | | 219 | 365 | 293 | 877 | 336 |
| 15 | 2017 | | 541 | | 541 | | 219 | 365 | 293 | 877 | 336 |
| 16 | 2018 | | 541 | | 541 | | 219 | 365 | 293 | 877 | 336 |
| 17 | 2019 | | 541 | | 541 | | 219 | 365 | 293 | 877 | 336 |
| 18 | 2020 | | 541 | | 541 | | 219 | 365 | 293 | 877 | 336 |
| 19 | 2021 | | 541 | | 541 | | 219 | 365 | 293 | 877 | 336 |
| 20 | 2022 | | 541 | | 541 | | 219 | 365 | 293 | 877 | 336 |
| 21 | 2023 | | 541 | | 541 | | 219 | 365 | 293 | 877 | 336 |
| 22 | 2024 | | 541 | | 541 | | 219 | 365 | 293 | 877 | 336 |
| 23 | 2025 | | 1,690 | | 1,690 | | 219 | 365 | 293 | 877 | -813 |
| 24 | 2026 | | 541 | | 541 | | 219 | 365 | 293 | 877 | 336 |
| 25 | 2027 | | 541 | | 541 | | 219 | 365 | 293 | 877 | 336 |
| 26 | 2028 | | 541 | | 541 | | 219 | 365 | 293 | 877 | 336 |
| 27 | 2029 | | 541 | | 541 | | 219 | 365 | 293 | 877 | 336 |
| 28 | 2030 | | 972 | | 972 | | 219 | 365 | 293 | 877 | -95 |
| 29 | 2031 | | 541 | | 541 | | 219 | 365 | 293 | 877 | 336 |
| 30 | 2032 | | 541 | | 541 | | 219 | 365 | 293 | 877 | 336 |

Note: /1 All cost except for incinerator is inclusive. The investor promotion cost is inclusive in the other cost.
/2 550,000US$ is the price for the 1 ha lot for 99 years lease by 55 $/m2 unit price. Price examples: 108$/m2 for 50 years lease (Tan Thuan), 29～75 (average 45) $/m2 in Eastern Seaboard of Thailand.
/3 4,500US$ of water charge will be charged annually if 50m3/day (300days operation) is consumed.
/4 OM Charge includes cost for sewage treatment plant and general maintenance fee. 10,000US$ of OM charge will be charged annally for 1.0 ha lot factory.

Financial Internal Rate of Return (FIRR) 6.49%

**Table 7.5-3 FIRR of Sihanoukville Port Free Zone Development in case of exclusion of sewage treatment and solid disposal---Alternative 1 Case**

(1,000 US$)

| Year | | Expenditure/1 | | | | Revenue | | | | Balance |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Const. cost | O/M cost | Other cost | Total | Land lease/2 (55.0$/m2) | Water charge/3 (0.30$/m3) | OM charge/4 (0.60$/m2) | Total | |
| 1 | 2003 | 1,129 | | 3 | 1,132 | | | | | -1,132 |
| 2 | 2004 | 12,528 | | 32 | 12,560 | | | | | -12,560 |
| 3 | 2005 | | 251 | 22 | 273 | 3,223 | 44 | 35 | 3,302 | 3,029 |
| 4 | 2006 | | 251 | | 251 | 9,669 | 175 | 141 | 9,985 | 9,734 |
| 5 | 2007 | | 251 | | 251 | 3,223 | 219 | 176 | 3,618 | 3,367 |
| 6 | 2008 | | 251 | | 251 | | 219 | 176 | 395 | 144 |
| 7 | 2009 | | 251 | | 251 | | 219 | 176 | 395 | 144 |
| 8 | 2010 | | 251 | | 251 | | 219 | 176 | 395 | 144 |
| 9 | 2011 | | 251 | | 251 | | 219 | 176 | 395 | 144 |
| 10 | 2012 | | 251 | | 251 | | 219 | 176 | 395 | 144 |
| 11 | 2013 | | 251 | | 251 | | 219 | 176 | 395 | 144 |
| 12 | 2014 | | 626 | | 626 | | 219 | 176 | 395 | -232 |
| 13 | 2015 | | 251 | | 251 | | 219 | 176 | 395 | 144 |
| 14 | 2016 | | 251 | | 251 | | 219 | 176 | 395 | 144 |
| 15 | 2017 | | 251 | | 251 | | 219 | 176 | 395 | 144 |
| 16 | 2018 | | 251 | | 251 | | 219 | 176 | 395 | 144 |
| 17 | 2019 | | 251 | | 251 | | 219 | 176 | 395 | 144 |
| 18 | 2020 | | 251 | | 251 | | 219 | 176 | 395 | 144 |
| 19 | 2021 | | 251 | | 251 | | 219 | 176 | 395 | 144 |
| 20 | 2022 | | 251 | | 251 | | 219 | 176 | 395 | 144 |
| 21 | 2023 | | 251 | | 251 | | 219 | 176 | 395 | 144 |
| 22 | 2024 | | 251 | | 251 | | 219 | 176 | 395 | 144 |
| 23 | 2025 | | 1,253 | | 1,253 | | 219 | 176 | 395 | -858 |
| 24 | 2026 | | 251 | | 251 | | 219 | 176 | 395 | 144 |
| 25 | 2027 | | 251 | | 251 | | 219 | 176 | 395 | 144 |
| 26 | 2028 | | 251 | | 251 | | 219 | 176 | 395 | 144 |
| 27 | 2029 | | 251 | | 251 | | 219 | 176 | 395 | 144 |
| 28 | 2030 | | 626 | | 626 | | 219 | 176 | 395 | -232 |
| 29 | 2031 | | 251 | | 251 | | 219 | 176 | 395 | 144 |
| 30 | 2032 | | 626 | | 626 | | 219 | 176 | 395 | -232 |

Note: /1 All cost except for incinerator is inclusive. The investor promotion cost is inclusive in the other cost.
/2 550,000US$ is the price for the 1 ha lot for 99 years lease. Price examples: 108$/m2 for 50 years lease (Tan Thuan), 29～75 (average 45) $/m2 in Eastern Seaboard of Thailand,
/3 4,500US$ of water charge will be charged annually if 50m3/day (300days operation) is consumed.
/4 OM Charge covers cost for maintenance cost of utilities of FZ except for sewage treatment plant.
7,000US$ of OM charge will be charged annally for 1.0 ha lot factory.

Financial Internal Rate of Return (FIRR) 10.57%

**Table 7.5-4 FIRR of Sihanoukville Port Free Zone Development in case of exclusive of solid disposal---Alternative 2 Case**

(1,000 US$)

| Year | | Expenditure/1 | | | | Revenue | | | | | Balance |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Const. cost | O/M cost | Other cost | Total | Land lease/2 (55.0$/m2) | Water charge/3 (0.30$/m3) | Sewage charge (0.30$/m3) | OM charge/4 (1.00$/m2) | Total | |
| 1 | 2003 | 1,379 | | 3 | 1,382 | | | | | | -1,382 |
| 2 | 2004 | 15,309 | | 32 | 15,341 | | | | | | -15,341 |
| 3 | 2005 | | 310 | 22 | 332 | 3,223 | 44 | 44 | 59 | 3,369 | 3,038 |
| 4 | 2006 | | 411 | | 411 | 9,669 | 175 | 175 | 234 | 10,254 | 9,843 |
| 5 | 2007 | | 445 | | 445 | 3,223 | 219 | 219 | 293 | 3,954 | 3,509 |
| 6 | 2008 | | 445 | | 445 | | 219 | 219 | 293 | 731 | 286 |
| 7 | 2009 | | 445 | | 445 | | 219 | 219 | 293 | 731 | 286 |
| 8 | 2010 | | 445 | | 445 | | 219 | 219 | 293 | 731 | 286 |
| 9 | 2011 | | 445 | | 445 | | 219 | 219 | 293 | 731 | 286 |
| 10 | 2012 | | 445 | | 445 | | 219 | 219 | 293 | 731 | 286 |
| 11 | 2013 | | 445 | | 445 | | 219 | 219 | 293 | 731 | 286 |
| 12 | 2014 | | 445 | | 445 | | 219 | 219 | 293 | 731 | 286 |
| 13 | 2015 | | 721 | | 721 | | 219 | 219 | 293 | 731 | 10 |
| 14 | 2016 | | 445 | | 445 | | 219 | 219 | 293 | 731 | 286 |
| 15 | 2017 | | 445 | | 445 | | 219 | 219 | 293 | 731 | 286 |
| 16 | 2018 | | 445 | | 445 | | 219 | 219 | 293 | 731 | 286 |
| 17 | 2019 | | 445 | | 445 | | 219 | 219 | 293 | 731 | 286 |
| 18 | 2020 | | 445 | | 445 | | 219 | 219 | 293 | 731 | 286 |
| 19 | 2021 | | 445 | | 445 | | 219 | 219 | 293 | 731 | 286 |
| 20 | 2022 | | 445 | | 445 | | 219 | 219 | 293 | 731 | 286 |
| 21 | 2023 | | 445 | | 445 | | 219 | 219 | 293 | 731 | 286 |
| 22 | 2024 | | 445 | | 445 | | 219 | 219 | 293 | 731 | 286 |
| 23 | 2025 | | 1,272 | | 1,272 | | 219 | 219 | 293 | 731 | -541 |
| 24 | 2026 | | 445 | | 445 | | 219 | 219 | 293 | 731 | 286 |
| 25 | 2027 | | 445 | | 445 | | 219 | 219 | 293 | 731 | 286 |
| 26 | 2028 | | 445 | | 445 | | 219 | 219 | 293 | 731 | 286 |
| 27 | 2029 | | 445 | | 445 | | 219 | 219 | 293 | 731 | 286 |
| 28 | 2030 | | 721 | | 721 | | 219 | 219 | 293 | 731 | 10 |
| 29 | 2031 | | 445 | | 445 | | 219 | 219 | 293 | 731 | 286 |
| 30 | 2032 | | 445 | | 445 | | 219 | 219 | 293 | 731 | 286 |

Note: /1 All cost except for incinerator is inclusive. The investor promotion cost is inclusive in the other cost.
/2 550,000US$ is the price for the 1 ha lot for 99 years lease by 55 $/m2 unit price. Price examples: 108$/m2 for 50 years lease (Tan Thuan), 29～75 (average 45) $/m2 in Eastern Seaboard of Thailand,
/3 4,500US$ of water charge will be charged annually if 50m3/day (300days operation) is consumed.
/4 OM Charge includes cost for sewage treatment plant and general maintenance fee. 10,000US$ of OM charge will be charged annally for 1.0 ha lot factory.

Finamcial Internal Rate of Return (FIRR) 6.68%

### 7.5.3 Effects on Poverty Reduction

#### (1) Reduction of Number of Poverty Households

The number of households below the poverty line in and around Sihanoukville is estimated at 147,000 families, or approximately 40% of the total households in 2003, as shown in **Table 7.5-5**.

If no effective measures were taken, poverty households will be increased to approximately 185,000 in 2015, as shown in the table.

**Table 7.5-5 Number of Poverty households in Sihanoukville and neighboring Province**

| | (1) Num of Household /1 | | | | (2) Poverty ratio (%) (1999) | (3) Num of Poverty Household (1)x(2) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2003 | 2008 | 2010 | 2015 | | 2003 | 2008 | 2010 | 2015 |
| Sihanoukville | 36,000 | 44,000 | 48,000 | 57,000 | 23.8 | 9,000 | 10,000 | 11,000 | 14,000 |
| Takaev | 179,000 | 195,000 | 202,000 | 218,000 | 38.6 | 69,000 | 75,000 | 78,000 | 84,000 |
| Kampot | 122,000 | 134,000 | 138,000 | 150,000 | 51.4 | 63,000 | 69,000 | 71,000 | 77,000 |
| Kaoh Kong | 34,000 | 43,000 | 47,000 | 57,000 | 18.3 | 6,000 | 8,000 | 9,000 | 10,000 |
| Total | 371,000 | 416,000 | 435,000 | 482,000 | 39.6 | 147,000 | 162,000 | 169,000 | 185,000 |

Note: /1 Projected assuming population growth rate on the basis of 1998 Census data
/2 Poverty ratio - JBIC Cambodia Poverty Profile, December, 2001
Source: JST

The development of the Sihanoukville Port Free Zone (SPFZ) and Industrial Area will create job opportunities in Sihanoukville. New employments of 4,800, 25,900 and 48,100 are expected in 2008, 2010 and 2015 respectively, during and after the commissioning of the SPFZ and an industrial area on *Site 4* and *Site 6* as shown in **Table 7.5-6**. Most of these employments will require unskilled and semi-skilled labor, for which siblings of poor households with limited education can apply.

**Table 7.5-6 Expected Job Creation by the Development of the Free Zone and Industrial Area in Sihanoukville**

| | | 2003 | 2008 | 2010 | 2015 |
|---|---|---|---|---|---|
| Direct employment | Port Free Zone | | 3,600 | 3,600 | 3,600 |
| | Industrial Area Site 4 | | | 15,900 | 15,900 |
| | Industrial Area Site 6 | | | | 16,700 |
| | subtotal | 0 | 3,600 | 19,500 | 36,200 |
| Indirect employment | Port Free Zone | | 1,200 | 1,200 | 1,200 |
| | Industrial Area Site 4 | | | 5,200 | 5,200 |
| | Industrial Area Site 6 | | | | 5,500 |
| | subtotal | 0 | 1,200 | 6,400 | 11,900 |
| Total | Port Free Zone | | 4,800 | 4,800 | 4,800 |
| | Industrial Area Site 4 | | | 21,100 | 21,100 |
| | Industrial Area Site 6 | | | | 22,200 |
| | Total | 0 | 4,800 | 25,900 | 48,100 |

Source: JST

**Table 7.5-7 Estimation of Indirect Employment induced by the Sihanoukville Port Free Zone**

| | | Indirect Employee |
|---|---|---|
| 1.Business support | | **700** |
| (Factory operation support) | | 300 |
| Engineering consultation | Repairing and spare parts supplying | |
| Construction service, interior design, space plannin | Packaging and cushioning material supplying | |
| Installation of utility | Factory supply service | |
| Electricity and thermal energy outsourcing service | Catering and canteen supply service | |
| Waste management and recycling | | |
| (Logistics support) | | 200 |
| Renting of ready made factories and warehouses | Courier service (domestic and international) | |
| Container operating and storage containers | Customs clearance service, logistics solution service | |
| Transportation and logistic service | | |
| (Software and other support) | | 200 |
| Insurance brokerage and consultancy | Gardening and green plant and flower supplying | |
| Recruitment and management consultancy | Office supply service | |
| IT and office network service | Printing and photocopy service | |
| Vocational training and English school | | |
| 2.Life support | | **500** |
| (Daily life support) | | 300 |
| Hotel, room accommodation and meeting room | Drugstore and retail store of daily life goods | |
| Restaurant | Banking and financial service | |
| Carpentry | Insurance service | |
| Cleaning | Internet service | |
| Taxi and transportation | Nursery | |
| Food and beverage supplying | | |
| (Sports and health support) | | 200 |
| Sports club, golf driving range, tennis court | Leisure and amusement facilities | |
| Swimming pool, marine sports club | Medical office | |
| Fitness center, gum, sauna, aerobic class | | |
| 3 Total | | **1,200** |

Source: JST

The created job opportunities will enhance the livelihood of workers and help decrease the number of households below the poverty line, thus improving the poverty ratio as shown in **Table 7.5-8**. If 50 % of the employees could be recruited from the households below the poverty line in the Free Zone and Industrial Area in Sihanoukville, the poverty ratio in and around Sihanoukville would drop to 33% in 2015 from the present level of 40% in 2003. If 80% of employments were recruited from the poverty household, the poverty ratio would further drop to 30% and the number of poverty households would decrease substantially as shown in **Table 7.5-9**.

**Table 7.5-8 Poverty Ratio Improvement by the Development of the Free Zone and Industrial Area in Sihanoukville**

| Item | 2003 | 2008 | 2010 | 2015 | Remarks |
|---|---|---|---|---|---|
| Num. of poverty household in Sihanoukville, Takaev, Kampot, Kaoh Kong | 147,000 | 162,000 | 169,000 | 185,000 | |
| Job Creation by Free Zone/Industrial Area | 0 | 4,800 | 25,900 | 48,100 | |
| Job Creation for poverty household | 0 | 2,400 | 13,000 | 24,100 | **50%** is assumed to employ from poverty household. |
| Number of poverty household after Free Zone/Industrial Area | 147,000 | 159,600 | 156,000 | 160,900 | |
| Number of household in Sihanoukville, Takaev, Kampot, Kaoh Kong | 371,000 | 416,000 | 435,000 | 482,000 | |
| Poverty Ratio after Free Zone/Industrial Area | 39.6% | 38.4% | 35.9% | 33.4% | |

Source: JST

**Table 7.5-9 Poverty Ratio Improvement in the case where 80% of the Employees come from Poverty Households**

| Item | 2003 | 2008 | 2010 | 2015 | Remarks |
|---|---|---|---|---|---|
| Num. of poverty household in Sihanoukville, Takaev, Kampot, Kaoh Kong | 147,000 | 162,000 | 169,000 | 185,000 | |
| Job Creation by Free Zone/Industrial Area | 0 | 4,800 | 25,900 | 48,100 | |
| Job Creation for poverty household | 0 | 3,800 | 20,700 | 38,500 | **80%** is assumed to employ from poverty household. |
| Number of poverty household after Free Zone/Industrial Area | 147,000 | 158,200 | 148,300 | 146,500 | |
| Number of household in Sihanoukville, Takaev, Kampot, Kaoh Kong | 371,000 | 416,000 | 435,000 | 482,000 | |
| Poverty Ratio after Free Zone/Industrial Area | 39.6% | 38.0% | 34.1% | 30.4% | |

Source: JST

## (2) Improvement of Household Income by Salary

The expenditure of the members of a poverty household is estimated at less than Riels 1,800 per day per capita in the rural area of Cambodia, equivalent to 70 US$ per month per household as shown in **Table 7.5-10**.

**Table 7.5-10 Poverty Line Index (expenditure) in Cambodia**

| | | Rural | Phnom Penh | Other Urban |
|---|---|---|---|---|
| (Riels/day/capita) /1 | Food | 1,379 | 1,737 | 1,583 |
| | Commodity | 398 | 733 | 510 |
| | Total | 1,777 | 2,470 | 2,093 |
| (US$/month/household) /2 | Food | 54.1 | 68.1 | 62.1 |
| | Commodity | 15.6 | 28.8 | 20.0 |
| | Total | 69.7 | 96.9 | 82.1 |

Note: 1$=3,900 Riels as of 1999, 5.2 persons /household, 1month=30days
After price adjustment of the data from "A Poverty Profile of Cambodia, 1997, Ministry of F
Source: /1 JBIC Cambodia Poverty Profile, December 2001 /2 JST

Considering the monthly salary of workers in FDI enterprise in the Free Zone/Industrial Area in Sihanoukville will be US$60-70 per month, the salary of one person in the family will almost cover the expenditure of the household[11].

In order to materialize this, a matter to be discussed is whether members of poverty households can find employment in FDI enterprises or not. The basic skill training and establishment of a job finding system for uneducated poor household members will be a key to the poverty reduction.

Though significant progress has been made in expanding access to primary and secondary schooling by the efforts of the Ministry of Education, Youth and Sports[12] to help the engagement of poverty household members in FDI employment, further input aiming at 100 % enrollment in the primary and secondary schools and improvement of enrollment in upper grade education for vocational training shall be necessary.

A new announcement system for the recruitment of workers should be established to provide equal and transparent accessibility to the job opportunities for poverty households in the rural area. Notification of job information from FDI enterprises to schools and vocational training centers through the one-stop service in the SPFZ, for instance, will be an effective measure in this regard.

## 7.6 INITIAL ENVIRONMENTAL EVALUATION ON THE SIHANOUKVILLE PORT FREE ZONE

### 7.6.1 Examination Items for Initial Environmental Evaluation

An Initial Environmental Evaluation (IEE) examines environmental aspects that may be affected directly or indirectly by the project during the construction and operation phases. The screening and scoping were carried out on the specific environmental aspects that will be potentially affected by the project, comprising 19 items. The results of the scoping are shown in **Table 7.6-1**.

This IEE was conducted following the Sub-Decree on Environmental Impact Assessment Process of the MOE and the Environmental Guidelines for Infrastructure Projects (Volume X: Regional Development) published by JICA. The main objective of IEE is to evaluate whether an Environmental Impact Assessment (EIA) is necessary for a project in the subsequent stage, and to define its contents if necessary.

[11] Current monthly income of the poorest households in the rural areas is estimated at 22 US$ (16,583 Riels per capita per month). This could be increased to a total household income of 80 – 90 US$ by adding the salary from the FDI enterprises, which can bring them above the poverty line.
[12] Enrollment for primary school in Cambodia was 90.0% in 2001.

**Table 7.6-1 Results of Scoping for Examination Items**

| Major Facilities / Activities | | Resources, Industry, Energy, Urban, Tourism, Transport, Road, Railway, Port/Harbor, Airport Development | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Activities which may cause impacts / Environmental Items | | Overall Evaluation | Construction Phase (include pre-construction Phase) | | After Operation | | | |
| | | | Reclamation and Spatial Occupancy | Operation of Construction Equipment and Vehicles | Spatial Occupancy | Operation of Vehicles, Ships and Airplanes | Operation and Maintenance of Associated Facilities | Accumulation of People and Goods |
| Social Environment | 1 Resettlement | A | A | | | | | |
| | 2 Economic Activities | B | B | | B | | | C |
| | 3 Traffic and Public Facilities | B | | B | B | B | | C |
| | 4 Split of Communities | B | B | | B | | | |
| | 5 Cultural Property | | | | | | | |
| | 6 Water Rights and Rights of Common | B | B | | B | | | |
| | 7 Public Health Condition | C | | C | | C | C | C |
| | 8 Waste | B | C | | | | B | B |
| | 9 Hazards (Risk) | C | C | | | | | |
| Natural Environment | 10 Topography and Geology | | | | | | | |
| | 11 Soil Erosion | C | C | | | | | |
| | 12 Groundwater | B | | C | | | B | C |
| | 13 Hydrological Situation | | | | | | | |
| | 14 Coastal Zone | B | C | | | | B | |
| | 15 Fauna and Flora | B | C | | | | B | |
| | 16 Meteorology | | | | | | | |
| | 17 Landscape | B | C | | A | | | |
| Pollution | 18 Air Pollution | B | C | C | | | B | |
| | 19 Water Pollution | B | C | | | | B | B |
| | 20 Soil Contamination | C | C | | | | C | |
| | 21 Noise and Vibration | B | | B | | | C | |
| | 22 Land Subsidence | C | | | | | C | C |
| | 23 Offensive Odor | C | | | | | C | C |

Note : Evaluation categories:
A: Serious negative impact is expected
B: Some negative impact is expected
C: Extent of impact is unknown (Examination is needed. Impacts may become clear as study progresses.).
No Mark: The environmental items requiring no impact assessment since the anticipated impacts are, **in general,** not significant.

## 7.6.2 Summary of the impact mitigation measures

The mitigation measures for environmental protection were identified to make sure that the development of the project should be planned in such a way as to provide society with sufficient prevention/mitigation measures for possible negative impacts, while securing sustainable development in the project affected areas. The prevention/mitigation measures should be taken to maintain and enhance the livelihood of the residents influenced by the project, and, to maintain harmony with the natural environment, while avoiding significant damage to the existing environment, and preserve valuable natural environmental assets. The prevention/mitigation measures to each environmental item, as shown in **Table 7.6-2,** are required as part of the subsequent detailed feasibility or detailed design efforts.

The following sections outline the possible impacts in the construction and operation phases, and proposed monitoring scheme.

### 7.6.3 Evaluation of Impact during Construction Phase

#### (1) Impact on Social Environment

*1) Impact by Resettlement*

The construction of the Sihanoukville Port Free Zone (SPFZ) will require resettlement of houses within and adjacent[13] to the SPFZ site. It is reported that 138 families in total had agreed to resettlement to a property of 2 to 2.5 ha next to the site. Most of the families belong to Tumnob Rolok village. The PAS is planning to provide the re-settler with a 4 m x 6 m wooden house constructed on a parcel of land 10 m x 15 m as compensation. The PAS has plans to develop infrastructure in the resettled land.

The following points were identified in this IEE that need to be further clarified in an EIA: criteria for the entitlement on compensation, detailed scheme of compensation, and infrastructure development plans for the substitute area. Updated information regarding the resettlement as of April 2003 was collected as shown below box.

Information from the hearing

A large change in plan of the PAS regarding the resettlement occurred in February in 2003, and as a result of the change, all families having houses inside the land for SPFZ agreed to move out and actually moved out, then their houses were pulled down for land preparation for the Free Zone.

The investigation for clarification was carried out and found that 37 families were living within the SPFZ site surrounded with wire fences. Most of the 37 families had their own business outside of the site. Then, the PAS developed a new resettlement plan which acknowledged the 37 families as subject to resettlement and compensation. The new plan, differs from the previous plan's inclusion of the houses located in the right-of-way where was not inside the SPFZ site because the ownership of the right-of-way is held by either the Governor of Sihanoukville municipality or the national railway company.

PAS compensated all the 37 families by money even though the families had alternative to receive it by a house with land. Documents for the agreement and their receiving the compensation money were made and kept.

Source Interview for Marketing Director of Port Authority

[13] Clear explanations as to why the houses adjacent to the SPFZ that are in the right-of-way, are subject for the resettlement and will be compensated by the PAS have not been provided by the PAS.

Prior to resettlement

- Location of the houses to be resettled and entitled to compensation has not been clearly identified.
- Number of population subject to resettlement has not been determined.
- The cut-off date for the entitlement has not been clarified.
- How the present sizes of the house and land will be reflected in the content of compensation
- Whether the compensation could restore present level of income of the families to be resettled, particularly those with shops or businesses
- How to deal with households who came into the site after the "cut-off date", i.e., the plans and measures to dealt with them.

After the resettlement

- Plans for providing infrastructure in the relocation land, particularly water supply[14] by the PAS, particularly, on the timing and the budget

Supplementary information for deciding the necessity of the EIA regarding the above points is included in **Appendix L**. Further detailed information regarding the basic socio-economic situation of the community to be resettled is also included in **Appendix G**.

*2) Impact on Economic Activities*

138 families to be resettled

Most of the 138 families to be resettled engage in fishing for their livelihood, and family members are working as fishery laborers for fishing boats moored at the fishing port in Tumnob Rolok village. Also, some of them work to classify and pack the catch in this port area. Considering the short distance from the resettlement area to the fishing port, the magnitude of possible impact from the proposed plan will be limited during the construction phase, if appropriate measures are taken in order to avoid any impact on fish population. Updated information regarding the resettlement as of April 2003 was collected please read a box below.

Some families engage in small businesses in their houses, though the exact number has not been clarified. The compensation should enable them to restore their level of income to the same as before the project. An EIA needs to be conducted to assess the impact of resettlement on families running small businesses and consider the appropriate measures to prevent impact.

[14] Basic infrastructure in the land to be provided were said to have been prepared by the PAS, but the PAS water supply development plan requires more clarification, particularly, on the timing and budget, since resettlement will be finished by the end of 2003.

Other families

The structure of economic activities of families in Tumnob Rolok and Phum Tamei villages who are not subject to resettlement is similar to those subject to resettlement, but a larger number of people operate small businesses, such as grocery shops, tailors, car repair shop, bars, etc[15]. In addition, there is a small market in each village. These small businesses would not be subject to negative impacts during the construction phase, if appropriate preventive measures were taken to prevent dust, noise, and waste and to accommodate the increased traffic.

*3) Traffic and Public Facilities*

A school named Sakura School with 2,200 students is located along Samdech Hun Sen Drive/Tumnob Rolok Street in Tumnob Rolok village[16]. The distance from this school to the north end of the Sihanoukville Port Free Zone (SPFZ) site is about a hundreds meters. Since this school provides both primary and junior high school education, children from other villages and communes attend school there. It is anticipated that there will be a possibility that these school children as well as nearby residents will face a nuisance or danger of traffic accidents during the construction with increased traffic and possible congestion.

No public facilities are located in the proposed SPFZ site, but near the north end of the site are some public facilities, such as the Military Police Post, the Immigration Office, the Custom and Excise Office. Employees and visitors of the facilities offices may be influenced by the increase in traffic. Appropriate measures for traffic control should be taken to prevent traffic accidents and traffic congestion.

*4) Split of Communities*

Some of people to be resettled to the substitute site near Phum Tamei village live in Tumnob Rolok now and work at a fishery port in Tumnob Rolok village. Shutting-down of a small road connecting Samdech Hun Sen Drive/Tumnob Rolok Street and the road along the national railway during the construction phase would require them to use another road along the northern end of the proposed SPFZ site. A necessary route should be secured for them by taking appropriate measures to control traffic of construction vehicles and to improve the condition of the route.

*5) Water Rights and Rights of Common*

There are at least two water sources for residents near the project site; an open spring in the east of the National Railroad near the north end of the project site and private wells located in the right-of-way adjoining SPFZ site. Water from the spring is in part directly consumed by people living nearby, and pumped to the central area of Tumnob Rolok village for sale. The number of the residents who purchase the

[15] For more details, please refer the section for 2) Impact on Economic Activities and Appendix L.
[16] This school has been supported by a Japanese NGO (Rotary Clubs) and the Japanese Embassy of Cambodia.

pumped spring water is unknown. From a private well existing in the right-of-way adjoining the SPFZ site, water is pumped-up and sent to the nearby houses.

An alternative water supply system for the residents needs to be established if the construction work will damage the present systems.

Fishing rights

The people engaged in fishery amongst the 138 families were said to have fishing rights. Some of fishermen living in Tumnob Rolok also have fishing rights. During the construction of the Sihanoukville Port Free Zone (SPFZ), their fishing rights will not be disrupted.

*6) Public Health Conditions*

Health statistic data for the people in and near the project site are not available, but it is presumed that diarrhea is common due to a shortage of sanitary toilets and potable drinking water. Should the present level of water supply not be available due to the construction, incidence of diarrhea would likely to increase in the nearby villages. Therefore, the present level of water supply needs to be secured during the construction.

The incidence of HIV infection may be increased during the construction. The present ratio of HIV among commercial sex workers in Sihanoukville was 22 per cent in 2000[17]. During the construction of SPFZ, construction workers who frequent sex shops at Phum Tamei may resultantly increase the incidence of HIV infection[18]. In addition, the Provincial Health Department, the Governor's Office, military and the Police in Sihanoukville with assistance of donor agencies and NGOs collaborated to promote "100 per cent condom use" in the sex industry in the province including Phum Tamei and had attained successes[19]. Thus, an EIA should be implemented to assess the impact on HIV infection during the construction phase and find mitigation measures.

*7) Impact by Waste*

In the proposed SPFZ plan, a large volume of construction waste, such as demolition waste, debris and surplus soils, will be generated. If these construction wastes were disposed of without appropriate management, it would lead either to illegal dumping into the sea or leftover waste, resulting in soil and water contamination. To prevent this, an adequate waste collection system should be established before the construction starts with careful planning and management.

[17] Sihanoukville Provincial Health Department, 2001.
[18] During the construction of "Sihanoukville Port Urgent Rehabilitation Project", JBIC has been implementing preventive activities against HIV under their Special Assistance for Project Implementation (SAPI) of the project.
[19] Prior to the begging of the promotion, the ratio of people with HIV among the direct CSWs in Sihanoukville was 57.3 per cent, but decreased to 22 per cent in 2000.

The collected waste should be disposed of in the designated landfill site. As the existing landfill site has 8 ha of land area, of which 7 ha is not used yet, the site has enough capacity to accommodate construction waste from SPFZ. Since the present landfill site is not a controlled type, the impact of the construction waste disposal on the surrounding environment and countermeasures needs to be studied in an EIA. If a serious negative impact is found in the EIA, the project proponent will be required to secure an adequate disposal site with proper disposal measures.

As Sihanoukville Municipality consigns waste collection to a private waste service company and the private company owns dumping site in Sihanoukville, the project proponents may be required to conclude a contract with the private company for the collection and disposal of construction waste.

*8) Impacts from Hazardous/toxic Material*

Special attention should be paid if hazardous/toxic materials should be used for the site construction. In that case, an appropriate management system for storage and handling of hazardous/toxic materials need to be established to prevent the materials from mixing with rainwater and flowing into the Kampong Som Bay.

**(2) Impact on Natural Environment**

*1) Impact on Soil Erosion*

About 70% of the project site is covered by shrubs or plants at present, which will be removed in the process of reclamation. Therefore, topsoil will be more vulnerable to erosion. To prevent this, measures need to be taken to control soil erosion.

*2) Impact on Groundwater*

The water is scarce and the water supply services are limited in Sihanoukville. A large number of households utilize water from shallow wells (Mitapheap District has 28 wells located in four communes in the municipal center), while factories and facilities including the Port of Sihanoukville have their own deep wells.

The houses in and adjacent to the project area depend for their water supply mainly on shallow wells and a groundwater spring located along the railroad in the west of the project site. Shallow wells tend to be influenced by intrusion of turbid water caused by land preparation activities. Appropriate measures need to be taken to prevent deterioration of water quality of the water sources and in the groundwater.

The proposed plan includes drilling of six 100m deep wells. The drilling may alter the characteristics of the aquifer and cause disruption in the availability of groundwater. In addition, there is a possibility of seawater intrusion into the aquifer as the project site is close to the sea. As no comprehensive study on the groundwater aquifers in Sihanoukville has been conducted, an EIA will be required to study groundwater conditions and the impact of drilling of wells.

*3) Impact on Coastal Zone*

According to the study conducted by DANIDA, 36 kinds of coral reefs are observed in the islands and estuaries in Sihanoukville. Locations of coral reefs in Sihanoukville are shown in **Figure 7.6-1**, the nearest of which is about 5km southwest of the project site（detailed descriptions of the location and conditions are shown in Appendix L）. Mangrove forest is also observed in Sihanoukville, but all are outside of a 10km radius from the project area. Some white sandy beaches are located along the Kampong Som Bay, and the number of both domestic and international tourists visiting Sihanoukville is increasing year by year. Offshore of Kampong Som Bay are some good fishing points, and there are 1,120 fishing boats operating in Sihanoukville.

It is anticipated that the impact of the project on coastal erosion and change of vegetation will be limited to the construction stage, but it is necessary to devise proper measures for land preparation and facilities construction in order to minimize the impact on the coastal zone.

*4) Impact on Fauna and Flora*

Based on the interview with the director of the Department of Environment and on the field survey conducted by the JICA study team, it is concluded that there are no natural habitats for rare or endangered species of plants or animals on the project site.

The Ream National Park is located about 20km southeast of the project site, where a variety of habitats including extensive mangrove areas exist with their own characteristic wildlife communities. Sea grass beds and coral reefs are found along the coastline of the mainland and islands in the park. Considering the distance from the project site, it is anticipated that the impact of the project on the national park will be small at the construction stage.


Source: State of Environment Report Sihanoukville, April 2002, MOE & Danida

**Figure 7.6-1 Location of Coral Reefs and Sea Grasses in Sihanoukville**

*5) Impact on Landscape*

There are five main beaches near the municipal center of Sihanoukville with high quality white sand; Victory Beach, Hawaii Beach, Independence Beach, Sokha Beach and Ochheuteal Beach. Offshore the municipality also maintains numerous islands with unspoiled beaches.

The project site will not be seen from these beaches and islands. It will be seen, however, on the National Road No. 4 between the Klang leu Market and the corner to the Mittapheap Kampuchea Soviet Street, where most of the tourists pass to come into the resort area. Some measures, such as concealment with indigenous tree lining, need to be considered.

**(3) Impact by Pollution**

*1) Impact by Air Pollution*

Exhaust gas and dust will be emitted or produced from the construction equipment and vehicles for land preparation and facility construction. Dust will also be generated in the land preparation due to bare land exposure. The exhaust gas and dust will disperse by periodic gentle winds and may be precipitated by heavy rain during the rainy season.

Appropriate measures should be taken in the dry season for dust control, such as sprinkling water, to mitigate negative effects on residents, especially children. Caution needs to be exercised regarding the effects to a junior high school and two elementarily schools located just the north and south of the project site.

Trucks carrying construction materials will pass over National Road No.4, which directly connects to the project site without passing though the urban central area. Therefore, the impact of exhaust gas from the trucks will be limited

*2) Impacts potentially causing Water Pollution*

If hazardous/toxic materials will be used during the construction stage, an appropriate management system for storage and handling of hazardous/toxic materials need to be established to prevent the materials from mixing with rainwater and flowing into the Kampong Som Bay.

*3) Impacts potentially causing Soil Contamination*

Possible contamination from construction materials and soils used for land preparation should be checked in advance. The seabed soil near the project site contains several chemical substances and may cause pollution[20]. When the seabed soil is used for land preparation, it should be carefully checked.

Construction waste including toxic/hazardous substance should be disposed of with appropriate measures to avoid soil contamination. If disposed of in a landfill, leakage or penetration of the waste to the ground should be prevented by setting waterproof shielding.

[20] According to the JICA report of the study on the master planning and feasibility study of the Sihanoukville Port.

*4) Impact by Noise and Vibration*

As about 10,000 people (including the people listed on the resettlement plan) live in two villages (Tumnob Rolok and Phum Tamei) near the project site, and there are three schools (in two locations) nearby, noise and vibration generated in the operation of heavy construction equipment and vehicles for land preparation and construction of facilities/factories shall be duly controlled. Noise and vibration may lead to health hazards for the residents if they continue over a long period of time. Thus scheduling/planning/management of construction and working hours should be carefully considered. Depending on the foreseen conditions, installation of sound insulation walls and a buffer zone need to be considered, particularly for the schools.

### 7.6.4 Evaluation of Impacts During Operation

#### (1) Impact on the Social Environment

*1) Impact on Economic Activities*

Tumnob Rolok village is one of the two villages nearest the Sihanoukville Port Free Zone (SPFZ) site, and one of the biggest fishing communities in Sihanoukville municipality. It has recorded the largest marine catch among the Cambodian coastal provinces. The shore in this village is regarded to be good to moor fishing boats because of moderate wave action within the surrounding breakwater and the proximity to good fishing points[21]. The fishermen in Tonob Rolok village catch squid, shrimp and small size fish all year round on small and medium fishing boats. Large and expensive fish, crabs, and shrimps are often sold to Thai fishing boats offshore. Some people own big fishing boats, but many people are working as fishery laborers employed by boat owners. Thus villages near the SPFZ have attracted poor, unskilled people from rural areas of other provinces looking for more rewarding jobs than agriculture,[22] and the population of Tumnob Rolok village has expanded rapidly. An NGO conducts training for street children and those victimized by trafficking to become fishermen at Tumnob Rolok village.

Yet, Tumnob Rolok village has been regarded as one of the poor villages in Sihanoukville[23]. This could be attributed to the fact that some of the people who flowed in the village have ended up becoming poorly paid daily-wage port workers or construction workers.

Phum Tamei village which adjoins the FZ site, has been serving as a village for fishermen who work for the fishing boats of Tumnob Rolok village, although it has also been known as the biggest red light area in Sihanoukville

[21] For the detailed number of people engaging in fishing, please see 7.6.3 Impact on Coastal Zone.
[22] The daily income for a fishery laborer of the village is generally from Riels 10,000 to 20,000, much higher than the income for agricultural daily wage laborers, from Riels 4,000 to 5,000.
[23] Hearing from Provincial Department of Social Affairs, Labor, Vocational Training, Youth Rehabilitation in Sihanoukville.

It is a concern that wastewater from the factories in the Sihanoukville Port Free Zone (SPFZ) may cause negative impacts on fishery, on which the economies of the two villages heavily depend, and consequently influence the livelihood of people engaged in fishery or require the fishermen to change their current fishing areas. Damage to the fishery would also affect the economy of Phun Tamei village. Poorer people of the two villages earning income on a daily basis from fishery are particularly vulnerable to the impact. Therefore, an EIA should be implemented to assess the impact on the fishery resources and the catch.

*2) Traffic and Public Facilities*

Operation of the SPFZ will increase traffic in nearby areas, which will cause the same type of problems to the school children, nearby residents, workers and visitors as in the construction phase. In addition, traffic congestion on Samdech Hun Sen Drive/Tumnob Rolok Street may occur. Therefore, appropriate measures for traffic control should be taken to prevent traffic accident and traffic congestion.

*3) Split of Communities*

Shutting-down of the small road mentioned in **Subsection 7.6.3** would require the local residents to use an alternative route along the northern end of the SPFZ. Their movement by the alternative routes should be secured by taking measures to control transportation of vehicles for the operation and improving the condition of the road.

*4) Public Health Conditions*

The number of workers at factories in the SPFZ is estimated to be 3,600, most in the reproductive age. Considering the density of workers in the SPFZ, caution will be necessary with respect to diarrhea and infectious diseases including dysentery and cholera and respiratory diseases. This will require provision of appropriate facilities such as a water supply system, sanitary toilets and a drainage system, and offering health education to the workers in the SPFZ. Considering their age, they will be highly vulnerable to HIV infection. Therefore, the EIA will be required to assess the vulnerability of workers to HIV/AIDS by age groups and gender, and to design appropriate health education on HIV/AIDS.

*5) Impacts from Waste*

According to the plan of the SPFZ, in all 37 factories are expected to operate. The estimated amount of waste from the SPFZ is about 9.4 tons/day, of which 2.3 tons/day is sludge and 0.051 kg/day is toxic waste. Special attention should be paid to the waste from the factories that deal with toxic/hazardous substances; garment related factories with dying processes (possibility of Cr in sludge), drugs and pharmaceutical factories (possibility of Cr, Hg, As, Pb, CN in sludge), rubber products factories (possibility of Cr in sludge and waste) and electrical appliance factories (possibility of Hr, F, Cu, W in sludge and waste). Each factory will be

responsible for the management and control of toxic/hazardous wastes under the proposed plan. Therefore, the factories with a conceivable possibility to discharge toxic/hazardous waste should be required to set up an adequate treatment system to comply with the toxic/hazardous substances related laws and regulations. The project proponent should also be required to effectively and strictly supervise relevant factories.

The existing landfill site is not a controlled type and is not suitable for toxic waste disposal. Construction of a controlled landfill site will thus be required, which is part of the project proposal. If the existing landfill site is renovated to a controlled landfill and properly managed, the impact form the waste discharged from the Sihanoukville Port Free Zone (SPFZ) will be mitigated.

The proposed SPFZ plan also recommends possession of a truck for waste collection and construction of waste collection facilities. In addition, the project proponents should establish an appropriate waste management system specific to the SPFZ for adequate waste collection and disposal.

**(2) Impacts on the Natural Environment**

*1) Impacts on Groundwater*

When the operation of the planned six deep wells with a capacity of 450 $m^3$/day each (total 2,700 $m^3$/day) begins, pumping of water may affect the groundwater use near the project area with a possible lowering of the groundwater table and disruption to yields at nearby wells. In addition, possible lowering of the groundwater table may cause land subsidence in the alluvial and clayey soil layers.

Therefore, an EIA needs to be conducted to study the impact of the pumping of groundwater, including a hydro-geological survey (groundwater capacity) and pumping test.

*2) Impact on the Coastal Zone*

During the project operation, some of factors, such as industrial wastewater, may have an impact on the coastal zone, with possible damage to marine resources and a change in the vegetation of the coast. It will be difficult to accurately anticipate the impacts and to consider appropriate prevention measures without an extensive survey on the existing natural conditions in the coastal zone. A survey on natural conditions will also be required for simulation of the impact of wastewater. Therefore, an EIA will be required to study the natural conditions of the coastal zone.

*3) Impacts on Fauna and Flora*

Some negative impacts on the fauna and flora in the coastal zone are expected after the operation of the project commences. Special attention should be paid to coral reefs and mangrove forests in the coastal zone to prevent destruction of these species.

Information on location and condition of the coral reefs and mangrove forests are shown in **Fig.7.6-1**. But, it is difficult to accurately anticipate the impacts from the project on the coral reefs, mangrove forests and other marine resource at the IEE stage. Therefore, an EIA is required to study the impacts from the project, especially the impact of wastewater from the project site on fauna and flora.

*4) Impacts on the Landscape*

As mentioned earlier, the project site will be seen from the road leading to the resort area, and there is a possibility that tourists may have a glimpse of smoke emitting from the factories once the operation of factories started.

In order to mitigate the possible negative impact on the image of Sihanoukville as a resort city, a study on the impact on landscaping of the SPFZ appropriate for a resort city will be necessary in an EIA. If substantial impact on tourist attraction is expected to accrue, appropriate measures need to be taken to mitigate the impact.

**(3) Impacts from Pollution**

*1) Impacts from Air Pollution*

When the 39 factories and related facilities including a power plant start operation, the concentration of pollutants and hazardous waste in the emission gas from each factory and the power plant should be kept below the standard designated by the Sub-Decree on Air Pollution Control and Noise Disturbance. The factory owner should be responsible for compliance with the Sub-Decree, while the project proponent should have a responsibility to supervise the pollution control.

The pollutants such as SOx, NOx, CO and small particulate matter (SPM) will be emitted from the factories. As is not certain that the ambient air quality around the project site will comply with the standard, an EIA needs to be conducted to study such factors as wind direction, wind speed, atmospheric stability and to simulate the atmospheric dispersion of pollutants.

Special attention should be paid to the emission gas from the power station, as an elementary school is located nearby. Thus, desulfurization measures, such as installing scrubbers, may need to be considered.

Traffic volume will increase with expansion of goods/materials distribution following the commencement of factory operation. Measures need to be taken if necessary to mitigate negative impact on the public health of the residents living in the area surrounding the project site.

*2) Impacts from Water Pollution*

During operation, wastewater will be discharged from factories. The estimated total pollution loads are 800 kg/day of BOD and 760 kg/day of Suspended Solids (SS). A wastewater treatment plant will be constructed in the Sihanoukville Port Free Zone (SPFZ). The quality of treated water is planned to comply with the standard set by the Sub-Decree on Water Pollution Control. The treated wastewater will be discharged into the Kampong Som Bay outside of the breakwater to avoid stagnation in the Bay. Although the discharged treated wastewater is anticipated to disperse, it still has a possibility to cause some negative impacts on marine resources (including coral reefs and mangrove forests), fishery and tourism resources.

To assess the impacts from the treated wastewater from the SPFZ, an EIA needs to be conducted to simulate wastewater dispersion, and to study the impacts on the natural condition of the coastal sea and ecosystem of marine resources. If substantial negative impacts are anticipated, appropriate measures will be undertaken, such as monitoring and/or reinforcement of the effluent standard for discharging wastewater.

Factories that use toxic/hazardous substances should be obliged to install a pre-treatment system to remove the toxic/hazardous substances before the wastewater is transmitted to the wastewater treatment plant.

Coarse substances contained in storm water will be removed before the storm water flows into the Kampong Som Bay in a sand sedimentation pond as proposed in the plan.

*3) Impacts from Soil Contamination*

Some of factories in the planned FZ may use toxic/hazardous substances in their manufacturing process. Leakage and penetration of the toxic/hazardous substances from the factory may lead to groundwater or seawater contamination.

To prevent this, factories using toxic/hazardous substances in the SPFZ should be required to strictly control the substances and set up an adequate treatment system to comply with the toxic/hazardous substances related sub-decrees.

*4) Impacts from Noise and Vibration*

The factories should be required to comply with maximum permitted noise levels in the public and residential areas designated by the Sub-Decree on Air Pollution Control and Noise Disturbance. Additionally, appropriate measures need to be taken to prevent noise pollution in the FZ, as necessary, such as installation of sound insulation walls or buffer zones, which needs to be considered in the area adjacent to the schools.

*5) Impacts from Land Subsidence*

Pumping of ground water may not only lower the groundwater table, but also cause land subsidence in the alluvial and clayey soil areas. An EIA needs to be conducted to study the impacts of pumping the planned amount of groundwater, including a hydro-geological survey (groundwater capacity) and pumping tests. If serious negative impacts are foreseen, the present water supply planning based on ground water should be reconsidered.

*6) Impacts from Offensive Odors*

The factories, particularly food processing, the power plant and a sewage treatment plant may generate offensive odors. The emission gas and odor from the factories/plants needs to be carefully examined to avoid substantial impacts on residents, particularly the three schools (in two locations) located nearby.

### 7.6.5 Environmental Monitoring Plan

An Environmental Monitoring Plan will be carried out throughout the period of the project (pre-construction; construction; and operation & maintenance stages). The relevant unit of CAPZA for monitoring the project will be responsible for the monitoring, and will make a performance report. Monthly monitoring progress reports will be completed and submitted to the managing authority during construction phase of the project.

Environmental-monitoring reports should at least provide information regarding the surface water quality, transportation of construction material, traffic control as well as other construction activities in the Sihanoukville Port Free Zone (SPFZ), as shown below.

A. Surface Water Quality
a) Test parameter

| | |
|---|---|
| Depth | meter |
| Temperature | °C |
| pH | |
| Conductivity | □S |
| Turbidity | NTU |
| DO | mg/l |
| Oil content | mg/l |
| BOD | mg/l |
| COD | mg/l |
| Total Nitrogen | mg/l |

b) Frequency
During construction and O & M periods
Every 2 months of the construction period and
Every 6 months of the O&M Period
c) Responsible Agency
Authority Port of Sihanoukville and the Department of Environment

B. Hydrology and Drainage Pattern
a) Test parameter
Depth of water upstream of the railway meter
Drainage flow capacity (measure outlet to the sea) $m^3/s$
b) Frequency
During construction and O & M periods
Every wet season of the construction and O&M period
c) Responsible Agency
Authority Port of Sihanoukville and the Department of Water resources and Meteorology

C. Transportation of Construction Material
a) Parameter
Dust control
Timing control
Noise control
b) Frequency
During construction and O&M period
Every day of the construction period
Every day of the O&M period
c) Responsible Agency
Site construction supervision engineer during construction phase and
APS and the local authority in O&M phase

D. Traffic Control
a) Parameter
Traffic signs
Site attention signs
b) Frequency
During construction and O&M period
Every day of the construction period
c) Responsible Agency
Local Traffic police and APS

**Table 7.6-2 Summary of Impact Mitigation Measures**

| Environmental Items | Mitigation measures |
|---|---|
| **Pre-Construction and Construction phase** | |
| 1. Resettlement | ・ Establishment of appropriate resettlement plan |
| 2. Traffic and Public Facilities | ・ Proper traffic management and control<br>・ Time arrangement for construction |
| 3. Split of Communities | ・ Securing of alternative route with appropriate traffic control |
| 4. Water Rights and Rights of Common | ・ Establishement of alternative water supply system for the residents near the project site |
| 5. Public Health Conditions | ・ Providing education on sanitaion and HIV infection to residents and construction workers<br>・ Construction of tremporary latrines for construction staff and workers. |
| 6. Waste | ・ Appropriate construction waste management/disposal |
| 7. Hazards | ・ Properly designedstorm water drainage<br>・ Measures to reduce coarse substances flowing into the Port<br>・ Appropriate management of hazardous/toxic and flammable substances |
| 8. Soil Erosion | ・ Using proper compacting methodology and machinery<br>・ Land prepartion should be done in the dry season as much as possible |
| 9. Groundwater | ・ Proper measures for Prevention of groundwater contamination |
| 10. Costal Zone | ・ Proper measures for land preparation and facility construction |
| 11. Fauna and Flora | ・ Proper measures for land preparation and facility construction |
| 12. Landscape | ・ Indigenous tree planting to mitigate negative asthetic impacts on tourists |
| 13. Air pollution | ・ Properly covering of construction material<br>・ Sprinkle of roads in project affected area |
| 14. Water Pollution | ・ Control of soil erosion<br>・ Proper management of toxic/hazardous substances and construction machinery |
| 15. Noise and vibration | ・ Assure the construction equipment is in good condition to minimize noise and vibration<br>・ Appropriate construction schedule/planning/management<br>・ Any construction works will be executed in the daytime.<br>・ Installation of acoustic wall or buffer zones if necessary |
| **After Operation Commences** | |
| 1. Traffic and Public Facilites | ・ Enlarge entrance road to the FZ<br>・ Proper traffic management and control |
| 2. Split of Communities | ・ Securing of alternative route with appropriate traffic control |
| 3. Public Health Conditions | ・ Providing education on sanitaion and HIV infection to residents and FZ staff/employees |
| 4. Waste | ・ Establishment of appropriate waste collection system<br>・ Construction of controlled landfill site |
| 5. Coastal Zone | ・ Construction of wastewater treatment plant<br>・ Effective supervision for each pollution source<br>・ Establishment of appropriate waste collection system |
| 6. Flora and Fauna | ・ Construction of wastewater treatment plant<br>・ Effective supervision for each potential pollution source<br>・ Establishment of an adequate waste collection system<br>・ Establishment of appropriate waste collection system |
| 7. Air Pollution | ・ Appropriate supervision on air pollution control<br>・ Installation of pollution prevention equipment if necessary<br>・ Regularl checks of vehicles and associated facilities for reduction of toxic gas emission |
| 8. Water pollution | ・ Construction of wastewater treatment plant<br>・ Regular monitoring of wastewater at outlet of the wastewater treatment plant.<br>・ Appropriate superviion on wastewater control |
| 9. Noise and Vibration | ・ Installation of acoustic wall or buffer zones if necessary |

### 7.6.6 Conclusion

The screening/scoping process and an examination of potential environmental impacts have indicated that some adverse impacts are likely to occur as a result of the project construction and operation. Most of the anticipated negative impacts caused by the project could be minimized if the mitigation measures mentioned in Table 7.6-2 can be taken, and many of the mitigation measures have already been incorporated into the project plan. However, further study for environmental impact assessment (EIA) is required for the items shown in Table 7.6-3 at the detailed design stage.

**Table 7.6-3 Environmental items to be implemented EIA**

| Phase | Category | Items | Contents |
|---|---|---|---|
| Construction Phase | Social Environment | Resettlement | ・the entitlement on the conpensation<br>・the detail of the compensation<br>・the infrastructure development plan for the resettlement area |
| | | Economic Activities | ・the impact of resettlement on families running small businesses |
| | | Public Health Condition | ・the impact on HIV infection |
| | | Waste | ・the impactof the construction waste dispasal to the existing landfill site |
| | Natural Environment | Groundwater | ・groundwater condition and the impact of drilling for deep wells |
| After Operation | Social Environment | Economic Activities | ・the impact on fishery resources and fish catch |
| | Natural Environment | Groundwater | ・hydoro-geological survey (groundwater capacity)<br>・pumping test |
| | | Coastal Zone | ・ the detail of natural condition of coastal zone |
| | | Flora and Fauna | ・the impact of wastewater on marine ecosystem |
| | | Landscape | ・the impact on tourism by taking contingent valuation method |
| | Pollution | Air Pollution | ・wind direction, wind speed and atmospharic stability<br>・simulation of the atmospheric dispersion of pollutants |
| | | Water Pollution | ・simulation of wastewater dispersion<br>・the impact of wastewater on natural condition of coastal sea and marin ecosystem |
| | | Land Subsidence | ・hydoro-geological survey (groundwater capacity)<br>・pumping test |

# Chapter 8
# Conclusions and Recommendations

# CHAPTER 8 CONCLUSIONS AND RECOMMENDATIONS

## 8.1 CONCLUSIONS

### 8.1.1 Urgent Development of Special Promotion Zone

#### (1) Role of Growth Corridor Area for Economic Development

The Growth Corridor area is where the strength of economic development is highest in Cambodia. The area should accommodate new industries in Cambodia to diversify the export commodities and accumulate new technologies. Particularly, the Municipality of Sihanoukville in the hinterland of the Port of Sihanoukville, the only deep seaport of Cambodia, will be a strategically important area for the future of Cambodia, in parallel with the western suburbs of Phnom Penh around the international airport. Specific development strategies and projects discussed in this Study need to be contemplated as a basis for regional development planning of Growth Corridor area.

#### (2) Strong Measures Necessary to Diversify Growth Base

To prepare for the probable removal of national export quotas and increasing advocacy of regional free trade, Cambodia must diversify its export commodities and export markets. Cambodia needs to diversify the export industries primarily by Foreign Direct Investment (FDI) with necessary technologies and capital, and enhance domestic industries that could provide interactions. Better utilization of local resources other than labor will have to be promoted to increase the value of the resources. Nonetheless, the climate of investment environment of Cambodia is not bright, with unstable domestic conditions and severe international competition, particularly after the accession of China to World Trade Organization (WTO). Cambodia needs to device strong and effective measures to attract FDI by establishing legal base and pilot area with good infrastructure with competitive prices.

#### (3) Special Promotion Zone as a Key Tool for FDI Promotion

Cambodia needs to implement a special promotion zone (SPZ)—a specific and clearly delineated area where different and entirely innovative investment and administrative procedures and principles would be applied. The basic objective of the SPZ is to promote investment, primarily by foreign direct investment (FDI), for export-oriented manufacturing and service industries, introduce new technologies, and consequently create new jobs.

The SPZ will be comprised of two zones with active interactions between them:

*Free Zone (FZ)*

The core of the SPZ will be the Free Zone (FZ), which will be a fenced-off bonded area directly connected to an international port or airport. As long as goods and materials stay within the FZ, import/export duty would not be incurred. The FZ will accommodate primarily FDI new export oriented firms for both manufacturing and services that are not in operation in Cambodia presently.

*Promotion Zone (PZ)*

The Promotional Zone (PZ) is essentially a mechanism to enhance the so-called backward linkage between economic activities in the FZ and the economy of Cambodia. PZ denotes the area surrounding FZ, where location of various manufacturing and service enterprises, both foreign and domestic, are promoted. These firms in PZ will provide the firms in the FZ with various economic interactions such as related manufacturing on a sub-contract basis, providing appurtenant services including logistics, supplies and maintenance, skills training and education and commercial services such as banking, telecommunication, lodging and tourism. These firms in the PZ will be the receptors of trickle down effects of FZ development, and the economic activities thus created in the PZ will deliver the development benefits to Cambodia.

### (4) Advantage of Sihanoukville for SPZ Development

The Municipality of Sihanoukville is a focal point of regional and economic development of Cambodia. The city has the only deep seaport of Cambodia, serving as the gateway to foreign nations. It is a fast growing city with plenty of room for future expansion. On top of this, Sihanoukville is located on a new development axis of Cambodia towards the coastal area. The first SPZ is thus proposed in Sihanoukville, as the showcase for the future development of industrial estates, including the western suburbs of Phnom Penh and in border areas such as Kaoh Kong.

### (5) Required Innovative Institutional and Legal Arrangement

*An Independent and Autonomous SPZ Authority*

For the operation and governing of the SPZ, a separate independent and autonomous organization in the form of a public corporation will be required under the guidance of a high authority within the Royal Government of Cambodia (RGC). Should the authority be created as an ordinary department structure within an existing organization, it would require enormous labor to rectify the existing administrative impediments for securing independence, and would be difficult to obtain investor confidence. The authority, tentatively called the Cambodian Special Economic Zones Authority (CAPZA), will offer such functions as the One-Stop Shop where all the necessary applications and permits for business operation, import / export and

investment are handled altogether, customs clearance, tax collection, labor relations and small and micro enterprises (SME[1]) promotion, in collaboration with the relevant authorities in Cambodia.

*Fiscal Incentives for the SPZ Showing the Commitment of RGC*

Among neighboring nations, Thailand has devised Industrial Estates for 30 years, and Vietnam has implemented Export Processing Zones for 10 years, both with a variety of fiscal and non-fiscal incentives and good performance in attracting FDI. To be competitive, the SPZ in Cambodia must provide with a set of preferential fiscal and non-fiscal incentives competitive with those in these neighboring nations. This will convey to potential investors the strong commitment of RGC in attracting FDI.

For fiscal incentives, the Amended Law on Investment provides a uniform corporate tax rate of 20% for the nation and *either* a tax holiday for a certain period *or* a special depreciation. In consideration of the weak international competitiveness and little accumulation of industries and shortage of qualified human resources, Cambodia needs to device strong enough incentives to attract FDI in the SPZ. The proposed fiscal incentives for the SPZ in Sihanoukville will include a reduction of the corporate tax rate to 15% in the PZ and 10% in the FZ, both for 3 years after the tax holiday stipulated in ALIZ, and *concurrent* application of a tax holiday *and* special depreciation. If such fiscal incentives were not provided, comparable measures would need to be taken to offset the absence.

*A SPZ Law as Firm Legal Basis*

It is imperative that the SPZ be properly positioned in the policy framework of the RGC and given an appropriate legal basis. In order to implement the SPZ successfully and sustainably, a new law that defines the SPZ as having a separate customs territory in the FZ and creates an independent organization for its operation is indispensable. A sample Law on SPZ[2] was drafted by the Study Team, as per attachment to this Main Report, for consideration by the RGC.

**(6) Urgent Construction of a FZ in Sihanoukville**

Urgent actions are necessary to materialize the proposed FZ as the core of the SPZ in Sihanoukville. An extensive questionnaire survey given to 8,700 export oriented firms in Asia confirmed substantial potential demand for locating manufacturing facilities in Sihanoukville if good and reliable systems and measures for investment promotion are substantiated. Accordingly, a 43 ha parcel of land directly behind the Port of Sihanoukville was selected as the site for the FZ. The cost of development

[1] Ordinarily, SME denotes “small and medium enterprises”, but in this study, SME denotes “small and micro enterprises” following the widely accepted definition in Cambodia.
[2] Upon the request of the RGC, the Study Team combined the Draft Law on Industrial Zones and the sample Law on SPZ, to make the Draft Law on Special Economic Zones, which is attached to the Main Report.

was estimated at US$ 17.2 million, including the costs for necessary infrastructure development. The project has high economic viability with an EIRR[3] of 21.6%. On the financial side, assuming that a small part of the project cost pertaining to environmental protection, US$ 3.5 million, be borne separately as grant aid, the FIRR[4] of the project will be 10.6% and the project is judged to be financially sound. Without the grant, the FIRR will drop to 6.1%, and a concessional fund such as an international soft loan would be desirable.

### 8.1.2 Regional Development of Growth Corridor

Due to the unfortunate history of the previous regime, Cambodia is laden with a number of issues and shortfalls hindering export promotion and industrial development. In order to enhance the competitiveness of Cambodia in the export capacity, SPZ must be positioned properly within the national development goal. It will be imperative to promote the development of SPZ under a strong policy coherence within RGC encompassing various sectors, highlighting on essential issues such as human resources development, proper land use planning, environmental management, contribution to social development in rural areas, and reliable and economical provision of necessary infrastructure. The present Study provides a wide range of policy proposals in the relevant fields of national and regional administration.

#### (1) Development of Agriculture and Fishery

*Improvement of Suburban Agriculture*

The primary target of agricultural improvement is in its restructuring to cater for the growing urban demands for food supply. Diversification of crops, including introduction of cash crops in the suburban areas of Phnom Penh, will be needed together with the enhancement of crop yields through irrigation and proper farm management. To enhance the value of agricultural products, establishment of an effective farm market system and provision of reliable market information will be essential. Improvement in post-harvest activities will also be necessary.

*Improvement of Fishery*

Although Cambodia has a rich marine resource for domestic consumption as well as for export, not much has been exploited for export. One cause of under-exploitation is in the excessive interference of the public sector in seafood exportation. By eradicating the present institutional process to be replaced by a market-oriented mechanism, export of raw seafood as well as processed forms will expand quickly. Promoting the establishment of seafood processing facilities within the FDI for export will contribute to the increase of value of fishery products. In the medium

[3] EIRR stands for Economic Internal Rate of Return, and indicates the economic viability of the project.
[4] FIRR stands for Financial Internal Rate of Return, and indicates the financial soundness of the project.

term, it is important to allow for appropriate use of ocean fishery resources through the implementation of fish farming and the protection of natural resources in coastal area.

### (2) Development of Secondary Industry

Two industrial cores should be developed; one in Phnom Penh and another in Sihanoukville. The Kaoh Kong EPZ, planned as the joint development with Cambodia and Thailand on the western boarder area, will be coordinated with the projects of the Growth Corridor in terms of the demand of the labor intensive industry.

Promotion of the export oriented industries in Cambodia should be advocated in consideration of the following category specific approaches;

- Garment industry will continue to be an important industry for Cambodia. In order to enhance the competitiveness, 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. 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.
- The agro-fishery industry will also open a possibility for establishing a local resource-based export industry. The agro-fishery industry will not only increase the value-added of the agro-fishery products, but also help generate additional income in rural areas, mitigate seasonal fluctuation of income and thereby stabilize the livelihood in the rural communities.
- Product assembly is a labor intensive industry requiring an inexpensive but good labor force. Without a great deal of industrial accumulation in Cambodia, it may not be possible to manufacture sophisticated goods from scratch. An alternative method is what is called knockdown or semi-knockdown production, where all or most of the required parts manufactured elsewhere are imported and assembled in Cambodia.
- Recycling of used machinery would have a substantial value if the usable units are selected and repaired or restored, or if the usable parts are extracted. Recycled machinery or parts could be marketed in Cambodia or exported to neighboring nations. Cambodia could host such functions and serve as a gateway to the Indochina market as a whole.
- Recapturing of the domestic market for consumer goods by "Made-in-Cambodia" products will contribute to the betterment of the trade imbalance and nurture a base for future export. With ample local resources in agro-fishery, some part of the imported processed food could be locally

manufactured to replace imports. Processed meat, fish, canned or dried fruits and vegetable oil are typical commodities in this category.

- Construction industry has a sizable market in Cambodia, representing 5% of the total output of the Cambodian economy. With regard to the materials needed for construction, only a small fragment is manufactured locally, such as simple bricks. As urban centers and industrial estates continue to expand, there will be a sizable demand for construction materials.
- Footwear manufacturing is a second largest export industry for Cambodia. Provision of a freer environment for material imports and product exports will be an essential factor, and improvement of technology and quality control will be the key for the growth of the footwear industry. The capacity for designing would be an important factor for boosting the value-added of the products. These are the areas where joint efforts by the public and private sectors will be needed.

Small and micro (handicraft) enterprises (SME) are an indigenous base for economic development in Cambodia, providing substantial employment. Although the output of SME is not yet high, advantages of SME are in close ties with the domestic economy through capital input and employment and potential for quick incubation in reaction to the needs in the market place. Employed technologies are often conventional or traditional, where ample room for improvement exists. Managerial skills are often not sufficient, requiring support for sophistication. Financing for prospective SME entities is not sufficient, due mainly to the lack of a formalized mechanism for SME support. A strong public sector initiative will be required to support the enhancement and growth of SME.

While neighboring nations such as Thailand and Vietnam have been active in the last decade or so in providing industrial estates with competitive infrastructures, Cambodia has little to offer to potential investors to relocate their production facilities. Utilities are expensive, particularly electricity. Transportation costs are substantially higher than most of the neighboring nations, particularly in Phnom Penh. Efforts need to be exerted to facilitate industrial estates with competitive and efficient infrastructures.

Based on the foregoing, the manufacturing industries in the Growth Corridor area will be diversified to new types, and dispersed area-wise. Heavy concentration to garments will be remedied by introducing new types of export oriented industries, reflecting the characteristics and expected roles of the three sub-areas.

### (3) Development of Tertiary Industry

*Promotion of Tourism*

Tourism is an important source of foreign currency earnings. The focus of international tourism is, and will continue to be, the ruins of Angkor Wat in Siem

Reap. It is important to establish Phnom Penh as the second destination for international tourists to Cambodia, and as one of the gateways to Angkor Wat.

Sihanoukville is a coastal resort town in Cambodia and a popular weekend getaway destination chiefly for domestic tourists and expatriates resident in Cambodia. Beaches on the coast and in the islands are the main appeal to visitors to Sihanoukville. In the short term, Sihanoukville should continue to promote visitors from within Cambodia by enhancing the amenities at the beaches and upgrading hotel/guesthouses. In the mid to long term, Sihanoukville should strive to become host to international tourist resorts, with the development of related recreational and service facilities.

Village tourism denotes a type of tourism that focuses on hands-on experience of cultural, traditional and indigenous livelihoods. Though such experiences may look commonplace and uninteresting to local residents, there is usually latent appeal to a fraction of foreign tourists seeking to learn about different cultures and traditions.

### (4) Establishment of an Urban Master Plan

*Necessity of a Model Urban Master Plan*

A large part of the output of economic activities comes from urban areas, and urbanization is in progress at a rapid pace. The issue of urbanization is latent, particularly in two areas: Sihanoukville, where industrial development is sought, and the outskirts of Phnom Penh where there is outward expansion of the urban core of Phnom Penh and need for industrial development. The Law on Land Use Planning, Urbanization and Construction stipulates that a development master plan and land use plan shall be formulated for approval for each urban center, although no such a plan has been approved yet. An urban master plan shall delineate a protection area and specific functional zones within the urban area, so that a harmful mixture of conflicting functions would not occur. There needs to be a model master plan, preferably for Sihanoukville to set an example.

When the pilot urban master plan is formulated and approved, this will serve as the model for other cities to follow. An urban master plan for major cities such as Phnom Penh, Siem Reap, will follow, broadening the basis of urban planning in Cambodia.

*Enhancement of Enforcement Mechanism*

It is imperative for Cambodia that urban planning be taken up as a continuous program that oversees the balanced and sustainable management of urban environment as well as an instrument to control the urban expansion. For this purpose a step-by-step guideline for workable and effective urban planning practices needs to be devised with external assistance. In parallel, capacity building of staff in charge of urban planning, particularly on the provincial levels, need to be

accelerated. This will help provincial authorities to facilitate appropriate urban plans for their local urban centers under a local initiative.

### (5) Human Resources 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.

Unless the RGC takes measures for human resources development and creation of employment, there will be too many underemployed and unemployed young Cambodians with unstable livelihood and low salaries.

The sector strategies for human resources development are;

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

There are two major important issues to implement the above strategies.

*Higher Education*

There is a sizable gap in the supply and demand for human resources in Cambodia. Higher education is highly concentrated in Phnom Penh. Besides the regional imbalance, enrollments at higher education institutions by discipline show that nearly half of the enrollments are in business, while enrollments in engineering are merely 4% of students. Disparity in supply and demand of human resources will pose a serious problem in the near future. Encouraging enrolments in engineering and career guidance at secondary schools would be effective for solving this disparity.

*Vocational Training*

Many vocational training schools in Cambodia focus on languages and computer skills. The remaining schools - mostly public - provide sewing, welding and other traditional vocational training areas. Though the importance of language and computer skills will not be denied, training of skilled workers and technicians will be needed in large numbers in many industrial and service enterprises.

### (6) Social Dimensions

*Empowerment of Rural People*

Poverty reduction remains the central issue in rural development. Enhancement of small scale development projects for rural and basic infrastructure should be advocated. The infrastructure in rural area should be such that it allows for participation of local people in maintenance and operation. In parallel, efforts need to be made for the generation of additional income in rural societies, focusing mainly on agro-fishery processing, natural and village tourism, handicraft. These income generation projects will not only improve the livelihood of rural households, but also improve the use of locally available resources for economic development. This should be accompanied by empowerment of rural people through health education to prevent diseases and improve the health condition.

*Preventive Measures for Development Projects*

When social change due to intensive development is foreseen in areas such as Sihanoukville and the outskirts of Phnom Penh, participatory community development ought to be adopted as the basic means for adaptation. Community participation could be rendered through the establishing of a committee for community development consisting of representatives of residents, local government officials, and NGOs. This aims at catering to the development needs of the communities, as well as facilitating the self-help efforts of the residents.

### (7) Environmental Management

Environmental management is a crucial element in the promotion of sustainable development in Cambodia. 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 minimize negative impacts on the environment, strict control and monitoring of pollution sources are required in the areas where extensive industrial development is anticipated, such as Sihanoukville and the suburbs of Phnom Penh. In addition, appropriate waste and wastewater management systems need to be introduced, focusing on reducing, reusing and recycling, to cope with rapid increase of solid waste and wastewater discharge.

### (8) Infrastructure Development

The level of service associated with infrastructure in Cambodia is generally poor and often expensive. The basic strategy for infrastructure development is to realize economical, competitive and sustainable infrastructure to cater for the economic development of the Growth Corridor Area. As the availability of funds is limited, prioritization of candidate projects and phased implementation will be essential.

Infrastructure development in the Growth Corridor will focus on the two essential facets. The first is the infrastructure necessary to sustain the industrial and economic development of the priority areas, comprising of transportation network, water sources and supply system, electricity generation, transmission and distribution network and reliable and effective telecommunication networks. The other is the rural infrastructure for the rural communities. The latter is important as part of the poverty reduction and improvement of rural livelihood.

One issue pertaining to the infrastructure in Cambodia is the shortage of funding for construction and maintenance. External assistance on essential infrastructure needs to be accelerated. Allocation of government budget must be rationalized based on priorities of specific projects. A concession agreement method, based on a BOT (Build-Operate- Transfer) type of contract, is a practical solution for the lack of funding, and is extensively utilized for infrastructure development in Cambodia. As the concessions are often rendered without substantial competition, scrutiny of the economic and financial viability of such a method needs to be carefully conducted and compared with the soft loan alternative financing scheme.

*Roads and Rails*

In order to activate the regional economy of the Growth Corridor, a network of good roads linking the supply areas and demand centers is imperative, chiefly in the Phnom Penh and Sihanoukville areas, and further connecting with international borders. Improved access to Thailand along the coast via National Route No. 48, which is to be chiefly financed by the Thai government, will provide a crucial international linkage for the Sihanoukville area. While National Route Nos. 3 and 4 have been (or are planned to be) improved to a good condition, provincial and rural roads are poorly maintained. In urban areas in Phnom Penh and in Sihanoukville, traffic conditions are deteriorating as a result of increased volumes of freight movement. Primarily, additional bypass roads will be needed around Phnom Penh, or in the vicinity of the urban areas in Sihanoukville.

Rails are in operation between Phnom Penh and Sihanoukville, thought the quality of service is very low, as the facilities are obsolete and equipment outdated. As the rails provide alternative means of transport, particularly for bulky cargo, it will be important to apply essential maintenance so as to keep them operational.

*Water Supply*

In Sihanoukville, the service ratio is only 13%, and when the connection rate increase, the existing capacity (3,000 $m^3$/day) could soon come to a limit, and new sources will be needed soon. As it requires a long period of time to develop new water sources, preparatory works including a feasibility study for water supply system improvement needs to be started at an early stage.

It is estimated that only 17% of the population is served with piped water and approximately 40% of the population is served by tube wells with a hand pump. Clean water supply directly relates to the health condition of residents, and thus serves the basic human need. Exploitation of water sources will be necessary for rural water supply.

*Electricity*

Establishment of the national transmission network including interconnection with neighboring countries for power trading is an urgent task to eliminate the current power shortage in major cities and provincial towns. Development of large-scale and indigenous source of electricity, such as hydropower and/or gas combined cycle (contingent on development of the natural gas resource in Siam Bay) will be the next step to cater for the suppressed demand and provide reasonable and stable services to public and industrial consumers through the established power grid. Some of the obsolete generators and distribution systems with low energy efficiency at scattered towns in the Intermediate Area need to be replaced to lower the energy costs at the generation ends and the stable service at consumer ends.

Promotion of electrification in rural areas is important from the viewpoint of the basic human needs in rural areas. Until the national transmission grid is in place, small-scale independent power sources such as diesel generators or renewable energy sources such as small hydropower, wind and solar power will be harnessed in isolated systems.

*Telecommunication*

The telecommunication network is a common and indispensable infrastructure for business operation. It is important to provide a fiber optical cable between Phnom Penh and Sihanoukville. This will not only enable data communication between the two cities and improve the Internet connection, but also provide better international connection.

Capacity building in information technology (IT) is also indispensable in transforming the nation to more adaptive to the improving information environment. Extensive training to foster IT engineers to enhance the IT platform in Cambodia will be an urgent task.

## 8.2 RECOMMENDATIONS

The following recommendations are made in the present study to be considered and adopted by RGC, international donors and private sector stakeholders and brought to immediate actions thereafter.

### 8.2.1 RGC

It is recommended for RGC to undertake the following;

- Make a formal decision within the RGC to adopt the Sihanoukville SPZ as an official instrument for promoting export and facilitating industrial development in Cambodia;
- Enact a law tentatively titled the Law on Special Promotion Zones, as per attached to this report, to define the authorities, functions and systems of operation of SPZs and coordinate its effects with the relevant laws and regulations, including the Amended Law on Investment;
- Establish a new independent and autonomous organization as tentatively called CAPZA, the Cambodian Special Promotion Zones Authority, for the management and operation of the SPZ based on the proposals and recommendations of this Study and with full commitment of the RGC to the governance thereof and elimination of opportunity for corruption;
- Take immediate actions to materialize the proposed FZ in Sihanoukville, including preparing financing, making arrangements for implementation and providing a sustainable solution to the resettlement issue;
- Commence investment promotion for new industries to Cambodia, primarily based on the questionnaire survey results for this Study, and promoting investment seminars in selected nations;
- Initiate coherent economic development policies to enhance the competitiveness of Cambodia, increase the value-added of local products, introduce agro-processing, promote tourism and extend sustainable micro-finance to domestic to the small and micro (handicraft) enterprises (SME);
- Initiate positive social development policies to secure sustainability of development, facilitate spatial balance of urban development, mitigate negative impacts of development, particularly on the poor, ensure protection of the environment, and ensure that the fruits of development be shared by the people in need in Cambodia;
- Undertake positive initiatives for planning and implementing effective and economical infrastructure development for transportation, water, power and

telecommunication; and

- Advocate imperative development projects with possible external assistance, focusing primarily on the proposed priority projects in this Study (See **Subsection 5.7.2**).

### 8.2.2 International Donors:

International donors acting as development partners to Cambodia are recommended to take the following actions.

- Coordinate and facilitate partnership for the successful and sustainable implementation of the proposed SPZ by continuing dialog at the Policy Round Table[5] on this topic;
- Extend guidance as necessary for establishing an enabling legal framework and facilitate marketing for the SPZ;
- Extend assistance to investment promotion for new type of export industries to invest in Cambodia;
- Provide development assistance to Cambodia in consideration of the priority projects selected in this study (See Annex 2);
- Provide additional funding and technical assistance to SME development, focusing on domestic or foreign/domestic joint-venture type of entrepreneurship particularly in the proposed SPZ in Sihanoukville; and
- Assist the RGC by facilitating the necessary funding for the development of the SPZ in Sihanoukville, particularly the urgent FZ development, by extending either a soft loan for the project or providing grant aid for the appurtenant environmental protection measures.

### 8.2.3 Private Sector:

- Utilize the facilities and opportunities to be materialized in the SPZ to diversify export commodities and target markets, and promote better use of locally available natural and agro-fishery resources;
- Take active part in the human resources development in Cambodia by providing various training programs, on and off the job, and broadening employment opportunities for Cambodian nationals, not only in unskilled work but also in middle managerial and technical jobs; and

[5] The Policy Round Table for Special Economic Zone was co-organized by JICA and WB-IFC to facilitate dialog among stakeholders to successfully and sustainable implement the proposed zone. Two separate sessions took place in early 2003. The initiative of this dialog was shifted to RGC to ensure continuation of dialog.

- Take an active and continuous role in the sustainable development of Cambodia through expanding economic activities, and even more positively cooperate to the enforcement of the laws and regulations of Cambodia.

# Annex 1
# Proposed Project

**Table A-1 Project/Program and Implementation Schedule (1/4)**

| Sector | Project | Executing Agency | Evaluation | | | | | | | Implementation Schedule | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | *I* | *II* | *III* | *IV* | *V* | *VI* | | **Urgent Term 2003 - 2005** | **Short Term 2006 - 2008** | **Medium Term 2009 - 2015** |
| **A. Primary Industry** | A-1 Agriculture Reform Program | Ministry of Agriculture and Forestry | A | A | B | A | A | A | | ========== | | |
| | A-2 Fishery Market Development Project | Ministry of Commerce | A | A | B | A | A | A | | ========== | | |
| | A-3 Mangrove Aquaculture Pilot Project | Ministry of Agriculture and Forestry, Provincial Government | A | A | C | A | C | A | | | ========== | |
| | A-4 Outer City Agriculture Promotion Program | Ministry of Agriculture and Forestry, Provincial Government | A | A | A | A | A | A | | ========== | | |
| | A-5 Cashew Plant Protection and Processing Project | Ministry of Agriculture and Forestry, Provincial Government | A | A | A | A | B | A | | | ========== | |
| | A-6 Agro-forestry Development Pilot Project | Ministry of Agriculture and Forestry, Provincial Government | A | A | C | A | C | A | | ========== | | |
| | A-7 Vegetable and Fruit Processing Project | Ministry of Agriculture and Forestry, Provincial Government | A | A | A | A | A | A | | ========== | | |
| | A-8 Border Trade Project | Ministry of Agriculture and Forestry, Provincial Government | A | A | A | A | A | A | | | ========== | |
| | A-9 Post Harvest Loss Prevention Project | Ministry of Agriculture and Forestry, Provincial Government | A | A | C | A | A | A | | ========== | | |
| **B. Secondary Industry** | B-1 Establishment of Industrial Promotion Organization in Cambodia | Ministry of Commerce, Ministry of Industry, Ministry of Public Works (Port Authority) | A | A | A | A | B | A | | ========== | | |
| | B-2 Establishment of Cambodia Food Safety Guidance Center | Ministry of Agriculture, Forestry, and Fishery | A | A | B | A | A | A | | ========== | | |
| | B-3 Establishment of Cambodia Food Processing Technology Development Center | Ministry of Agriculture, Forestry, and Fishery | A | A | A | A | B | A | | | ========== | |
| | B-4 Upgrading of Small and Micro Industries | Ministry of industry, Mines and Energy, Dept. of Small industry and Handicraft | A | A | A | A | A | A | | ========== | ========== | |
| | B-5 Mineral Resource Survey and Evaluation for the Growth Corridor Area | Mineral Resource Development Department of MIME. | A | A | B | A | A | A | | ========== | | |
| | B-6 Garment and Footwear Industry Revitalization Project | Ministry of industry, Mines and Energy | A | A | A | A | A | A | | ========== | | |
| | B-7 Community Business Development in Rural Area( Silk and handicrafts, in Takeav Province) | Ministry of industry, Mines and Energy, Dept. of Small industry and Handicraft | A | A | A | A | A | A | | ========== | ========== | |
| | B-8 Used Machinery Tuning and Recycling Project | Ministry of industry, Mines and Energy | A | A | A | A | A | A | | ========== | | |
| **C. Tertiary Industry** | C-1 Training Center for Tourism and Service Business | Ministry of Tourism, MOC, Phnom Penh Municipality in cooperation with private sector | A | A | A | B | A | A | | ========== | ========== | |
| | C-2 Improvement and Support for Urban Service Business (Sihanoukville and Phnom Penh) | International agency in collaboration with MOC, Sihanoukville and Phnom Penh Municipalities | A | A | A | C | B | A | | ========== | ========== | |
| | C-3 Improvement of Beach Areas in Sihanoulville | Sihanoukville Municipality and Sihanoukville Tourism Office in collaboration with MOT | A | A | A | A | A | A | | ========== | ========== | |
| | C-4 Tourism Master Plan for Greater Capital Area | MOT and relevant ministries, Phnom Penh Municipality, Kandor and Provincial governments | A | A | B | B | A | A | | ========== | | |
| | C-5 Arts and Handicraft Center (Greater Capital) | Ministry of Culture and Fine Arts in cooperation with local governments NGOs | A | B | B | A | B | A | | ========== | ========== | |
| | C-6 Pilot Project for Village-Based Tourism | Local government in cooperation with Ministry of Tourism and NGOs | A | A | C | A | C | A | | ========== | ========== | ========== |

I; Conformity to Basic Strategy II; Conformity to Regional Strategy III; Relevance to Industrial Development IV; Sustainability and use of local resource V; Admissibility of implementation VI; Impact on social dimension

**Table A-1 Project/Program and Implementation Schedule (2/4)**

| Sector | Project | Executing Agency | Evaluation | | | | | | | Implementation Schedule | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | *I* | *II* | *III* | *IV* | *V* | *VI* | | **Urgent Term 2003 - 2005** | **Short Term 2006 - 2008** | **Medium Term 2009 - 2015** |
| **D. Investment Development** | D-1 Establishment of SPZ to Improve Investment Environment of Cambodia | CDC, MOC, MIME | A | A | A | A | A | A | | ═══ | | |
| | D-2 FDI Promotion for FTZ/EPZ in Sihanoukville and Phnom Penh | MOC with the collaboration of CDC and MIME | A | A | A | A | A | A | | ═══ | | |
| | D-3 Development of the Sihanoukville EPZ/FTZ | PAS + Private investors for internal infrastructure | A | A | A | A | A | B | | ═══ | | |
| | D-4 Development of GIE in the Sihanoukville SPZ | GOC+ Private investors for internal infrastructure | A | A | A | A | B | A | | | ═══ | ═══ ═══ ═══ |
| | D-5 Renovation of Fish Port with Supporting Infrastructure and Development of Fishery Processing Estate | MAFF +MPET+ Local Government | A | A | A | A | C | A | | | | ═══ ═══ ═══ ═══ ═══ ═══ ═══ |
| | D-6 Development of Phnom Penh EPZ/FTZ | GOC+ Private investors for internal infrastructure | A | A | A | A | A | A | | ═══ | | |
| | D-7 Development of GIE in the Greater Capital | GOC+ Private investors for internal infrastructure | A | A | A | A | B | A | | | ═══ | ═══ ═══ ═══ |
| | D-§ Koh Kong Special Border Economic Zone/IZ | Cross-Border Economic Development Corporation under the International Border Economic Committee of Thailand/Cambodia | A | A | B | A | A | A | | ═══ ═══ ═══ | | |
| **E. Legal and Institutional Framework** | E-1 Computerization of Customs Clearance Procedures | The CED, Ministry of Economy and Finance (MEF) would conduct the implementation of the system, with cooperation of the Tax Department, MOC, MIME and other relevant ministries. | A | A | A | A | A | A | | ═══ ═══ | | |
| | E-2 Dispatch of Specialists from Japan for Facilitating the Legal and Institutional Framework of the SPZ | The CDC will be the main governmental sector for implementing the project. The MOC, MIME and other relevant ministries shall cooperate with the CDC | A | A | A | A | A | A | | ═══ ═══ | | |
| **F. Urban Planning** | F-1 Enhancement of Planning Enforcement Mechanism of Urban Planning | MLMUPC in collaboration with Sihanoukville Municipality | A | B | B | A | B | A | | ═══ | | |
| | F-2 Assistance of Capacity Building for Decentralization of Planning Functions | MLMUPC | B | A | B | A | C | A | | | ═══ ═══ ═══ | ═══ ═══ ═══ |
| | F-3 Pilot urban Master Plan for Sihanoukville | MLMUPC in collaboration with Sihanoukville Municipality | A | A | A | A | A | A | | ═══ | | |
| | F-4 Greater Phnom Penh Capital Area Urban Master Plan | MLMUPC in collaboration with municipalities/ provinces | B | A | B | A | C | A | | ═══ ═══ | | |
| **G. Human Resource Development** | G-1 Establishment of Training Institute within Sihanoukville SPZ | Sihanoukville SPZ Authority | A | A | A | B | A | A | | | ═══ ═══ | |
| | G-2 Establishment of University in Sihanoukville with faculty of Engineering | Sihanoukville SPZ Authority in collaboration with Sihanoukville Municipality | A | A | A | B | B | A | | | ═══ ═══ | |
| | G-3 Strengthening Sihanoukville Municipal Vocational Training Center | Sinanoukville Municipal Vocational Training Center under Sihanoukville Municipality | A | A | A | A | B | A | | ═══ ═══ | | |
| | G-4 Establishment of Faculty of Engineering in Royal University of Phnom Penh | Royal University of Phnom Penh in collaboration with Higher Education Department, MoEYS | A | A | B | B | B | A | | | ═══ ═══ | |
| | G-5 Upgrading of Preah Kossomak Polytechnic Institute with Cooperation from King Mongkut's Institute of Techno- logy Ladkrabang, Thailand | Preah Kossomak Polytechnic Institute in collaboration with Higher Education Department, MoEYS | A | A | B | B | A | A | | | ═══ ═══ | |
| | G-6 Assistance for Rural Entrepreneurship Development | NGOs in Cambodia in collaboration with Technical and Vocational Education and Training Department, MoEYS | A | A | A | A | A | A | | ═══ ═══ | | |

*I; Conformity to Basic Strategy II; Conformity to Regional Strategy III; Relevance to Indus trial Development IV; Sustainability and use of local resource V; Admissibility of implementation VI; Impact on social dimension*

**Table A-1 Project/Program and Implementation Schedule (3/4)**

| Sector | Project | Executing Agency | Evaluation | | | | | | | Implementation Schedule | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | *I* | *II* | *III* | *IV* | *V* | *VI* | | Urgent Term 2003 - 2005 | Short Term 2006 - 2008 | Medium Term 2009 - 2015 |
| H. Rural Development | H-1 Improving Living of Urban Poor Areas in Sihanoukville | The Community Development Committee and the municipality unit with support from NGO | B | B | B | A | A | A | | ========== | ========== | ========== |
| | H-2 Income Generation Activities for Farmers in Kandal Province (Supporting a NGO project Income Generation) | NGO with support from Provincial Department of Agriculture, Forestry, Fishery and that of Rural Development and relevant provincial organizations. | B | B | B | A | A | A | | ========== | ========== | |
| | H-3 Income Generation Activities for Vulnerable People in Kandal Province (Supporting a NGO project ) | NGO with support from provincial offices relevant to this kind of activities, | B | B | C | A | A | A | | ========== | ========== | ========== |
| | H-4 Income Generation of a Silk Weaving Village Through Tourism | JOCV or NGOs working together with relevant ministries such as Ministries o | B | B | B | A | A | A | | ========== | ========== | |
| | H-5 Participatory Rural Development Project (in Kampong Speue Province or Other Provinces) | A village group consisted of villagers and members from the commune council with support from the section of the provincial offices in charge of rural development and Seila | B | B | C | A | A | A | | ========== | ========== | ========== |
| I. Environment | I-1 Capacity Enhancement for Effective Enforcement Environmental Legislation | MOE in collaboration with Provincial/Municipal DOE | B | A | B | A | A | A | | ========== | ========== | |
| | I-2 Reinforcement of Pollution Source Monitoring in Sihanoulville and Greater Capital Area | MOE in collaboration with DOE of Sihanoukville, Phnom Penh and Kandal | B | A | B | A | B | A | | ========== | ========== | |
| | I-3 Construction of Controlled Landfill Site | Sihanoukville Municipality, Private Waste Service Compnay | B | A | B | A | B | B | | ========== | ========== | |
| | I-4 Study on Area Specific Zero Emission Model | Sihanoukville Municipality, Private Sector, Local People | A | A | A | A | B | B | | | ========== | |
| | I-5 Establishment of Integrated Coastal Fishery Management Center | MAFF in collaboration with DOF of Coastal Provinces/Municipalities | A | A | A | A | B | A | | ========== | ========== | |
| | I-6 Biodiversity Conservation Project (Community Forestry Project), Bokor National Park | MOE and MRD in collaboration with DOE of Kampot Province | B | A | B | A | B | A | | ========== | ========== | |
| | I-7 Recycling of Market Waste and Household Sewage Project | MOE and MOPWT in collaboration with provincial DOE and DOPWT | C | A | B | A | B | A | | | ========== | |
| J. Transportation | J-1 Southern Railway Rehabilitation Project | RRC | C | C | B | C | C | B | | | | ========== |
| | J-2 Container Distribution Center Project | MPWT, PAS, PPAP and concessionaire. | A | A | A | A | A | B | | ========== | ========== | |
| | J-3 Container Lane Project | MPWT, PAS and concessionaire | A | B | B | A | A | A | | ========== | ========== | |
| | J-4 Sihanoukville Urban Transport Project | MPWT and Sihanoukville City | A | B | B | B | B | B | | ========== | ========== | ========== |
| | J-5 New Phnom Penh Port Project | MPWT, PPAP and concessionaire | A | A | A | B | A | B | | ========== | ========== | |
| | J-6 Phnom Penh Urban Transportation Project | MPWT and Phnom Penh Municipality | A | B | B | B | A | B | | ========== | ========== | |
| | J-7 Kampot Urban Infrastructure Development Project | MPWT and Kampot City | A | B | C | C | B | B | | ========== | ========== | |
| | J-8 Rural Road Maintenance System Development Project | MRD, Province and Rural Development Committee. | A | A | C | A | B | A | | | | ========== |
| | J-9 Route 48 Upgrading Project | MPWT | A | A | A | B | B | B | | ========== | ========== | |

*I; Conformity to Basic Strategy II; Conformity to Regional Strategy III; Relevance to Indus trial Development*

*IV; Sustainability and use of local resource V; Admissibility of implementation VI; Impact on social dimension*

**Table A-1 Project/Program and Implementation Schedule (4/4)**

| Sector | Project | Executing Agency | Evaluation | | | | | | | Implementation Schedule | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | *I* | *II* | *III* | *IV* | *V* | *VI* | | **Urgent Term 2003 - 2005** | **Short Term 2006 - 2008** | **Medium Term 2009 - 2015** |
| **K. Water Resources** | K-1 Master Plan Study on Water Resources Development and management | MOWRAM, CNMC | A | A | A | A | A | A | | ========== | | |
| | K-2 Improvement to Meteorological / Hydrological Network | MOWRAM, CNMC | B | B | C | B | A | C | | ========== | | |
| | K-3 Strengthening of Database and Information Systems (Flood and Drought Forecasting and Early Warning System) | MOWRAM, MRC, CNMC, CNCDM, RGC ministries, etc | B | B | C | B | A | C | | ========== | ========== | |
| | K-4 Improvement of Urban Water Supply (include Water Supply Development for SPZ) | MIME, and other water supply authorities / company | A | A | A | B | A | A | | ========== | ========== | ========== |
| | K-5 Rehabilitation of Irrigation Schemes | MOWRAM, MOAFF | A | A | C | B | A | A | | ========== | ========== | |
| | K-6 Flood Control and Mitigation | MOWRAM, MRC, CNMC, CNCDM, MoPW&T | A | A | B | B | B | A | | | ========== | ========== |
| | K-7 Community Enhancement of Water management | MRD, MOWRAM | A | A | C | A | A | A | | ========== | | |
| | K-8 Preak Thnot River Basin Development | MOWRAM, **MOAFF** | A | A | A | B | B | B | | | ========== | ========== |
| **L. Electricity** | L-1 The Sihanoukville Combined Cycle Power Development Project | MIME/EDC | A | A | A | A | B | A | | ========== | ========== | |
| | L-2 Kamchay Hydro Project | MIME/EDC | A | A | A | A | B | B | | ========== | ========== | |
| | L-3 Steng Atay Hydro Project | MIME/EDC | A | A | A | A | C | C | | ========== | ========== | ========== |
| | L-4 Steng Russei Chrum hydro project | MIME/EDC | A | A | A | A | C | C | | ========== | ========== | ========== |
| | L-5 220kV transmission line between Sihanoukville and Kampot | MIME/EDC | A | A | A | A | C | B | | ========== | ========== | |
| | L-6 Project for Construction of new Power Plant and Extension of Distribution Network in Sihanoukville | MIME/EDC | A | A | A | A | A | B | | ========== | | |
| | L-7 Project for the Construction of 220kV Transmission Line between Phnom Penh and Vietnam | MIME/EDC | A | A | A | A | A | A | | ========== | | |
| | L-8 Project for Capacity Extension 10 MW of EdC C5 Power Plant | MIME/EDC | A | A | A | A | A | B | | ========== | | |
| | L-9 Project for Extension of Power Distribution System around Phnom Penh | MIME/EDC | A | A | A | A | A | A | | ========== | ========== | |
| | L-10 220kV Transmission Line between Takeav and Kampot | MIME/EDC | A | A | A | A | B | B | | ========== | ========== | |
| | L-11 Cambodia Renewable Energy Promotion Project | MIME | A | A | A | A | A | A | | ========== | ========== | |
| | L-12 Provincial Power Supply Project | MIME/EDC | A | A | A | A | A | A | | ========== | | |
| **M. Tele-communications** | M-1 Nourishment of Qualified IT Related Human Resources | The National Information Communications Technology Development Authority (NiDA) | B | B | B | A | A | A | | ========== | | |
| | M-2 Development of Optical fiber Cable Network between Phnom Penh and Sihanoukville | MPTC | A | A | A | A | B | A | | ========== | | |

*I; Conformity to Basic Strategy II; Conformity to Regional Strategy III; Relevance to Indus trial Development*

*IV; Sustainability and use of local resource V; Admissibility of implementation VI; Impact on social dimension*

| **A. Primary Industry** | **A-1** |
|---|---|
| Project Name | Agriculture Reform Program |
| Backgrounds | It is pointed out institutional constraints relating to land title, barrier of access to agricultural market, and rural finance. The details are as follows:<br><br>- Land concessions are often given without proper consultation with villagers. Land titles are sometimes given to farmers by their communal heads, not by the Government, which have little to no power at all against formal claims. Land titling needs to be improved so that the farmers can secure their land.<br><br>- The government claims that the agricultural market is liberalized, government's subsidies abolished, most inputs are supplied by the private sector and that prices of producers and farm inputs such as fertilizers and chemicals, are determined through the market mechanism. Nonetheless the public sector still plays a substantial role in the market.<br><br>- Farmers have little access to credit, as there is no government program for this purpose. Farmers often have to sell paddy just after harvest to pay for urgent necessities or lend money from money lenders and relatives. |
| Project Purposes | To formulate and implement agriculture reform program to improve institutional constraints in the Study Area |
| Target Year<br>(Project Period) | -2005 (2 –3 years) |
| Beneficiaries<br>(Target Group,<br>Target Area) | All the farmers in the Study Area |
| Activities | - Study on institutional constraints for agriculture sector in the Study Area<br>- Formulation of action program<br>- Implementation of action program |
| Executing Organization | Ministry of Agriculture and Forestry |
| Outputs (Results) | - Establishment of appropriate institutional framework for primary sector. |
| Inputs<br>(Project Cost) | Not specified |

| **A. Primary Industry** | **A-2** |
|---|---|
| Project Name | Fishery Market Development Project |
| Backgrounds | It is widely observed the trading of marine fishes in Shhanoukville and many raw fish products expert to Thailand or other foreign countries. It is also noted that there are no good marketing facilities for selling fishes in coastal area in Shhanoukville. To develop market channel in the area, it is recommended to establish modernized market with cold storage. It is also recommend promoting market organization without any government intervention.<br><br>Therefore, project component includes: i) construction of market facilities, ii) installation of marketing equipment including cold storage, and iii) institutional and financial training to market organization. |
| Project Purposes | To develop modernized fish market with cold storage to expand fish trade. |
| Target Year<br>(Project Period) | 2005 (3 years) |
| Beneficiaries<br>(Target Group,<br>Target Area) | Fishermen and traders in Shhanoukville |
| Activities | (1) Feasibility Study and Basic Design<br>(2) Detailed Design<br>(3) Construction of market facilities and installation of equipment including cold storage<br>(4) Training program to market origination |
| | Ministry of Commerce |
| Outputs (Results) | (1) Development of fish market,<br>(2) As result of the above, job opportunities and income of beneficiaries are enhanced. |
| Inputs<br>(Project Cost) | US 20.0 million |

| **A. Primary Industry** | **A-3** |
|---|---|
| Project Name | Mangrove Aquaculture Pilot Project |
| Backgrounds | There was 7,900ha of mangrove forests in Kampot in 1994 according to the analysis of LANDSAT imagery. However, these forests depleted substantially in 1992 when a salt pan venture started on the major mangrove forests by joint enterprise of the ministry of industry, mine and energy and a private company. The defective land registration system is behind the problems. The remaining mangrove forests lie in the periphery of the salt pans with a width of around 10m and in islands difficult to communicate by roads. Almost all of the remaining mangrove forests were given to private as concessions. There is no other suitable areas for mangrove development than shallow sea (30-100cm in depth), which extents to 2-3 km from seashore.<br><br>According to the 1998 census, there were 3,007 fishermen in the province. The living standard of fishers is very low due to decreasing fishery resources and decreasing landing amounts of fish caused by over-fishing and the depletion of spawning, nursery and feeding grounds such as mangrove forests for the fish. Mangrove forest also conserves pristine coastal ecosystem by trapping sediments and pollution from land<br><br>Mangrove forest is under jurisdiction of the department of fisheries in the ministry of agriculture, forestry and fisheries. The trespass and utilization of the mangrove forest by rural population are prohibited without permits. However, there have been a custom of community management of mangrove forests and many rural population derived their livelihood from the mangrove forests through fishing, firewood collection, charcoal production, tannin production, etc. |
| Project Purposes | The project is to develop pilot community based mangrove-friendly aquaculture such as mud-crab for the livelihood improvement for rural communities in Kampot bay without destroying mangroves. |
| Target Year<br>(Project Period) | 2008 (3 years) |
| Beneficiaries<br>(Target Group,<br>Target Area) | Fishermen in Shhanoukville |
| Activities | • to reclaim mangrove forest from the shallow sea<br>• to provide land titles for the participating fishers,<br>• to develop mud crab aquaculture in mangrove forests,<br>• to export the mud crab to neighboring countries and<br>• to involve NGOs for the management of project activities. |
| | Ministry of Agriculture and Forestry, Provincial Government |
| Outputs (Results) | (1) Sustainable development of aquaculture,<br>(2) As result of the above, household income of farmers are enhanced. |
| Inputs<br>(Project Cost) | US 10.0 million |

| **A. Primary Industry** | **A-4** |
|---|---|
| Project Name | Outer City Agriculture Promotion Program |
| Backgrounds | Demand of vegetables and fruits of urban people, hotels, trade companies and factories increase year by year in Phnom Penh. Therefore, there is high potential for introduction or expansion of high value crops including vegetables, fruits and a part of fodder crops. For the vegetables, however, low market prices are widely observed in the dry season since many farmers cultivate vegetables using home gardens, the river banks and irrigated areas. Therefore, the introduction of new techniques, especially the adjustment of the cropping pattern and more crop diversification is necessary to stabilize the supply of vegetables all year-round. In the fruits or fodder crops, production of those crops is rather small compared to market demand and accordingly stable market price is expected. To hedge the risk to introduction of new crops and techniques, demonstration plots and associated farmer training should be promoted in the program target area. |
| Project Purposes | To enhance farm income through expansion of crop diversification and modernized agriculture in outer city area. |
| Target Year (Project Period) | 2005 (3 years) |
| Beneficiaries (Target Group, Target Area) | Local people in outer city area of Phnom Penh |
| Activities | - Feasibility Study<br>- Technical assistance for overall project management, preparation of crop management calendar, selection, design and establishment of demonstration plots,<br>- Implementation of training program for extension staff of Ministry of Agriculture and Forestry,<br>- Operation and maintenance of demonstration plots<br>- Implementation of technical guidance to farmers in the demonstration plots,<br>- Technical assistance for formulation of production groups and marketing, and<br>- Implementation of agricultural needs assessment and baseline survey, and monitoring and evaluation (M&E) survey. |
| Executing Organization | Ministry of Agriculture and Forestry, Provincial government |
| Outputs (Results) | - The cultivated area of value added crops in outer city area is expanded<br>- As result of the above, income of farmers is enhanced. |
| Inputs (Project Cost) | US 5.0 million |

| **A. Primary Industry** | **A-5** |
|---|---|
| Project Name | Cashew Plant Protection and Processing Project |
| Backgrounds | In the Intermediate Area, some farmers cultivate cashew nuts. However, insect or disease damage are widely observed and, accordingly, quality of cashew nuts is very poor. As a result, the price of cashew nuts is also very low. Concurrently, cashew nut produced in Cambodia is exported to Vietnam without processing and the processed products is returned to Cambodia. The lack of appropriate process plant is the cause. To improve such situations, the proper protection and processing of cashew nuts should be promoted through farmers group. |
| Project Purposes | To reduce rural poverty and enhance farm income through improvement of cashew protection and processing. |
| Target Year (Project Period) | 2008 (3 years) |
| Beneficiaries (Target Group, Target Area) | Local people in Kaoh Kong, Kampot, Takaev and Kampong Spueu |
| Activities | - Feasibility Study<br>- Formulation of farmers group for cultivation of cashew nuts,<br>- Implementation of technical guidance for protection of cashew nuts to farmers group,<br>- Implementation of technical guidance for post harvest activities to farmers groups in the demonstration plots,<br>- Design of cashew processing plants<br>- Construction of cashew processing plants<br>- Implementation of training program for operation and maintenance of cashew processing plants, and<br>- Implementation of monitoring and evaluation (M&E). |
| Executing Organization | Ministry of Agriculture and Forestry, Provincial government<br>Ministry of Commerce |
| Outputs (Results) | - Quality improvement of cashew nuts is made.<br>- Value of cashew nuts is added.<br>- As result of the above, income of farmers is enhanced. |
| Inputs (Project Cost) | US 3.0 million |

| **A. Primary Industry** | **A-6** |
|---|---|
| Project Name | Agro-forestry Development Pilot Project |
| Backgrounds | The key problems in the forest in the study area were identified as the uneconomic utilization of forests resources, the environmental degradation in forest and the elimination of villagers from forest. The biggest causes of them appear to be the rampant smuggling of timber, the total export ban of logs, no formal land titles for villagers and weak enforcement of the law. The present concessionaires stopped investment and their vast lands were left fallow without producing any economic benefits.<br><br>Animal raising such as cow is very important source of income for farmers in the study area. But their raising are inefficient and very risky because of poor genetic resources of animal, poor supply of feeds, prevalence of diseases such as new-castle and foot-and mouse diseases, poor supply of medicines such as vaccine, insufficient veterinary services.<br><br>Most of dairy products are imported except those from the farm of Nestle. In 2000, there were 47,800 ton equivalent to US$3million of import of dairy produce, bird eggs and natural honey. |
| Project Purposes | To increase farm income by operating a dairy farm equipped with a milk processing plant and supplied with forage from agro-forestry gardens planted by teak, mahogany, elephant grass and stylo. |
| Target Year<br>(Project Period) | 2005 (3 years) |
| Beneficiaries<br>(Target Group,<br>Target Area) | Landless farmers from the Cardamon and the Elephant mountains. |
| Activities | • to establish and operate agro-forestry farms planted with teak, mahogany, elephant grass and stylo,<br>• to establish and operate a milk processing plant,<br>• to settle land expropriated landless farmers,<br>• to issue land titles to the settlers, and<br>• to train the settlers on dairy business and agro-forestry. |
| | Ministry of Agriculture and Forestry, Provincial Government |
| Outputs (Results) | - Creation of income source for landless farmers |
| Inputs<br>(Project Cost) | US 3.0 million |

**A. Primary Industry** **A-7**

| | |
|---|---|
| Project Name | Vegetable and Fruit Processing Project |
| Backgrounds | Raw vegetables and fruits are so cheap in Intermediate area, since middleman has strong power in the negotiation with farmers and there is oversupply of raw products due to the difficulties to change cropping schedule. To add vale of vegetables and fruits as well as to keep those in the storage, the processing activities of vegetable and fruits is highly recommendable. However, most of farmers have no knowledge or experience of processing activities using simple equipment.<br><br>Therefore, proposed training center will provide technical skills for processing activities for vegetables and fruits, In addition, training center has functions such as: i) institutional and financial training to farmers' group, and ii) training on marketing. In addition, the public orientation program will be made to explain how to participate the community managed agro-processing unit (CMAU). The initial inputs including equipment and materials will be provided to community. The cost of those inputs will be subsidized to some extent. However, the scale of subsidy will be examined carefully considering government policy and subsidy condition of other projects. |
| Project Purposes | To increase value of vegetables and fruits through processing activities. |
| Target Year<br>(Project Period) | 2005 (3 years) |
| Beneficiaries<br>(Target Group,<br>Target Area) | Farmers, especially women, in Intermediate Area |
| Activities | • Feasibility Study and Basic Design,<br>• Detailed designing,<br>• Training program to staff in the Center,<br>• Construction of building, and<br>• Installation of equipment. |
| | Ministry of Agriculture and Forestry, Provincial Government |
| Outputs (Results) | Increase in household income through selling processed vegetables and fruits. |
| Inputs<br>(Project Cost) | US 10.0 million |

| **A. Primary Industry** | **A-8** |
|---|---|
| Project Name | Border Trade Project |
| Backgrounds | Border trade of crop products widely is carried out in Kampot Province to Thailand. However, the actual volume of border trade is not known, since considerable border trade is made unofficially. Only limited reports show a part of actual conditions of exports in border provinces. Kampot Province needs to utilize advantage of the location more to increase the exports for both agriculture agro-processed products.<br><br>The proposed project will expand crop and agro-processed production in the Kampot Province through extension service including preparation of crop management calendar, and demonstration plots and associated farmer training. However, the present conditions as well as potential crops are not clear in terms of exports of crop production. It is therefore proposed that the study should be carried out to clarify the present export condition, selection of potential crops and its development plan including agro-processing |
| Project Purposes | To expand export oriented crop production including agro-processed products in border provinces |
| Target Year<br>(Project Period) | 2008 (3 years) |
| Beneficiaries<br>(Target Group,<br>Target Area) | Farmers in Kampot Province |
| Activities | (1) Technical assistance for study on export oriented agriculture development in border provinces,<br>(2) Technical assistance for overall project management, preparation of crop management calendar, and establishment of demonstration plots,<br>(3) Implementation of training program for MAFF staff,<br>(4) Operation and maintenance of demonstration plots by MAFF staff,<br>(5) Implementation of technical guidance to farmers in the demonstration plots,<br>(6) Technical assistance for formulation of community managed agro-processing unit (CMAU), and<br>(7) Implementation of agricultural needs assessment and baseline survey, and monitoring and evaluation (M&E) survey. |
| | Ministry of Agriculture and Forestry, Provincial Government |
| Outputs (Results) | (1) The cultivated area of crops as well as agro-processing of crops in Kampot Province is expanded,<br>(2) As result of the above, provincial export income as well as household income of farmers are enhanced. |
| Inputs<br>(Project Cost) | US 10.0 million |

**A. Primary Industry** **A-9**

| | |
|---|---|
| Project Name | Post-Harvest Loss Prevention Project |
| Background | Cereal and grain such as rice, maize, cashew nut, and piper are often loosing by infection, rat, weevil, and moisture after harvest and during storage. This is caused by farmers' crops are not good drying and storing. To prevent the post-harvest loss of farmers' s crops, drying by Solar Chimney Dryer and storing by appropriate materials of cereal and grain are highly recommended. However, farmers have no knowledge or experiences of post-harvest loss prevention activities as well as equipment.<br><br>Therefore, proposed training center will provide technical skill for post-harvest loss prevention activities for cereal and grain. Moreover, training center plays role as: (1) institutional and financial training to farmer's group, and (2) training on marketing. The initial inputs including equipment and materials will be provided to the farmers' group. The cost of those inputs will be subsidized to some extent. But the scale of subsidized carefully considering government policy and subsidy condition of other projects. |
| Project Purpose | To increase income to farmers through post-harvest loss prevention activities using Solar Chimney Dryer and appropriate storing equipment. |
| Target Year (Project Period) | 2003 (3 years) |
| Beneficiaries (Target Group, Target Area) | Farmers in Intermediate Area |
| Activities | - Feasibility study and Basic design<br>- Detailed design<br>- Training program to staff in the training center<br>- Construction of building, and<br>- Installation of equipment |
| Executive Organization | Ministry of Agriculture Forestry and Fisheries, Provincial Government. |
| Outputs | Increase in household income through preventing post-harvest loss of cereal and grain |
| Inputs (Project Cost) | US 3.0 million |

| **B. Secondary Industry** | **B-1** |
|---|---|
| Project Name | Establishment of Cambodia Industrial Promotion Organization |
| Backgrounds | In order to make the industrial promotion in Cambodia where there is scarcely industrial accumulation, it is necessary to promote the domestic capital nourishment and new business creation as well as active foreign capital introduction. For the foreign capital introduction, it is required to make conditions of capital import and conduct campaigns for attracting capital. As for domestic capital nourishment and new business creation, it is necessary to search for the promising industries lies between the primary and secondary industries and to provide supports to entrepreneurs.<br>The mutual cooperation of the government and the private sector is important for effective implementations of the above matters Establishment of a specialized agency independently from the existing administrative organization is effective in implementing the business. There is a limit to the government with no experience in business making guidance for implementation, and various matters such as market information, market access and creating business call for experience and vitality of the private sector.<br>This project is to establish the implementation body for industrial promotion measures in Cambodia jointly by the government and the private sector. |
| Project Purposes | 1) To promote foreign capital import<br>2) To provide business service for promoting foreign capital import (One-stop-service)<br>3) To promote port sales (promotion of port utilization)<br>4) To promote the small-scale enterprises development and new business generation in Cambodia<br>5) To foster marketing and incubation managers for the above |
| Target Year<br>(Project Period) | Long-term |
| Beneficiaries<br>(Target Group,<br>Target Area) | Foreign and Cambodian enterprises<br>Entrepreneurs<br>Individuals and groups |
| Activities | This project is to establish the implementation body for the following industrial promotion measures jointly by the government and the private sector.<br>1) To promote foreign capital import and port sales<br>2) To provide business service for the above<br>3) To promote business seeds research and business creation<br>4) To provide consultation for a serious of information supply, market development, and business creation<br>5) To foster marketing and incubation managers for the above |
| | The Ministry of Commerce<br>The Ministry of Industry<br>The Ministry of Public Works (Port Authority) |
| Outputs (Results) | 1) Industrial accumulation<br>2) Increase in port utilization<br>3) New-create of domestic enterprises<br>4) Industrial vitalization<br>5) Increase in employment. |
| Inputs<br>(Project Cost) | |

**B. Secondary Industry** **B-2**

| | |
|---|---|
| Project Name | Establishment of Cambodia Food Safety Guidance Center |
| Backgrounds | There is a large interest in food safety in the world now. Based on this interest, the food manufacturing enterprises have the complete checking system of quality control at the stage not only of production and distribution, but also of raw material procurement. It is often the case that the enterprises open this process of complete checking for the witness of safety. If Cambodia aims at the export promotion for agriculture products and processed foods, it is necessary to establish the national system for guaranteeing food safety in accordance to the global standards. This should be applied for the domestic market as well. |
| Project Purposes | 1) To extend and stabilize the market by improving safety and reliability of the food manufacturing industry<br>2) To train and improve the research capability of analyzing food safety<br>3) To diffuse and enlighten knowledge of food safety not only for the enterprises, but also for the entire Cambodian people |
| Target Year<br>(Project Period) | Short-term |
| Beneficiaries<br>(Target Group,<br>Target Area) | Food processing enterprises in the country<br>Trading enterprises for food<br>Entrepreneurs<br>Individuals and groups |
| Activities | This project is to establish the organization with the following functions.<br>1) To perform analysis, research, and guidance of safety in the food processing<br>2) To perform training for leaders of the above item 1)<br>3) To perform funded research and commissioned analysis regarding the above item1)<br>4) To diffuse and enlighten knowledge of the above item 1)<br>5) To certify the safety mark for the export food |
| Executing Organization | The Ministry of Agriculture, Forestry, and Fishery |
| Outputs (Results) | 1) Raising reliability of Cambodian foods in the export market<br>2) Ensuring nations' healthy dietary life<br>3) Improving research capability for food safety |
| Inputs<br>(Project Cost) | |

**B. Secondary Industry** **B-3**

| | |
|---|---|
| Project Name | Establishment of Cambodia Food Processing Technology Development Center |
| Backgrounds | There is an urgent need of conversion from products of the primary industry to those of the super primary or the secondary industry, for instance, the agriculture product processing industry. Moving into the stage of processing from the present stage of only supplying materials is expected to increase value-added, extend the market, and create new business. To achieve this moving, it is necessary to improve the capability of technology development and product development, and introduce the relevant technology as well as diffusion and enlightenment of knowledge, and human resource development.<br>This project is to establish the core organization that will lead development of the food processing technology so that its function and achievements could be spread into the region. |
| Project Purposes | 1) The base for technical support to promote the regional food processing industry<br>2) The base for technical transfer and human resource development to promote the regional food processing industry<br>3) The base for transmission and supply of information to promote the regional food processing industry |
| Target Year<br>(Project Period) | Mid-term |
| Beneficiaries<br>(Target Group,<br>Target Area) | Food processing enterprises<br>Trading enterprises for food<br>Groups and individuals<br>Entrepreneurs |
| Activities | This project is to establish the organization with the following functions.<br>1) To perform technical development, experimental and research regarding the food processing<br>2) To provide technical transfer and technical guidance regarding the above item 1)<br>3) To perform funded research and commissioned analysis regarding the above item 1)<br>4) To perform training regarding the above item 1)<br>5) To perform consulting regarding the above item 1)<br>6) To transmit and supply information regarding the above item 1) |
| Executing Organization | The Ministry of Agriculture, Forestry, and Fishery |
| Outputs (Results) | 4) Improvement of technical development and product development for agriculture product processing, etc.<br>5) New creation of the agriculture product processing business (facilitation of cluster development effects)<br>6) Seedbed for fostering and establishing the regional industry<br>7) Raising reliability towards the safe and reliable food processing industry |
| Inputs<br>(Project Cost) | |

**B. Secondary Industry** **B-4**

| | |
|---|---|
| Project Name | Upgrading of Small and Micro Industries |
| Backgrounds | Based on the data of number of enterprises, 99 percent of all industries comprise of medium, small and micro (SME) and they have serious problems to develop further and shift to modern technology and management system autonomously. However there are no legislative or regulatory framework and no concrete measures to support SME development. |
| Project Purposes | 1) Modernizing and upgrading traditional SME by improving means of production, management and marketing.<br>2) Utilization of abundant internationally competitive low cost labor.<br>3) Promotion of appropriate technology and scale manufacturing for local and niche market.<br>4) Effective utilization of locally scattered agro-related domestic resources. |
| Target Year (Project Period) | 2003-2008 (5 years) |
| Beneficiaries (Target Group, Target Area) | Entrepreneurs and employees of Medium, small and micro industries (SME) |
| Activities | 1) Establish legislative and regulatory framework and guideline for the development and modernization of SME.<br>2) Establish financial support scheme in terms of loan and credit guarantee.<br>3) Provide the methodologies for the provision of loan (credit analysis) and the assessment of the feasibility of the applied project.<br>4) Organize business association/network among the same or related business category. |
| Executing Organization | Ministry of industry, Mines and Energy, Dept. of Small industry and Handicraft |
| Outputs (Results) | Modernizing and upgrading of SME and local sustainable and initiative development |
| Inputs (Project Cost) | Sending experts (SME financing, SME management and marketing) |

**B. Secondary Industry** **B-5**

| *Project Name* | Mineral Resource Survey and Evaluation for the Growth Corridor Area |
|---|---|
| Backgrounds | Mineral resource based industry is among the top priority industries to be developed according to the Government industrial policy. However, no comprehensive mineral resource survey has ever been carried out in Cambodia including the Growth Corridor Area, except these carried out by the private sector with very limited scale. Judging from the geological information, the Growth Corridor Area is presumed to have mineral deposits of various kinds. |
| Project Purposes | • Promote mineral- resource- based industry.<br>• Contribute to import substitution and export promotion. |
| Target Year (Project Period) | 2003 - 2005 |
| Beneficiaries (Target Group, Target Area) | Cambodian private sector investors. |
| Activities | • Carry out mineral resource survey for the Growth Corridor Area except the Phnom Penh city, which should include lime stone, silica sand, phosphate and gem stones.<br>• Evaluate the scale of deposits. |
| Executing Organization | Mineral Resource Development Department of MIME. |
| Outputs (Results) | Mineral resource map with identified volume of mineral resource. |
| Inputs (Project Cost) | To be determined. |

**B. Secondary Industry** **B-6**

| | |
|---|---|
| Project Name | Garment and Footwear Industry Revitalization Project |
| Backgrounds | Garment and footwear industry is a staple industry for Cambodia, currently employing approximately 200,000 of people and earning 70 % of export value. This is a incomparable local resource to Cambodian Economy. The strength of Cambodian garment and footwear industry is closely related with the existing quota under GSP. With possible dismantling of the quota in 2005, revitalization of the industry to survive and recapture the export market after 2005 is imperative to Cambodia |
| Project Purposes | In order that the Cambodian garment and footwear industry stays in business after 2005, active promotion needs to be filed by assisting the marketing of the products in markets other than USA; providing vocational training to potential and current garment workers for higher skills and supporting Cambodian garment manufactures to grow. |
| Target Year (Project Period) | Project implementation is planned to be completed in 2008. |
| Beneficiaries (Target Group, Target Area) | ● 200,000 employed by the garment industry.<br>● Target Area is in and around Phnom Penh, where most of the garment factories are located. |
| Activities | ● Export promotion of garment and footwear to EU and Asian markets<br>● SME support for domestic garment and footwear manufactures by utilizing various multinational funding (ex. MPDF, Asia Foundation, etc.) |
| Executing Organization | MIME |
| Outputs(Results) | Sustaining of employment in garment and footwear industries and enhancement of competitiveness of related local manufactures |
| Inputs (Project Cost) | To be determined |

**B. Secondary Industry** **B-7**

| | |
|---|---|
| Project Name | Community Business Development in Rural Area (silk and handicraft) |
| Backgrounds | Community businesses (cottage industries) such as silk weaving is generally viewed as a secondary source of livelihood in rural area. Community business development means not only rural economy and business development but also the development of rural society in terms of quality of life and culture. Takaev is a major production area of hand woven silk fabric in Cambodia. |
| Project Purposes | 2) Revitalizing traditional industry by improving means of production, design, management and marketing to develop products adaptable to urban and export demand.<br>2) Realizing rural sustainable development and local people initiative.<br>3) Promotion of linkage between production area and tourism spot<br>4) Human and natural resource based industry development |
| Target Year<br>(Project Period) | 2003-2008 (5 years) |
| Beneficiaries<br>(Target Group,<br>Target Area) | People in Takaev area which have traditional silk weaving. |
| Activities | 4) Making inventories of silk business and advisory service in terms of management, production technology, raw material, equipment and marketing.<br>5) Training programs to improve knowledge (information) and design technology adaptable to market needs.<br>6) Capacity development of public sector in charge of community business development in terms of technical/information guiding activities and.<br>4) Establish a institute for silk industry as the assisting core of community business |
| Executing Organization | Ministry of industry, Mines and Energy, Dept. of Small industry and Handicraft |
| Outputs(Results) | Revitalization of silk industry and rural sustainable and initiative development in terms of social stability, capacity and life style |
| Inputs<br>(Project Cost) | Development survey<br>Sending experts (design, management and marketing) |

| **B. Secondary Industry** | **B-8** |
|---|---|
| Project Name | Development of the Environmental Friendly Industry: Indochina Gateway of the Tuning and Recycling Industry of the Used Machinery |
| Backgrounds | A large volume of used machinery, particularly automobiles, are disposed or discarded in Japan and other developed countries. These used machinery would have values if selection, tuning and extraction of usable parts could be carried out effectively. Recycling of used machinery has becoming a new prospective industry by strong supports of governments of developed nations, particularly Japan , who seek the way to save resources and mitigate environmental impacts.<br>Cambodia can host such functions and become one of the gateways to the Indochina recycling market as a whole. EPZ and FTZ planned in Cambodia will provide an excellent site for tuning and reassembling of machinery and displaying and sales of re-tuned machinery and selected usable parts.<br>Consideration needs to be made to adopt an environmentally safe and friendly method in dealing with the used machinery. |
| Project Purposes | This project aims to develop an Indochina gateway of the tuning and recycling industry of the used machinery in the growth corridor, particularly in Sihanoukville. The new recycling industry will be invited to establish for accommodating used machinery for selection of usable ones, reassembling and tuning for reuse, extraction of usable parts. The location will preferably be within the Free Trade Zone. The main source of used machinery is presumed to be Japan and other developed nations. |
| Target Year<br>(Project Period) | Project implementation is planned to start urgently before 2005. |
| Beneficiaries<br>(Target Group,<br>Target Area) | ● Present and future employment in the recycling industry<br>● Mechanics and technicians can be trained through the tuning and reassembling of the used machinery.<br>● Target area is SPZ in Sihanoukville |
| Activities | ● Promotion of the recycling industry FDI<br>● Legal arrangement for the support of the establishment of the recycling industries<br>● Coordinating support for the linkage between the recycling industry and the local machinery workshops/mechanics<br>● Capacity building of the local machinery workshops with training of mechanics |
| Executing Organization | MIME |
| Outputs(Results) | ● Contributing to mitigation of the global environmental problem<br>● Economic and job opportunity improvement in the region by the establishment of the recycling industry<br>● Nourishment of skilled machinery mechanics/technicians through the on the job training |
| Inputs<br>(Project Cost) | |

**C. Tertiary Industry** **C-1**

| Project Name | **Training Center for Tourism and Service Business** |
|---|---|
| Backgrounds | According to Tourism Human Resource Development Strategy, ADB Project (TA No. 3454-CAM) and other relevant studies, lack of human resource in terms of skill, knowledge and management is one of major constraints to MOT, municipal and provincial tourism offices. In addition, MOT does not have its own facility to have training program and activity. Due to increasing demand for tourism sector, strengthening of capacity building for both public and private sectors are strongly needed. It also necessary to have a training center for tourism and service business operated and managed by MOT in cooperation with relevant ministries and private sectors. |
| Project Purposes | To improve capacity building of human resource for tourism sector of both public and private sectors.<br>To develop Training Center for Tourism and Service Business for providing various training programs/courses. |
| Target Year (Project Period) | (-2008) Short term |
| Beneficiaries (Target Group, Target Area) | MOT staff, Provincial and Municipal officials, entrepreneurs, private sector, Phnom Penh |
| Activities | - Feasibility study<br>- Design and construction of necessary facilities<br>(Lecture room, meeting space, seminar hall, parking space, etc.)<br>- Necessary equipment<br>- Plan of Training program<br>- Preparation of training materials<br>- Management and operation plan |
| Executing Organization | Ministry of Tourism and MOC in cooperation with Phnom Penh Municipality and private sector |
| Outputs (Results) | - Acquire sufficient knowledge and skill for public officials and private sector<br>- Acquire technical skill and creativity for artisans |

| **C. Tertiary Industry** | **C-2** |
|---|---|
| Project Name | **Improvement and Support for Urban Service Business (Phnom Penh and Sihanoukville)** |
| Backgrounds | In the Growth Corridor area, service sector (including trade, hotel & restaurants, transport & communication, finance, etc) is the leading industry with a 41.5% (2,630 Billion Riels) of the total GDP in 2000. Most service businesses have concentrated in Phnom Penh and Sihanoukville and provincial centers in the Study Area. The GDP of service sector in Phnom Penh and Sihanoukville in 2015 are estimated to increase 6,471 Billion Riels (56.9%) and 547 Billion Riels (50.8%), respectively. In particular trade, hotel & restaurant and transport & communication businesses dominate in service sector. In the service sector, most of companies are either small and medium enterprises (SMEs) or company smaller than SMEs.<br><br>Since service sector in the Study Area is the most important for urban economic activity and increasing demand and diversifying service business activity and function especially in Phnom Penh and Sihanoukville. In addition, Special Promotion Zone (SPZ)/EPZ will be established in Sihanoukville in near future. Under the circumstances, it is indispensable to have further improvement of the service sector in terms of management and operation by providing technical and financial support. |
| Project Purposes | To improve business and management skill for manager and staff by providing various types of training course<br>To strengthening financial institutions by providing loan analysis training and SME Investment Fund.<br>To support service sector |
| Target Year<br>(Project Period) | 2004-2008 (Urgent- Short term) |
| Beneficiaries<br>(Target Group,<br>Target Area) | Private and SMEs for service sector, local workers |
| Activities | - Service sector survey and analysis<br>- Create supporting system<br>- Providing training course for SME (management training, skill, etc)<br>- Dispatch instructor and specialist<br>- Establishing SME investment fund<br>- Training of local employees working at foreign enterprises<br>- Establishing information database |
| Executing Organization | International agency in collaboration with MOC, Phnom Penh and Sihanoukville Municipalities and private sector |
| Outputs (Results) | - Improvement of business skills<br>- Acquiring basic knowledge and skill for service business<br>- Upgrading of service quality |

**C. Tertiary Industry** **C-3**

| Project Name | **Improvement of Beach Areas in Sihanoukville** |
|---|---|
| Backgrounds | Sihanoukville is a beach/marine tourist destination in Cambodia and popular for local people from Phnom Penh and backpackers. The number of visitor to Sihanoukville was increased from 43,331 in 1996 to 103,568 in 2001. There are five major beaches along the coastal line. Most of beaches have been developed without proper plan and design standard and guideline. Existing facilities located at beach area such as toilet, shower, restaurants are very poor condition, which degrades an image of Sihanoukville. Beaches and surround areas are main tourist resources to attract visitors to Sinanoukville. Due to a growing number of visitors to Sihanoukville, it is necessary to improve and manage existing beach areas. |
| Project Purposes | To attract more visitors to beach areas by improving existing facilities and developing necessary facilities at beach areas.<br>To manage and protect environment at beaches and surrounding areas.<br>To create awareness in preservation, beautification of beach areas for local people and visitors.<br>To manage beach areas by local people and private sector.<br>To provide employment opportunities and increase in income for local people<br>To promote marine/beach activities |
| Target Year<br>(Project Period) | -2008<br>Phase I: priority area (Ochheuteal Beach)<br>Phase II: to be selected |
| Beneficiaries<br>(Target Group,<br>Target Area) | Local people, municipalities in Sihanoukville<br>Beaches (Ochheuteal, Victory, Independence, Sokha, Hawaii) in Sihanoukville |
| Activities | - Feasibility study<br>- Design and construction of necessary facilities (Information building, toilet, shower room, restaurant, retail space, parking area, access roads, bench)<br>- Beautification of beach areas<br>- Installation of signage and information board<br>- Preparation of management and operation plan<br>- Training of staff<br>- Promotion of marine sport activities |
| Executing Organization | Sihanoukville Municipality and Sihanoukville Tourism Office in collaboration with Ministry of Tourism |
| Outputs (Results) | - Increase in income of local people<br>- Increase in employment opportunity<br>- Growth of visitors to beach area<br>- Enhancement of environmental quality at beach area<br>- Upgrading service quality |

| **C. Tertiary Industry** | **C-4** |
|---|---|
| Project Name | **Tourism Master Plan for Greater Capital Area** |
| Backgrounds | Phnom Penh is a tourism gateway for foreign tourists offering several cultural and historical tourism resources and attractions including Royal Palace, Silver Pagoda, National Museum, Toul Sleng Genocide Museum, etc. In recent years, an increasing number of foreign tourist only visiting Angkor Wat temples in Siem Reap coming by a directly flight arrive to visit Siem Reap by direct flight from Bangkok and other cities in neighboring countries. Most foreign tourists spend only one or two days visiting major tourist sites in Phnom Penh.<br><br>Phnom Penh is designated as one of four priority development areas by the RGC, but it still remains opportunities for improvement and development of tourist sites, accommodation, information services and so on in order to attract more tourists and increase the tourist's length of stay.<br><br>In the past, Tourism Development Strategy for Phnom Penh (July, 1996, UNDP, WTO) and Greater Phnom Penh Tourism Development Strategy (2001, ADB) were prepared bur there is no master plan in Phnom Penh yet.<br><br>Referring to the previous studies, Greater Phnom Penh area (Phnom Penh and Kandal Province) is necessary to prepare and formulate a tourism Master Plan for short and long term including tourism development guideline feasibility analysis of projects/programs. |
| Project Purposes | To analyze current situation of tourism industry in Greater Phnom Penh Area and find development potential.<br>To provide an appropriate tourism planning and development guideline of Greater Phnom Penh Area for MOT and relevant agencies.<br>To prepare effective implementation measure for proposed projects/program for shot-long term. |
| Target Year<br>(Project Period) | Master plan preparation period; 2003-5 (2 –3 years), Master plan period is 15 years. |
| Beneficiaries<br>(Target Group,<br>Target Area) | Locals engaged in tourism and service business in Phnom Penh and Kandal Province<br>Domestic and foreign tourists, private sector (tourism business operator, hotels, etc), MOT, local government |
| Activities | - Analysis of existing condition for tourism sector<br>- Field survey of tourist sites<br>- Analysis of development constraints and potential<br>- Tourism demand projection<br>- Tourism development framework, development scenario and strategies<br>- Proposing projects and programs<br>- Feasibility Study of selected projects and programs<br>- Implementation and management, marketing plan |
| Executing Organization | Ministry of Tourism in collaboration with Ministry of Public Works, relevant ministries, Phnom Penh Municipality, Kandal Provincial government and private sectors |
| Outputs (Results) | - Improve existing tourist sites and enhance cultural and historical value<br>- Increase in income of local people and reduction of poverty<br>- Increase in tourist's length of stay and tourist expenditure<br>- Revitalizing tourism and service business and increasing employment opportunity<br>- Growth of domestic and foreign tourists in Greater Phnom Penh |

**C. Tertiary Industry** **C-5**

| Project Name | **Arts and Handicraft Center by Refurbishing Grand Market (Greater Capital Area)** |
|---|---|
| Backgrounds | Various type of handicraft such as Khmer silk weaving, silver craft, carvings, etc are sold at markets, souvenir shops at hotels and handicraft shops in Phnom Penh. Most of handicraft shops are relatively small scale with limited kinds and design, which sometimes does not meet foreign tourist requirement.<br>Foreign tourists not only enjoy purchasing handicraft but also they want to see a process of the handicraft production by local artisan, and experience to make the product by their own. Most handicrafts are produced at rural villages and transported to Phnom Penh. In fact, handicraft villages are not easy to access for foreign tourists. In this regard, it is necessary to develop Arts and Handicraft Center at selected village or area in Greater capital area, in which various types of handicraft artisans and local handicraft workers are gathered. At the Arts and Handicraft Center, besides demonstration and experience of handicraft production process, traditional dance performance by local dancers is offered, which will become a new tourism site attracting foreign tourists.<br>The Grand Market was built in 1930's and is one of the monumental architectural piece form the colonial age. This project presumes to refurbish this Grand Market by installing new painting, lighting, interior refurbishing, while maintaining the structure and outlook of the building. |
| Project Purposes | To promote local handicraft industry<br>To improve technical skill of local handicraft producer<br>To show actual handicraft production process to visitor<br>To increase income of local produce by selling products<br>To organize local art performance group capable of Khmer traditional dances, music, etc. |
| Target Year (Project Period) | 3 years in the urgent and short terms (2005 - 2007) |
| Beneficiaries (Target Group, Target Area) | Local people, handicraft artisans, local handicraft workers, local dancers in Greater capital area |
| Activities | - Feasibility study<br>- Plan, design and construction of necessary facilities (Main building, dance performance space, retail space, exhibition area, information corner, restaurant and parking area)<br>- Management and operation plan<br>- Training development program of local artisans, handicraft workers<br>- Promotion of local handicraft product and tour |
| Executing Organization | Ministry of Culture and Fine Arts in cooperation with local government and NGOs |
| Outputs (Results) | - Increase in income of local people and employment opportunity<br>- Acquire technical skill and creativity for artisans<br>- New tourist attraction for foreign tourist |

| **C. Tertiary Industry** | **C-6** |
|---|---|
| Project Name | **Pilot Project for Village-Based Tourism (Intermediate Area)** |
| Backgrounds | Village-based tourism is introduced as a new type of tourism activity, which aims to develop an appropriate tourism product for the village community. Village-based tourism has already been planned and implemented at developing countries.<br><br>For village-based tourism, suitable tourism products such as handicraft, artwork, traditional performing arts, music and other local cultural aspects are selected for the villages at the initial stage. After created tourism products at the village with technical support from local experts NGOs in cooperation with will local authority, a private tour operator organizes a village-based tourism tour and brings tourists to the village.<br><br>In the Intermediate Area, there can be identified suitable villages for the village-based tourism as a pilot project. |
| Project Purposes | To develop appropriate product tourism product for the village community<br>To create employment opportunity and earn supplemental income for villagers<br>To improve living standard of villager<br>To create tourism awareness |
| Target Year<br>(Project Period) | 3 years in the urgent to short terms (2004-2006) |
| Beneficiaries<br>(Target Group,<br>Target Area) | Village community at selected area within the Intermediate Area |
| Activities | - Field survey<br>- Feasibility study of site selection for pilot project<br>- Selection of tourism product for the village<br>- Product development<br>- Organization of village community for tourism activities<br>- Design and construction of necessary facilities<br>- Management and operation plan<br>- Training of staff<br>- Promotion plan |
| Executing Organization | Local government in cooperation with Ministry of Tourism and NGOs |
| Outputs (Results) | - Increase in income and employment opportunity<br>- Enhance value of culture and tradition<br>- Improvement of infrastructure for the community<br>- Create awareness of conservation, management and sustainable use of the environment |

| **D. Investment Development** | **D-1** |
|---|---|
| Project Name | Establishment of Special Promotion Zone (SPZ) to improve the investment environment of Cambodia |
| Backgrounds | In order to meet and overcome the current institutional requirement and the constraints of Cambodia and improve the investment climate for FDI, some basic principles of SPZ have to be introduced. |
| Project Purposes | Establishment of SPZ for the FDI promotion |
| Target Year | Urgently in 2002-2003 |
| Beneficiaries | *Employees working in FDI enterprises established in SPZ attracted by the preferential incentives and well-developed supporting infrastructure* |
| Activities | • Promulgation of a new Law named "Special Promotion Zone Law"<br>• Coincidence with the amended Law of Investment<br>• Appoint the SPZs throughout the country |
| Executing Organization | • CDC, MOC, MIME |
| Outputs (Results) | • Enactment of a new Law named "Special Promotion Zone Law"<br>• Designation of SPZs |
| Inputs | None |

| **D. Investment Development** | **D-2** |
|---|---|
| Project Name | FDI Promotion for EPZ/FTZ in Sihanoukville and Phnom Penh |
| Backgrounds | *Effective FDI promotion is necessary for the success of the Sihanoukville EPZ/FTZ* |
| Project Purposes | Establishment of FDI manufacturers/traders in Sihanoukville EPZ/FTZ and Phnom Penh EPZ/FTZ |
| Target Year | Urgent and Short term |
| Beneficiaries | • Sihanoukville EPZ/FTZ<br>• Phnom Penh EPZ/FTZ |
| Activities | • Selection of the target category of industry and countries/region<br>• Preparation of promotion materials<br>• Promotion activities such as promotion trip for prospective countries, mail promotion, etc. for Sihanoukville EPZ/FTZ and Phnom Penh EPZ/FTZ<br>• Establishment of new organization for FDI promotion is recommended in Thailand and other prospective countries. |
| Executing Organization | • MOC with the collaboration of CDC and MIME |
| Outputs (Results) | • Identification of interested FDI for investment in EPZ/FTZ<br>• Decision of investment by FDI in EPZ/FTZ |
| Inputs | US$ 1 million |

| **D. Investment Development** | **D-3** |
|---|---|
| Project Name | Development of the Sihanoukville **EPZ/FTZ** |
| Backgrounds | To meet the FDI demand in 2005, EPZ/FTZ shall be developed as the urgent industrial infrastructure development in the designated area of the Sihanoukville SPZ to invite the port based manufacture and trader. |
| Project Purposes | FDI promotion in Sihanoukville SPZ |
| Target Year | Urgent (before 2005) |
| Beneficiaries | Employees working in FDI enterprises established in EPZ/FTZ<br>FDI and Local investor |
| Activities | • Establishment of the organization in charge of the EPZ/FTZ development project<br>• Development of internal and external infrastructure of EPZ/FTZ by the cooperation of the FDI and local private initiatives |
| Executing Organization | PAS + Private investors for internal infrastructure |
| Outputs (Results) | Development of EPZ/FTZ in the Sihanoukville |
| Inputs | Tentatively US$ 10 million for the internal infrastructure for the area of 40ha |

| **D. Investment Development** | **D-4** |
|---|---|
| Project Name | Development of GIE in the Sihanoukville SPZ |
| Backgrounds | To meet the FDI demand in 2008 and 2015, GIE with the area of approximately 60 ha and 100ha shall be developed in the designated area of the Sihanoukville SPZ to invite the port based manufacture. |
| Project Purposes | FDI promotion in Sihanoukville SPZ |
| Target Year | Short-term (2008) and Long term (around 2015) |
| Beneficiaries | Employees working in FDI enterprises established in GIE<br>FDI and Local investor |
| Activities | Development of internal and external infrastructure by the cooperation of the FDI and local private initiatives |
| Executing Organization | GOC+ Private investors for internal infrastructure |
| Outputs (Results) | Development of 100ha GIE in the Sihanoukville SPZ |
| Inputs | Tentatively US$ 15 million and US$ 25 million for the internal infrastructure for the area of 60 ha and 100ha |

| **D. Investment Development** | **D-5** |
|---|---|
| Project Name | Renovation of fish port with supporting infrastructure and development of fishery processing estate in Sihanoukville, Kaoh Kong and Kampot |
| Backgrounds | The present export value of the fish reaches only to US$ 5.9 million, or 0.4 % of the total value amount of exports. The reasons of the low export value are low value added of unprocessed products, unmodernized export system, 10% export tax, poor support infrastructure in the fishing port, etc. |
| Project Purposes | To encourage the fishing products export and increase the fisherman ‘s income through the modernization of fish products trading system and improvement of fishing support infrastructure.<br>For the future expansion of the Sihanoukville Port, the development of the new fish port with the supporting infrastructure is inevitable for the relocation of existing fishermen’s village spread in the port area. |
| Target Year | Medium term |
| Beneficiaries | • Fishermen, Fish products trader<br>• FDI manufacturer of marine products, Employees of manufacturer |
| Activities | • Renovation of the supporting infrastructure of fish port (loading, storage, transportation, etc.)<br>• Development of whole sale market of marine products (system and facility)<br>• Development of fish processing industrial estate |
| Executing Organization | • MAFF (Ministry of Agriculture, Forestry and Fisheries)<br>• MOPWT (Ministry of Public Works and Transport)<br>• Sihanoukville City<br>• Kampot Provincial Government<br>• Kaoh Kong Provincial Government<br>• Fish transport and export associations |
| Outputs (Results) | • Renovated fish port facility, wholesale market, processing industrial estate<br>• Establishment of fish processing manufacturer and shipping to domestic/foreign market<br>• Improvement of trading system of fish products |
| Inputs | US$30 million |

| **D. Investment Development** | **D-6** |
|---|---|
| Project Name | Development of Phnom Penh **EPZ/FTZ** |
| Backgrounds | To meet the FDI demand in 2005, EPZ/FTZ shall be developed as the urgent industrial infrastructure development to invite the airport based manufacture and trader in the vicinity of the Phnom Penh airport. |
| Project Purposes | FDI promotion in the Greater Capital area |
| Target Year | Urgent (before 2005) |
| Beneficiaries | Employees working in FDI enterprises established in EPZ/FTZ<br>FDI and Local investor |
| Activities | • Establishment of the organization in charge of the EPZ/FTZ development project<br>• Development of internal and external infrastructure of EPZ/FTZ by the cooperation of the FDI and local private initiatives |
| Executing Organization | GOC + Private investors for internal infrastructure |
| Outputs (Results) | Development of EPZ/FTZ in the great capital area |
| Inputs | Tentatively US$ 40 million for the internal infrastructure development for 200ha |

| **D. Investment Development** | **D-7** |
|---|---|
| Project Name | Development of GIE in the Greater Capital |
| Backgrounds | To meet the FDI demand in 2008 and 2015, GIE with the area of approximately 200ha and 400ha shall be developed in the vicinity of the Phnom Penh airport to invite the port based manufacture. |
| Project Purposes | FDI promotion in the Greater Capital area |
| Target Year | Short term (2008) and Long term (around 2015) |
| Beneficiaries | Employees working in FDI enterprises established in EPZ/FTZ<br>FDI and Local investor |
| Activities | Development of internal and external infrastructure of EPZ/FTZ by the cooperation of the FDI and local private initiatives |
| Executing Organization | GOC + Private investors for internal infrastructure |
| Outputs (Results) | Development of GIE in the greater capital area |
| Inputs (Project Cost) | Tentatively US$ 40 million and US$ 80 million for the internal infrastructure development for 200 ha and 400ha |

**D. Investment Development** **D-8**

| | |
|---|---|
| Project Name | Kaoh Kong Special Border Economic Zone/IZ |
| Backgrounds | This project is one of the top priority components of the Thailand-Cambodia Strategic Economic Cooperation Plan which has been initiated by the Governments Cambodia and Thailand at the beginning of 2002. |
| Project Purposes | Project aims at making the best use of the land and labor of Cambodia and capital and marketing capacity of Thai investors for the mutual benefit of the two countries. Kaoh Kong area has been selected due to the close proximity to the Eastern Seaboard and Bangkok and locational advantage of having coastal line with possible sea transport. |
| Target Year (Project Period) | Project implementation is planned to be completed in 2005. |
| Beneficiaries (Target Group, Target Area) | • Target group includes the joint venture companies to be formulated between the Thai and Cambodian investors and the Cambodian people to be employed in the factories.<br>• Target Area is the Kaoh Kong town, Kaoh Kong district and Mondul Seima district in the Kaoh Kong province, which are located close to the Thai boarder. |
| Activities | • Establish IZ/SBEZ (Special Boarder Economic Zone) attracting manufacturing enterprises of Thai-Cambodian joint venture as well as Thai and Cambodian investors.<br>• Urban area expansion and upgrading as well as the development of infrastructure including airport, water supply and electricity. |
| Executing Organization | Cross-Border Economic Development Corporation under the International Border Economic Committee of Thailand/Cambodia |
| Outputs (Results) | Details are yet to be worked out by carrying out a feasibility study.<br>At this preliminary stage, area of industrial zone is expected to be around 400 ha. |
| Inputs (Project Cost) | US$62.6 million |

**E. Legal and Institutional Framework** **E-1**

| Project Name | *Computerization of customs clearance procedures* |
|---|---|
| Backgrounds | The CED currently operates the customs clearance work manually. The manual method obviously delays the customs clearance process, allows the leakage of the possible taxation, makes the trade statistics incorrect, forces the investors (exporters and importers) to deal with the duplicated documentation work (for example, the VAT refund procedures) and reporting to the relevant government sections. The human contacts unavoidably occurred by the manual method is said to allow the request for the unofficial charges and fees during the course of customs clearance.<br>In 1998, the CED started to examine the possibility of introducing ASYCUDA (Automated System to the Customs Data), which is a package software developed by UNCTAD, to apply to the customs clearance and once updated the introduction plan in 2000. The CED finally gave up the introduction plan because of the budgetary constraint.<br>Although the CED is now working on the installation plan of computer systems with assistance of UNDP under Technical Cooperation Action Plan (TCAP), the scope of installing such computer system is said to be limited to a general use at inside of the CED. As of October 28, 2002, UNDP started the recruit of IT Development Officer in Cambodia for strengthening the advisory and planning activities to the CED in the field of IT development. According to the Reform Program 2002 – 2008 of the CED, they plan to develop and implement the Customs Automation System in between 2002 and 2006.<br>Among ASEAN member countries, Singapore, Malaysia, Thailand and Indonesia have already installed the computerized customs clearance system. Those systems are believed to contribute considerably to facilitate cargo reporting, shorten the customs clearance time, value customs duty and tax precisely, establish the traders profile, realize effective Post Clearance Audit (PCA) scheme, produce more accurate trade statistics and make revenue analysis easier. The problem of unofficial cost arise in the customs clearance process would not be solved by simply installing the computerized system (by avoiding human contacts) but the computerization of the customs clearance process would bring enormous benefits to both the investors and the RGC. |
| Project Purposes | • The computerization of customs clearance procedures has the following objectives:<br>• Simplifying the customs clearance operation<br>• Harmonizing with PSI scheme<br>• *Enabling the advance cargo reporting*<br>• Eliminating unnecessary physical inspection by establishing Database of traders<br>• Widening the PCA opportunities<br>• Realizing smooth flow of goods<br>• Providing the investors with the opportunities for planned and rationalized operations, which promote the trade activities<br>• Avoiding duplicate documentation among the relevant governmental sections<br>• Preparing accurate trade and revenue statistics in time so that they could contribute to well-planned policy making |
| Target Year<br>(Project Period) | 2003: Research on the current procedures and required scopes of the system. Future needs and requirements have also to be studied. Outline the desirable system and estimating the expected cost of implementation including the hardware. Complete basic system design.<br>2004: Complete system design and start programming<br>*2005: Complete programming and test run. Start formal operation by the end of year* |
| Beneficiaries<br>(Target Group,Target Area) | |

| Project Name | *Computerization of customs clearance procedures* |
|---|---|
| Activities | • Sector to be covered by the new computerized system<br>The computerized system is to be installed in the CED, including Head Quarter and main boarder gates such as Sihanoukville Port, Phnom Penh Airport and major gates (3- 4 places as the first stage)<br>• Systems<br>ASYCUDA, EDI or self-development software<br>Necessary hardware<br>• Contents of the System<br>Customs declaration systems for exports and imports<br>Selection system of automatic approval for customs clearance<br>Preparation for intelligent audit<br>Database for PIA<br>Preparation and supply of Profile data<br>Application to handle bond-related procedures<br>Application to handle customs duties, excise taxes and VAT<br>Application to handle VAT refund<br>Application to handle the investors' reporting to the CDC<br>Automatic preparation of trade statistics and revenue statistics |
| Executing Organization | The CED, Ministry of Economy and Finance (MEF) would conduct the implementation of the system, with cooperation of the Tax Department, MOC, MIME and other relevant ministries.<br>Outside software consultants with good knowledge of computerization of customs operations and computer hardware engineers would also participate.<br>Local software houses would have to be involved for preparing the future maintenance work. |
| Outputs (Results) | |
| Inputs (Project Cost) | ASYCUDA is said to cost US$2 to 2.5 million. In case of self-developed software, the estimated cost would vary according to the scope of work.<br>Hardware cost is subject to the estimation. |

**E. Legal and Institutional Framework** **E-2**

| | |
|---|---|
| Project Name | Dispatch of Experts from Japan for Facilitating the Legal and Institutional Framework of the SPZ |
| *Backgrounds* | The RGC has long been considering the introduction of Special Promotion Zone to promote FDI and activate national and regional economies. In SEDP II, the establishment of the SPZ is one of the policy targets and its intention has been repeatedly reported in its implementing report.<br>In spite of its strong will and policy, there has not been any legal framework provide for establishing such SPZ, except for the Sub-Decree of 1995 on the appointment of Stung Hav Industrial Zone. The real purpose, legal and institutional framework, preferential treatment provided to the investors to locate in the Zone, detailed rules on the business activities of the investors or the licensing and approval procedures have never been seriously examined. This might be due to the lack of experiences and capacities in the RGC for implementing such a policy.<br>Among ASEAN members, some countries already succeeded in the economic take-off by utilizing the similar scheme for quite a while. China also introduced "one country-two schemes" policy some twenty years ago. For attracting FDI and letting market-oriented economy works in the country, they introduced so-called "Economic Special Zones" and recorded remarkable success.<br>Those countries are still very much in need of FDI for their economic growth and there can be seen the hard competition among the Asian countries to promote FDI in own country. China is making over-all success in such competition again and the other Asian countries now seem to concentrate their efforts to the selected field where they think they still keep the competitiveness over China. In view of such tendency, there is not much time left for Cambodia and the country shall start serious efforts on implementing the attractive SPZ to promote FDI. To assist such efforts of the RGC, it is recommendable that the RGC would invite from outside some specialists with experiences and knowledge of implementing the legal and institutional framework for the similar zone. |
| Project Purposes | • Promote FDI in Cambodia<br>• Present and give advise to the RGC officials in charge about the development concept of the SPZ<br>• Coordinate the interests among relevant governmental sections<br>• Streamline the investment procedures and licensing process necessary for the exports-imports activities by utilizing the SPZ<br>• Being consulted about the measures of the operation management of the SPZ<br>• Facilitate the formation of legal and institutional framework for the SPZ<br>• Assist the RGC officials in drafting the law and regulations regarding the SPZ<br>• Cooperate with the RGC for fund raising |
| Target Year<br>(Project Period) | 2003: Study on the desirable concept of the prospective SPZ. Form the initial concept plan of legal and institutional framework, together with the incentive plans to be provided to the investors in the SPZ. Draft the Law.<br>2004: Coordinate the interests among the relevant sections. Facilitate the promulgation of the Law. Search for the financing source. Start drafting the Sub-Decree on the Implementation of the Law.<br>2005: Assist in searching for the financing source to establish the SPZ. Start drafting the Sub-Decree on the Implementation of the Law. |
| Beneficiaries<br>(Target Group,<br>Target Area) | |

| | |
|---|---|
| Project Name | Dispatch of Experts from Japan for Facilitating the Legal and Institutional Framework of the SPZ |
| Activities | • Number of Experts<br>Each one specialist for forming legal and institutional framework<br>• Duration of Dispatch<br>• Minimum for two years: Until the development planning will be completed with the enactment on the SPZ Law.<br>• Another one year for assisting in drafting of Sub-Decree on the Implementation of the Law (After the promulgation of the SPZ Law)<br>• Above dispatch will be implemented intermittently according to the work schedule and necessity. |
| Executing Organization | The CDC will be the main governmental sector for implementing the project. The MOC, MIME and other relevant ministries shall cooperate with CDC |
| Outputs (Results) | |
| Inputs (Project Cost) | 0.8million USD |

**F. Urban Planning** **F-1**

| Project Name | **Enhancement of Planning and Enforcement Mechanism of Urban Planning** |
|---|---|
| Backgrounds | The urban planning and enforcement mechanism in Cambodia is generally weak. Although the Law on Land Use Planning, Urbanization and Construction recognize the need for development master plans and land use plans as instruments for urban planning, the substance and methodology of the planning remain to be established.<br>Enforcement of the master plans and land use plans depends on the means of instrumentation. The Law provides "construction permission" is a regulatory instrument. The procedure of construction permission is not substantiated in the Law, nor any guidelines are in effect. Without clearly stipulated procedures and guidelines, the construction permission mechanism only fosters room for uncertainty and unpredictability for developers and investors.<br>The imperative task of urban planning in Cambodia resides in the enhancement of the planning and enforcement mechanism. Though the Law provides basic framework for urban planning, specifics of the urban planning and enforcement procedure are still widely open for substantiation. |
| Project Purposes | The objective of this project is to establish guidelines of the development master plan and land use plan, and to establish an autonomous criteria for the provision of construction permissions fro developers/investors. In order to achieve this, the prerequisite conditions for specific type of construction in specific zoning area needs to be established clearly.<br>These criteria shall be officially announced by RGM in due form. |
| Target Year<br>(Project Period) | 2003 |
| Beneficiaries<br>(Target Group,<br>Target Area) | The general population of Cambodia, 13 million in 2000<br>(Target group; Urban population 2 million in 2000) |
| Activities | 1) Compilation of the Guideline for Urban Master Plan<br>- Procedures and methodologies for Development Master Plan<br>- Requirements for Development Master Plan<br>- Requirement for Land Use Plan<br>- Procedures for approval<br>2) Technology transfer and capacity building of counterpart in urban planning |
| Executing Organization | Ministry of Land Management, Urban Planning and Construction |
| Outputs (Results) | 1) Provision of practical guideline for the Development Master Plan and Land Use Plan stipulated by the Law on Land Use Planning, Urbanization and Construction<br>2) Ensuring effective management of urban growth and thereby alleviating the urban poverty<br>3) Establishing a stable and transparent system of construction permission, and thereby promoting investments for development |
| Inputs<br>(Project Cost) | Expatriate expert providing advices and consultancy 12 Person/month |

**F. Urban Planning** **F-2**

| Project Name | **Assistance Capacity Building for Decentralization of Planning Functions** |
|---|---|
| Backgrounds | Urban planning does not pertain only to large cities. Medium and small cities often provides gateways to larger cities, and thus activate the rural hinterland. There need to be models appropriate for medium and small cities, probably more practical and straightforward than the model for larger cities, capable addressing the issues of medium and small cities. Considering that there are more than x cities in Cambodia with the population between 10,000 and 100,000, the planning of these cities needs to be decentralized.<br>The Law on Land Use Planning, Urbanization and Construction provides that the planning initiatives to start on the municipal and provincial levels, submitting the National Committee with draft plans for approval, but the regional offices of MLMUPC nor the Municipality/Provinces have the capacity and resources for formulating the master plans. |
| Project Purposes | The capacity building of staff will be the key for successful implementation of urban planning. This project aims at 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. |
| Target Year<br>(Project Period) | 2005 – 2010 |
| Beneficiaries<br>(Target Group,<br>Target Area) | The general population of Cambodia, 13 million in 2000<br>(Target group; Urban population 2 million in 2000) |
| Activities | 1) Seminar on the procedures and guidelines of urban planning in Cambodia to be attended junior planning staff of municipalities and province<br>2) On the job training of senior and junior planning staff in formulating and enforcing the respective urban plans for approval, with the guidance from the Ministry of Land Management, Urban Planning and Construction<br>3) Compilation of Khmer Language documents describing the urban planning procedures and construction permission guidelines<br>4) Assistance to the necessary equipment and facilities |
| Executing Organization | Ministry of Land Management, Urban Planning and Construction in collaboration with municipalities/provinces |
| Outputs (Results) | 1) Improved capacity of planning staff of MLMUPC regional offices and municipal and provincial governments<br>2) Khmer Language documents describing the urban planning procedures and construction permission guidelines<br>3) Enhancement of hardware for urban planning |
| Inputs<br>(Project Cost) | Basically utilizing local resources, with necessary guidance and consultancy from the expatriate.<br>(Yen 50 million) |

**F. Urban Planning** **F-3**

| Project Name | **Pilot Urban Master Plan for Sihanoukville** |
|---|---|
| Backgrounds | The most important strategy of urban planning in Cambodia is to facilitate a good pilot model of urban planning combining the local and expatriate expertise. The pilot Urban Master Plan shall include the development master plan and land use plan, as stipulated in the Law, together with a guideline for enforcement, particularly in regard to construction permission. |
| Project Purposes | The objective of the pilot Urban Master Plan is not only to construct a solid urban planning base for a specific city, but to establish methodologies, assumptions and procedures for urban master plans that follow. It will also serve as the first draft plan to be contemplated by the National Committee for approval. Formulation of the pilot Urban Master Plan shall in involve Department of Urban Planning and relevant regional office of MLMUPC, Municipality/Province and relevant agencies/organization. |
| Target Year<br>(Project Period) | 2003 |
| Beneficiaries<br>(Target Group,<br>Target Area) | The general population of Sihanoukville Municipality, 180,000 in 2000<br>(Target group; Urban population of Sihanoukville, 80,000 in 2000) |
| Activities | 1) Formulation of the Urban Master Plan of Sihanoukville<br>- Development Master Plan including population projection of sub-districts; planning of urban structure; population distribution; transportation network plan; infrastructure planning of water, power sewerage and telecommunication; environmental management; and recreational area planning<br>- Land Use Plan with a zoning plan with residential, commercial, industrial, recreational, public, defense and other relevant categories; relevant regulatory criteria; and an enforcement plan<br>2) Technology transfer and capacity building of counterpart in urban planning<br>3) Submittal of Urban Master Plan to National Committee for approval<br>4) Integration of participatory planning and self-help urban improvement |
| Executing Organization | Ministry of Land Management, Urban Planning and Construction in collaboration with Sihanoukville Municipality |
| Outputs (Results) | 1) Alleviation of urban poverty as a combined effect with the improvement of Port of Sihanoukville and development of SPZ in Sihanoukville<br>2) Effective management of urban growth of Sihanoukville<br>3) Establishing of methodologies, assumptions and procedures for urban master plans in other cities of Cambodia that will follow<br>4) Support for the enhancement of planning and enforcement mechanism of the urban planning practices in Cambodia (Project **H2**) |
| Inputs<br>(Project Cost) | Basically utilizing local resources, with necessary guidance and consultancy from the expatriate.<br>(Yen 100 million) |

| **F. Urban Planning** | **F-4** |
|---|---|
| Project Name | **Greater Phnom Penh Capital Area Urban Master Plan** |
| Backgrounds | The Greater Capital Area encompassing Phnom Penh Municipality and Kandal Province is the largest urban center of Cambodia, where staple of the nation's economic activities take place. Although the Law provides that Phnom Penh Committee be established, chaired by National Committee Chairperson, to formulate the Phnom Penh Development Master Plan, the committee has not yet been formed nor the plan prepared. Lack of the approved master plan for the area not only hinders a sound and harmonized expansion of the city, but also induces aggravation of urban environment, hampers economic activities and weaken the strength of the metropolitan area, and thereby the nation. |
| Project Purposes | The objective of the Greater Capital Area Master Plan is to formulate Greater Phnom Penh Capital Area Urban Master Plan. This plan will be a complex and multi-facetted planning exercise involving a variety of expertise. Expatriate assistance should be considered for this task. The prerequisite for the commencement of this project will be the guidelines for the urban planning and enforcement procedure put in effect. |
| Target Year<br>(Project Period) | 2004 – 2005 |
| Beneficiaries<br>(Target Group,<br>Target Area) | The general population of Phnom Penh Municipality and Kandal Province, 2.2 million in 2000<br>(Target group; Urban population of Phnom Penh Municipality and Kandal Province, 1.1 million in 2000)) |
| Activities | 1) Formulation of the Urban Master Plan of Greater Phnom Penh Capital Area<br>- Development Master Plan including population projection of sub-districts; planning of urban structure; population distribution; transportation network plan; infrastructure planning of water, power sewerage and telecommunication; environmental management; and recreational area planning<br>- Land Use Plan with a zoning plan with residential, commercial, industrial, recreational, public, defense and other relevant categories; relevant regulatory criteria; and an enforcement plan<br>2) Technology transfer and capacity building of counterpart in urban planning<br>3) Submittal of Urban Master Plan to National Committee for approval<br>4) Integration of participatory planning and self-help urban improvement |
| Executing Organization | Ministry of Land Management, Urban Planning and Construction in collaboration with Sihanoukville Municipality |
| Outputs (Results) | 1) Creation of the national capital symbolizing the future of the kingdom where the nationals can take pride<br>2) Vitalization of economic activities and promoting foreign direct investments<br>3) Alleviation of urban poverty<br>4) Effective management of urban growth of Capital Area |
| Inputs<br>(Project Cost) | Expatriate consultancy in close collaboration with the local counterpart agencies.<br>(Yen 1,000 million) |

**G. Human Resources Development** **G-1**

| | |
|---|---|
| Project Name | Establishment of Training Institute within Sihanoukville SPZ |
| Backgrounds | There are 2 Upper Secondary School and 2 Vocational Training Schools (Don Bosco and JVC) in Sihanoukville.<br>With a view to invite more FDIs, it is required to provide workers with practical knowledge and skills. However training needs for workers may be different in each firm. It is therefore effective that a professional training institute be invited to Special Economic Zone in Sihanoukville to provide order-made training required by FDI firms. Training facilities shall be made open to FDI firms. |
| Project Purpose | To Provide facility and practical training opportunity for FDI firms |
| Target Year<br>(Project Period) | 2008 |
| Beneficiaries<br>(Target Group,<br>Target Area) | FDI companies and employees |
| Activities | 1. To allocate training space (1 ha) in Sihanoukville SPZ<br>2. To invite Professional Training Institute<br>3. To make training arrangement for FDI firms |
| Executing Organization | Sihanoukville SPZ Authority (Tentative name) and a Training Institute |
| Outputs (Results) | 1. Professional training institute operates within Sihanoukville SEZ<br>2. FDI firms become able to provide practical training with workers<br>3. FDI firms improve satisfaction with the relevance of training programs |
| Inputs<br>(Project Cost) | Local resources (private training institute or Sihanoukville Vocational Training Center) |

**G. Human Resources Development** **G-2**

| | |
|---|---|
| Project Name | Establishment of University in Sihanoukville with faculty of Engineering |
| Backgrounds | There are 15 major Universities including both public and private in Cambodia. Out of 15 universities, 2 of them are located in Battambang and the rest in Phnom Penh. Population of Sihanoukville is increasing rapidly. The Cambodian Government encourages private sector participation in higher education. In Phnom Penh, new universities managed by private sector have been established.<br>It is worth inviting private university to Sihanoukville – the other pole of the growth corridor -. Establishment of University in Sihanoukville contributes to improve urban-rural disparities in higher education. |
| Project Purposes | To establish University in Sihanoukville, which provides practical education in the fields of engineering. |
| Target Year<br>(Project Period) | 2008 |
| Beneficiaries<br>(Target Group,<br>Target Area) | University enrolment age students in Sihanoukville |
| Activities | 1. To allocate lot (10 ha) for university campus in Sihanoukville SPZ<br>2. To invite private university<br>3. To make the university accredited from MoEYS |
| Executing Organization | Sihanoukville SPZ Authority (Tentative name) and Sihanoukville Municipality |
| Outputs (Results) | 1. Higher education institute operates within or close to Sihanoukville SPZ<br>2. FDI firms become able to recruit university graduated engineers easily |
| Inputs<br>(Project Cost) | Investment from Private university with guidance from Higher Education Department, MoEYS |

**G. Human Resources Development** **G-3**

| | | | | |
|---|---|---|---|---|
| *Project Name* | Strengthening Sihanoukville Municipal Vocational Training Center | | | |
| Backgrounds | There is a Municipal Vocational Training School in Sihanoukville.<br>In Sihanoukville, there are a few garment factories. There are many foreign supervisors working in these factories. It is more cost effective to replace these foreign workers with Cambodian workers. Cambodian supervisors may be able to better communicate with Cambodian subordinates. There is a Garment Training Center in Phnom Penh where garment factories supervisor candidates are trained. It would be effective to improve capacity of Sihanoukville municipal Training Center's training program on garment production management | | | |
| Project Purposes | 1) To train instructors of garment course in the Training Center in order to better teach garment production management. | | | |
| Target Year (Project Period) | 2005 (3 Years) | | | |
| Beneficiaries (Target Group, Target Area) | 1. Sihanoukville Municipal Vocational Training Center instructors,<br>*2. Garment factories in Sihanoukville* | | | |
| Activities | 1. To design course curricula together with local enterprises<br>2. To arrange equipment and materials for the program<br>*3. To implement training program (20 participants/ 1 course * 3 times/year)* | | | |
| Executing Organization | Sihanoukville Municipal Vocational Training Center under<br>Department of Education, Sport and Youth of Sihanoukville Municipality | | | |
| Outputs (Results) | *1. Sihanoukville Municipal Vocational Training Center instructors become able to teach production management of garment factory*<br>2. Rural women entrepreneurial groups are identified and trained | | | |
| Inputs (Project Cost) | Japanese experts (Garment production management)<br>*2. Sewing machine and ancillary equipment* | | | |
| Finance | Technical cooperation | | | |
| Implementation Schedule | Activity | 2003 | 2004 | 2005 |
| | | | | |
| | Course preparation | ═══ | | |
| | Course implementation | | ═══ | ═══ |
| | | | | |
| | | | | |
| Evaluation (Including Results of IEE) | Not implemented | | | |
| SW of EIA | Not required | | | |
| Location Map | Sihanoukville Municipal Vocational Training Center Located in Mitthapheap District | | | |

**G. Human Resources Development** **G-4**

| | |
|---|---|
| Project Name | Establishment of Faculty of Engineering in Royal University of Phnom Penh(RUPP) |
| Backgrounds | There are 14 major Universities including both public and private in Cambodia. Out of 14 universities, only four of them have engineering faculty. Cambodia Institute of Technology (ITC) is the leading university in this disciple however its annual enrolment is merely 80 students. 80 students are divided into 6 courses: Food Technology and Chemical Engineering, Civil Engineering, Energy and Electrical Engineering, Computer and Communication Engineering, Industrial and Mechanical Engineering, and Rural Engineering. Thus for example, only 15 Civil Engineers enter into the Cambodian labor market annually. Courses in ITC are taught in French. Preah Kossomak Politechnic Institute started offering Electronics Engineer evening course last year. Its annual intake is limited to 30 students. 2 new private universities have recently started providing engineering courses.<br>Thus there is very limited number of engineers entering into labor market each year. Engineers are required in almost all industrial and commercial activities. Due to the shortage of the engineers, many enterprises have to rely on foreign engineers. |
| *Project Purposes* | To establish Faculty of Engineering in Royal University of Phnom Penh (RUPP). The Faculty includes, 1) Civil Engineering, 2) Electric, 3) Electronic and Mechatronic Engineering course. Courses will be taught in English. |
| Target Year<br>(Project Period) | 2008<br>(3 years from 2006) |
| Beneficiaries<br>(Target Group,<br>Target Area) | Royal University of Phnom Penh (RUPP) |
| Activities | 1. To arrange collaborating university (ties) in Japan<br>2. To establish 3 laboratories – Civil, Electric, and Electronic -<br>3. To design curricula for Engineering Faculty<br>4. To dispatch Japanese Experts to the Faculty as lecturers<br>5. To design and improve training courseware |
| Executing Organization | Higher Education Department, Ministry of Education, Youth and Sports (MoEYS), Royal University of Phnom Penh (RUPP) |
| Outputs (Results) | 1.Faculty of Engineering starts accepting 90 students annually (30 students each in 3 courses - Civil, Electric, Electronics -<br>2. Faculty members are trained by Japanese counterpart<br>3. Course ware (e.g. textbooks) is developed |
| Inputs<br>(Project Cost) | |
| Other Donor's Assistance | The World Bank's "Higher Education Project" is in the pipeline. The project is aimed at strengthening the formation year (general education) of the RUPP. The project is waiting for the enactment of the Law on accreditation of higher education in Cambodia". |

**G. Human Resources Development** **G-5**

| | |
|---|---|
| Project Name | Upgrading of Preah Kossomak Polytechnic Institute with cooperation from King Mongkut's Institute of Technology Ladkrabang (KMITL), Thailand |
| Backgrounds | There are little well-educated/trained human resources, while there are little jobs requiring educated/trained personnel in Cambodia. It is necessary to break through this viscous cycle of "No appropriate personnel, not much proper jobs" in order to develop industry in Cambodia.<br>3 Senior volunteers have been assigned to Preah Kossomak Polytechnic Institute. They are teaching Civil engineering, Computer technology, Electrical and Electronical Engineering.<br>King Mongkut's Institute of Technology Ladkrabang (KMITL) was established with the aims to provide education, and to promote research and development in science and technology for the industrial and economic development of Thailand.<br>The Institute has its origin in the Nonthaburi Telecommunications Training Centre (established with technical support from the Government of Japan in 1960), which later became the Nonthaburi Telecommunications College.<br>In 1985, King Mongkut's Institute of Technology Ladkrabang Campus achieved its current status as an independent state university.<br>KMITL accepted Faculty members of National University of Laos (NUOL) and also dispatched its faculty members to NUOL.<br>Preah Kossomak Polytechnic Institute is the only polytechnic in Cambodia. Preah Kossomak has the long history as the vocational training school. |
| *Project Purposes* | To establishment of IT Course (faculty) of Preah Kossomak Polytechnic Institute with cooperation from King Mongkut's Institute of Technology Ladkrabang (KMITL)<br>To improve the quality of Preah Kossomak Faculty members |
| Target Year<br>(Project Period) | 2008<br>(3 Years from 2006) |
| Beneficiaries<br>(Target Group,<br>*Target Area)* | Faculty members, Faculty of computer science, Preah Kossomak Polytechnic Institute |
| Activities | 1. To dispatch KMITL faculty members to Preah Kossomak as Lecturers (1month *3 members *4 times)<br>2. To dispatch Cambodian faculty members to KMITL (6 months *3memebers**4 times)<br>3. To dispatch Japanese Experts to Preah Kossomak as lecturers (0.5 month **3 members *4 times<br>4. KMITL and Preah Kossomak have monitoring meeting every 6 months. |
| Executing Organization | Ministry of Education, Youth Rehabilitation and Sports (MoEYS),<br>Technical and Vocational Education Department |
| Outputs (Results) | 1. 10 Preah Kossomak faculty obtain either Bachelor's and Master's Degree<br>2. Faculty of Computer Science is established |
| Inputs<br>(Project Cost) | |

**G. Human Resources Development** **G-6**

| | | | | |
|---|---|---|---|---|
| *Project Name* | Assistance for Rural Entrepreneurship Development | | | |
| Backgrounds | There is growing number of young personnel unemployed and underemployed. Providing productive employment for these new entrants to labor market is an important issue. Facilitation of private sector-led employment development is essential. Employment creation should not be limited to paid employment in FDIs. More attention shall be given to self-employment. Without assistance on entrepreneurship, many of the rural young women might be left as surplus agricultural workers or left in casual employment.<br>Takaev and Kampong Spue provinces are located along the Routes No. 3 and 4 respectively and their proximity to Phnom Penh market is considered advantage. | | | |
| Project Purposes | 1) To improve the quality of life of rural population.<br>2) To strengthen capacity of provincial government officials and TVET Dept. of MoEYS through jointly undertaking the following<br>*- To identify new value added products in rural areas*<br>- To provide rural women with entrepreneurial and managerial training<br>*- To explore marketing strategy for existing and new value added products* | | | |
| Target Year (Project Period) | 2005 (3 Years) | | | |
| Beneficiaries (Target Group, Target Area) | 1. Provincial government officials (Vice governor's office and Planning Department) and Technical and Vocational Education and Training Department of MoEYS,<br>*2. Rural young women in Takaev and Kampong Spue Provinces* | | | |
| Activities | 1. To conduct study jointly with Cambodian provincial government officials on rural women entrepreneurship<br>2. To provide entrepreneurship training with young Cambodians wishing to start their own business (e.g. how to prepare business plan, basics of accounting, business law, marketing) at Provincial Training Centers of Kampong Speu and Takeo, and at private training institutes.<br>*3. To provide financial assistance (micro credit) for those wishing to start up a business utilizing Self Employment Generation Fund in the Pilot projects* | | | |
| Executing Organization | Technical and Vocational Education and Training (TVET) Department, MoEYS and Takaev and Kampong Spue Provincial governments | | | |
| Outputs (Results) | *1. Provincial government officials become able to provide entrepreneurial and managerial training and advice*<br>2. Rural women entrepreneurial groups are identified and trained | | | |
| Inputs (Project Cost) | 1. Japanese experts (e.g., Business Development, Marketing, Participatory Planning and Food Processing)<br>*2. Provincial government staff* | | | |
| Finance | Technical cooperation | | | |
| Implementation Schedule | Activity | 2003 | 2004 | 2005 |
| | | | | |
| | Master Plan | | ═══ | |
| | Pilot Project | | | ═══ |
| | | | | |
| | | | | |
| Evaluation (Including Results of IEE) | Not implemented | | | |
| SW of EIA | *Not required* | | | |
| Location Map | Entire Takaev and Kampong Spue Provinces<br>Takaev province - population 790 thousand, Land area – 3,563km<br>Kampong Spue Province - population 600 thousand, Land area – 7,017km | | | |

**H. Rural Development** **H-1**

| | |
|---|---|
| Project Name | Improving Living of Urban Poor Areas in Sihanoukville |
| Backgrounds | The economic development such as newly created employments by factories, increasing volume of construction works in Sihanoukville have been attracting inflows of population. As a result, informal settlements in the urban area has growing rapidly and the living conditions and the environment in the such community have posed negative impact on health of the residence, thus, keeping them poor. |
| Project Purposes | Promoting improvement of living conditions and reducing poverty in urban poor communities in Sihanoukville through building up capacity of the unit of the municipality in charge of urban development, facilitating participatory planning and collective actions by residents of the community for improving their living conditions, raising awareness about sanitation and environment, providing training for income generation. |
| Target Year (Project Period) | 12 years (2003-2015) |
| Beneficiaries (Target Group, Target Area) | Poor people living in urban areas in Sihanoukville including informal settlements. |
| Activities | 1) setting up and capacity building of the Community Development Committees and the municipality unit,<br>2) networking among the CDCs, the municipality unit, and NGOs,<br>3) participatory planning of the urban area,<br>4) establishing and operating the Urban Community Development Fund,<br>5) formulation of standards and criteria for application for the fund<br>6) training of residents for construction works by a NGO<br>7) disbursement of loans for improvement of individual housing, upon the loan scheme becomes viable. Part of the fund for the loan is allocated from the Urban Community Development Fund |
| Executing Organization | The CDC and the municipality unit with support from International or Cambodian NGO |
| Outputs (Results) | Improvement of living conditions of poor families and communities in the poor urban area of Sihanoukville. |
| Inputs (Project Cost) | Training of the municipality unit and the CDC, skill training of the residence, materials for construction and improvement of infrastructure, fund for the Development Fund |

| **H. Rural Development** | **H-2** |
|---|---|
| Project Name | Income Generation Activities for farmers in Kandal Province (supporting a NGO project income generation) |
| Backgrounds | Recent economic growth of Phnom Penh Municipality has pulled up the economy in Kandal Province. Intensive vegetable production, food-processing, and handicrafts making targeting at the Municipality in a micro-scale by farmers as their family business have high potentially to generate additional income. |
| Project Purposes | Income generation of farmers in Kandal province |
| Target Year (Project Period) | 5 years (2002 – 2008) |
| Beneficiaries (Target Group, Target Area) | Farmers who have already experienced either vegetable production, food-processing, or handicrafts making as their small family business, and have land and intentions to enhance the business. |
| Activities | Activities in NGO's Income Generation Activities for the farmers supported by external fund.<br>1) Identifying potential markets in Phnom Penh Municipality and potential products<br>2) Researching potentiality to utilize the past experiences of farmers<br>3) Formulation of production skill training based on the result from 1) and 2)<br>4) Conducting the skill training for production<br>5) Purchasing of the products from the farmers by the NGOs<br>6) Selling of the products by the NGOs in the market<br>7) Conducting skill training for marketing and accounting<br>8) Facilitating collective activities as the preparation for making agricultural or craftsmen cooperatives |
| Executing Organization | International or Cambodian NGO with support from PAFF, PRD, and relevant provincial organizations. |
| Outputs (Results) | Increases of income of the farmers. Upgrading their production skills.<br>Setting-up preparatory functions for formulating agricultural or craftsmen cooperatives. |
| Inputs (Project Cost) | International or Cambodian NGO (experts of agriculture, agriculture food-processing, and handicrafts, experts of marketing and accounting, experts of operation of production cooperatives)<br>Materials for training, |

| **H. Rural Development** | **H-3** |
|---|---|
| Project Name | Income Generation Activities for Vulnerable People in Kandal Province (Supporting a NGO project) |
| Backgrounds | In spite of the recent sound growth of the Cambodian economy, vulnerable people in the society, such as people with disability, heads of female-headed household, landless farmers, can not enjoy the benefit. Instead, they are facing economic and social disparity due to inadequacy of the social policy of the government. Measures for mitigate the disparity are necessary. |
| Project Purposes | Realizing economic betterment of the vulnerable population through income generation activities conducted by them. |
| Target Year (Project Period) | 3 years |
| Beneficiaries (Target Group, Target Area) | Vulnerable groups such as female-headed households and people with disabilities in Kandal Province. |
| Activities | Activities in NGO's Income Generation Activities supported by external fund.<br>1) documentation and registration of the vulnerable groups<br>2) setting-up criteria for the selection of the beneficiaries and the selection<br>3) marketing research for prospective products produced by the beneficiaries (handicraft for souvenirs, cloths)<br>4) training of the skill needed for the production<br>5) training of promotion of entrepreneurship for part of the beneficiaries<br>6) sales of the products, distribution of the income to the beneficiaries<br>7) setting-up a pool fund for operation of activities as well as for saving for the future capital for the beneficiaries |
| Executing Organization | International or Cambodian NGO with support from provincial offices relevant to this kind of activities, such as Department of Women's and Veterans Affairs or Department of Social Affairs Labor Vocational Training and Youth Rehabilitation |
| Outputs (Results) | Increases of income of the vulnerable people through the sales of their products. Increases in skills of such people. Establishment and operation of small business by such people. Empowerment of the vulnerable people through collective learning, participation of activities, learning skills. |
| Inputs (Project Cost) | International or Cambodian NGO (skill trainers, experts of small business, social-welfare), training center, materials for training |

| **H. Rural Development** | **H-4** |
|---|---|
| Project Name | Income generation of a silk weaving village through tourism : Development of "Silk Island" (Kaoh Dach Island) as a tourist spot for "day-trip destination Phnom Penh City |
| Backgrounds | Silk weaving in villages in the Growth Corridor Area has been provides steady means of living for rural residents. Although several villages in the Greater Phnom Penh Area engaging in silk weaving, most producers working with middlemen, which is part of the reason for the lack of variety silk products thy produce. Despite the value of the traditional Khmer silk, increase in consumption by the Cambodians or international tourists do not come easily.<br>Thus, the producers make little efforts to increase their income by establishing a production association nor diversifying their product types. Little attention is paid to international tourists as potential buyers of Khmer silk souvenirs.<br>One of such villages is "Silk Island" (Kaoh Dach, in the local language) located in the Mekong River about 15 km north of Phnom Penh City. "Silk Island" village has a fertile potentiality to increase their income if it makes a tourists day-trip destination form Phnom Penh City. As a tourist's spot, the nurtured tradition of Khmer silk weaving could be displayed, while small fees could be collected from the visitors, and souvenirs made of silk sold. For successful operation, a committee consisting of members of producers and those of the commune council are formulated. With initiatives of this committee, the production techniques are to be upgraded, marketing of souvenir products are to be studied, and diversification of products be promoted. Part of the fee collected from the tourists would be pooled as a small development fund for the village. |
| Project Purposes | Increases of income of the people in a silk weaving village |
| Target Year<br>(Project Period) | 4 years (2003 – 2007) |
| Beneficiaries<br>(Target Group,<br>Target Area) | Silk weaving households in the "Silk Island" and other villagers, mainly those participate in souvenir producing. |
| Activities | 5) Setting up a committee consisted by producers and the commune council<br>6) Setting up mechanism and the environment as a tourist's spot such as fee/charge collecting mechanism and a resource center where silk products are displayed with short explanation about their production processes. Silk products are sold here.<br>7) Conducting marketing research on silk souvenirs<br>8) Training the producers and villagers to diversify their products and make silk souvenirs<br>9) Enhancing awareness of the producers and villagers to receive tourists<br>10) Promotion of the "Silk Island" as a tourist's spot of the "Silk Island" as a tourist's spot. |
| Executing Organization | JOCV or NGOs working together with relevant ministries such as Ministries of Industry, Rural Development, Commerce, Tourism. |
| Outputs (Results) | Increases in income of silk weaving households and villagers who participate in making silk souvenirs<br>Collection of information of marketing of silk souvenirs<br>Sales of silk products including newly introduced souvenirs.<br>Diversification of the silk products and training of silk weavers.<br>Creation of a tourist attraction in the Greater Phnom Penh Area |
| Inputs<br>(Project Cost) | JOCV, a resource center, training, materials for training, marketing research, sales promotion, etc. |

**H. Rural Development** **H-5**

| | |
|---|---|
| Project Name | Participatory Rural Development Project (in Kampong Spueu Province or other provinces) |
| Backgrounds | Cambodian farmers are in poverty due to the lower Agricultural productivity, and inadequate rural infrastructure. Large urban – rural economic disparity exist, and the preparedness of the rural population for competing for well-paying off-farm jobs is inadequacy. Agricultural extension services by the government reach only limited number of farmers. Very basic rural infrastructure, such as rural roads, small scale irrigation, drinking water supply facilities, which could earn high development effects, is still in need. Lack of knowledge of villagers on health issues and lack of their taking appropriate actions have made them powerless against preventable disease. Urgent measures for bottom-up of the rural areas are necessary. While economic development in the Phnom Penh and Sihanoukville Municipalities has been advancing, the trickle-down from it need time to reach the poor in the rural area. The on-going activities of Seila should be combined in this project. |
| Project Purposes | Poverty reduction in the rural area |
| Target Year (Project Period) | 5 years for the quick bottom-up (2003-2008) |
| Beneficiaries (Target Group, Target Area) | Poor farmers and their family members |
| Activities | 1) Training of district officials and commune representatives (chief, etc.).<br>2) Participatory commune planning. 3) Participatory construction of rural infrastructure and operation of O & M group activities for the infrastructure.<br>4) Training of low-input and sustainable agriculture techniques.<br>5) Awareness rising: on health and nutrition (sanitation, vegetable growing in family garden, disease prevention, improvement of daily life) |
| Executing Organization | A village group consisted by villagers and members for the commune council with support from the section of the provincial offices in charge of rural development and Seila |
| Outputs (Results) | Improvement of rural infrastructure, agriculture productivities, and nutrition situation and health of children in target villages. |
| Inputs (Project Cost) | Japanese experts: 6 to 7 persons in charge of decentralization, participatory development, gender, rural infrastructure, and health education, other. |

**I. Environment** **I-1**

| Project Name | **Capacity Enhancement for Effective Enforcement of Environmental Legislation** |
|---|---|
| Backgrounds | The enforcement system for the environmental legislation has not been sufficient in Cambodia. Although environment related basic legislation have been established step by step since the enactment of the Law on Environment Protection and Natural Resource Management in 1996, the enforcement system itself cannot satisfy the purpose of the laws. Insufficient law enforcement has no effect on prevention of environmental degradation.<br>Effective enforcement of the environmental legislation requires institutional capacity building both in the Ministry of Environment (MOE) and the provincial/municipal departments of environment, enactment of procedures and guidelines for law obedience, standardized pollution control system which covers wide range of pollution sources, and sufficient number of expertise. It is not until the above-mentioned factors are satisfied that the effective law enforcement becomes practicable. |
| Project Purposes | 1) To strengthen technical and institutional capacity of MOE and provincial and municipal departments of environment for effective law enforcement<br>2) To support making procedures and guideline (and relevant laws if necessary) for effective law enforcement<br>3) To train MOE and DOE staff for strict pollution source control and effective law enforcement |
| Target Year<br>(Project Period) | 2004~07 (more than 2 years) |
| Beneficiaries<br>(Target Group,<br>Target Area) | Staff of Ministry of Environment and Provincial/Municipal Departments of Environment |
| Activities | 1) Supporting to make procedures and guidelines for effective law enforcement,<br>2) Supporting to establish additional or detailed environmental legislation if necessary<br>3) Educating and training MOE and DOE officials based on the procedures and guidelines<br>4) Making the rounds of supervision to the provincial/municipal departments of environment |
| Executing<br>Organization | Ministry of Environment, Provincial/Municipal Departments of Environment |
| Outputs (Results) | Capacity for strict enforcement of environmental legislation will be strengthened and effective environmental management will be accomplished. |
| Inputs<br>(Project Cost) | Japanese experts or senior volunteers, related equipment |

**I. Environment** **I-2**

| | |
|---|---|
| Project Name | **Reinforcement of Pollution Source Monitoring in Sihanoukville and the Greater Capital Area** |
| Backgrounds | There are a number of proposed socio-economic development plans for Sihanoukville and the Greater Capital Area, including SPZ development. Implementation of these plans has possibilities to increase pollution from land and sea based sources, and to degrade valuable natural habitat. To prevent deterioration of air and water quality in SNV and GCA, strict emission control is required based on standardized and periodic pollution source monitoring. Currently, MOE and Municipal Department of Environment have conducted pollution source monitoring on wastewater from some factories but their institutional and technical capacity is limited. Thus, the level of monitoring capacity needs to be reinforced to cope with predicted pollution source increase by industrial development and urbanization. |
| Project Purposes | 1) To implement effective and standardized pollution source monitoring and control in Sihanoukville and the Greater Capital Area<br>2) To establish effective environmental management system based on the environmental monitoring system |
| Target Year<br>(Project Period) | SNV 2005~08 (3 years)<br>GCA 2004~06 (2 years) |
| Beneficiaries<br>(Target Group,<br>Target Area) | Local Communities, Ministry of Environment, Department of Environment of Sihanoukville and the Greater Capital Area |
| Activities | 1) Upgrading or establishment of laboratory office as a center for collecting, analyzing and processing monitoring data<br>2) Provision of adequate laboratory equipment and chemical materials for carrying out analysis.<br>3) Training and nurturing of MOE and DOE staff to enhance institutional capacity for environmental monitoring and to give now how to handle laboratory equipment and materials. |
| Executing Organization | Ministry of Environment, Department of Environment of Sihanoukville and the Greater Capital Area |
| Outputs (Results) | 1) Strengthening of environmental monitoring and management system for pollution source control.<br>2) 1) leads to factories' obedience to environmental standard and prevention of environmental degradation. |
| Inputs<br>(Project Cost) | Office, monitoring equipment, chemical test equipment and materials, training and teaching materials, environmental monitoring experts |

**I. Environment** **I-3**

| Project Name | **Construction of Controlled Landfill Site** |
|---|---|
| Backgrounds | In Sihanoukville, the volume of solid waste has been increasing with the population increase and industrial development. The municipality has an eight hectors landfill site, but the site is least-controlled type landfill. The collection and disposal of solid waste is consigned to the private company, but only 30% of discharged waste has been collected. The capacity of the company is limited at this stage, and the improvement of waste collection and management system cannot be expected in the short run.<br>The amount of solid waste discharged in Sihanoukville is about 80 tons in 1998. However, it is anticipated that the volume of solid waste will be about 220 tons in 2005 and 540 tons in 2008. To cope with the rapid increase of solid waste volume and to appropriately dispose of high volume of solid waste, upgrading present solid waste management system, including construction of controlled landfill site, is imperative and urgently required. |
| Project Purposes | 1) To facilitate appropriate solid waste disposal<br>2) To cope with predicted increase of solid waste discharge<br>3) To improve living conditions of local people<br>4) To prevent negative health impact caused by inappropriate solid waste disposal |
| Target Year<br>(Project Period) | 2004~06 (2 years) |
| Beneficiaries<br>(Target Group,<br>Target Area) | Local people, Local Enterprises, Sihanoukville Municipality |
| Activities | 1) F/S (including EIA) and D/D of controlled landfill site<br>2) Construction of controlled landfill site<br>3) Training for the municipal staff or responsible private company on operation and maintenance |
| Executing Organization | Sihanoukville Municipality, Private Waste Service Company (P.M. Rasy) |
| Outputs (Results) | By upgrading the present least controlled landfill site, discharged solid waste will be appropriately disposed. The establishment of controlled landfill site will mitigate negative impact on the surrounding environment and reduce health risk of the people living near the landfill site. |
| Inputs<br>(Project Cost) | Construction Materials, Construction Equipment and Vehicles, Expert for F/S and D/D, and landfill site management, Initial Operation Cost |

**I. Environment** **I-4**

| Project Name | **Study on Area-Specific Zero Emission Model** |
|---|---|
| Backgrounds | The depletion of natural resources and the degradation of environment will result in the difficulty in continuing in industrial growth and improvement of quality of life. One of the ways to prevent the situation from worsening is to create recycling oriented society, in other words "Zero Emission". Many systems have been introduced around the world both at area wide level and grass roots level. The process to establish zero emission systems often lead to establishment of the area-specific industries, and the system itself often contributes to improve living condition in the system implemented area. |
| Project Purposes | 5) To contribute to establish recycle oriented model area in Cambodia.<br>6) To enhance public awareness towards resource recycling society<br>7) To improve living conditions of local people<br>8) To seek possibility to establish area-specific eco-friendly industry<br>9) To improve cost efficiency for industrial/agricultural production |
| Target Year<br>(Project Period) | 2006~08 (2 years) |
| Beneficiaries<br>(Target Group,<br>Target Area) | Local People, Private Sector |
| Activities | 4) Disseminating the importance to establish zero emission society/recycle oriented society<br>5) Studying the possibility to introduce zero-emission system and identifying prospective cases by cooperating with local people and enterprises.<br>6) Implementing some pilot projects with technology transfer. |
| Executing Organization | Sihanoukville Municipality, Private Sector, Local People |
| Outputs (Results) | By implementing some pilot projects for area-specific zero emission, awareness of the local people for the importance of resource recycling will be enhanced. Some pilot projects may lead to improvement of sanitary condition in the rural area, and another project may contribute to establish area-specific industry. As a result, the study will results in poverty reduction in the area. |
| Inputs<br>(Project Cost) | Japanese local government experts with the knowledge of area-specific zero-emission (Local government with similar natural condition to Cambodia is preferable). |

**I. Environment** **I-5**

| Project Name | **Establishment of Integrated Coastal Fishery Management Center** |
|---|---|
| Backgrounds | Coastal water in Cambodia is rich in fishery resources. Coastal fishery resource generates significant benefit to local people if it is properly managed and used with sustainable manner based on scientifically supported data. However, a recent trend shows that the over-exploitation and habitat degradation have already started because of disordered coastal fishing. Further, scientific data on coastal fishery resources has not yet been sufficiently collected and analyzed. |
| Project Purposes | 1) To provide scientific support to effectively manage coastal fishing and aquaculture.<br>2) To enhance local fishermen's and fish farmers' awareness on importance of sustainable fishery resource use and systematic fishery.<br>3) To enhance fishery related officers' ability for fishery resource management. |
| Target Year (Project Period) | 2004~06 or 07 (2~3 years) |
| Beneficiaries (Target Group, Target Area) | Local Fishermen, Department of Agriculture, Forestry and Fishery in Coastal Provinces, MAFF |
| Activities | 1) Construction of the Fishery Management Center.<br>2) Collecting, analyzing and accumulating data on coastal fish resources and utilize the data for computing maximum sustainable yield.<br>3) Educating and training local fishermen for sustainable fishery resource use (including fish processing and marketing).<br>4) Instructing and exercising sustainable fishing technique (including simple aquaculture technique)<br>5) Disseminating the importance of coral reef and mangrove forestry for fishery to fishing villages.<br>6) Researching alternative livelihood for local fishermen to diversify their income resources (such as seaweed processing development) |
| Executing Organization | MAFF, DOAFF in Coastal Provinces |
| Outputs(Results) | 1) Enhancement of local fishermen's awareness for sustainable fishing and fishery management<br>2) Contribute to keep over-exploitation of marine resources and habitat degradation at a minimum |
| Inputs (Project Cost) | building, data collection/analysis/accumulation equipment, small aquaculture facilities, fishery management and aquaculture experts |

**I. Environment** **I-6**

| | |
|---|---|
| Project Name | **Biodiversity Conservation Project (Community Forestry Project), Bokor National Park** |
| Backgrounds | The Bokor National Park contains a wide range of habitats for internationally endangered species and supports a rich diversity of fauna and flora. However, the national park is under exploitation pressure, as the communities located adjacent to the national park have almost no alternatives but to depend on forest resources, such as firewood, wild foods and wild animals, for household income and subsistence.<br>To protect forest environment and habitat for a number of endangered species, it is necessary to improve socio-economic conditions of local people living around the national park through environmental education and income source diversification |
| Project Purposes | 1) To enhance awareness of local people on the importance of biodiversity protection for their livelihood.<br>2) To generate alternative income resource activities which are substitute for forest resources.<br>3) To enhance local officers' ability for participatory management systems. |
| Target Year<br>(Project Period) | 2004~06 or 07 (2～3 years) |
| Beneficiaries<br>(Target Group,<br>Target Area) | Poor Household Living in the Area adjacent to the National Park, the National Park Staff, Departments of Environment (Kampot, Sihanoukville, Koh Kong, Kompong Spew), MOE |
| Activities | 1) Establishment of local stakeholder committee to work with the project team<br>2) Implementation of community reforestation<br>3) Promotion of utilizing alternative energy materials (such as refuse of sugar palm)<br>4) Conducting vegetation survey and data collection, and implementing pilot project for agriculture, horticulture, and agro-forestry demonstration<br>5) Making physical boundary demarcation plan (zoning plan)<br>6) Establishment of small scale enterprises<br>7) Production of nature conservation education materials and implementation of environmental education at schools and local communities |
| Executing Organization | MOE (Department of Nature Conservation and Protection), Provincial Department of Environment |
| Outputs (Results) | Natural resources in the Bokor National Park will be managed in a sustainable manner, and the local people can get benefit by selling forest products which will be gained through properly managed way. |
| Inputs<br>(Project Cost) | Japanese experts team, local staff, GIS equipment, small scale nurseries and seedlings, meeting points construction |

**I. Environment** **I-7**

| Project Name | **Recycling of Market Waste and Household Sewage Project** |
|---|---|
| Backgrounds | Household sewage treatment and management of waste from the markets are one of the major environmental issues in the study area. In many cases, household sewage is discharged to waterways or water bodies with no treatment. Wastes from market are periodically collected, but it is often the case that the collected wastes are not properly disposed (the ratio of organic garbage is relatively high.). The above-mentioned situation deteriorates sanitary condition, especially in the area adjacent to the provincial urban center.<br>To make situation better, recycling use of household sewage and market waste as composting is effective. |
| Project Purposes | 1) To reduce environmental pollution caused by inadequate waste and sewage management.<br>2) To make sanitary condition better<br>3) To establish the base for proper waste management system<br>4) To enhance awareness of local people for the importance of recycling<br>5) To raise agricultural productivity |
| Target Year<br>(Project Period) | 2004~07 (3 years) |
| Beneficiaries<br>(Target Group,<br>Target Area) | Local People, Market Shop Owners, Provincial Department of Environment, Provincial Department of Public Work and Transportation |
| Activities | 1) Disseminating the importance of toilet use for sanitation<br>2) Equipping composting toilets to the selected household selected by attitudinal survey<br>3) Establishing separate waste collection and recycling system for the market generated wastes and educating market shop operators for the implementation of the system<br>4) Constructing waste composting facilities |
| Executing Organization | MOPWT, Provincial DOPWT, Private Waste Collection Companies, NGOs |
| Outputs (Results) | The environmental problems caused by inadequate management or treatment of waste and sewage will be reduced and the sanitary condition in the targeted areas will improve |
| Inputs<br>(Project Cost) | Japanese expert or NGO, JOCV, materials for composting toilet, equipment cost, composting facilities and site |

| **J. Transportation** | **J-1** |
|---|---|
| Project Name | Southern Railway Rehabilitation Project |
| Backgrounds | Transportation on the Growth Corridor heavily depends on road. It is useful to utilize the advantage of railway mode.<br>Southern Route of Royal Railways of Cambodia was very active in the past. Currently, the role of railway is very limited and its future is not promising. In addition, it is unlikely for a private company to operate the route. |
| Project Purposes | Utilize the advantage of railway transportation in the Region. |
| Target Year<br>(Project Period) | 2015 |
| Beneficiaries<br>(Target Group,<br>Target Area) | Railway users |
| Activities | Rehabilitation of rail beds.<br>Establishment of signal and communication system<br>Introduction of new rolling stocks. |
| Executing Organization | Royal Railways of Cambodia (RRC). |
| Outputs (Results) | Rehabilitation of Southern Line of RRC.<br>Improvement of passenger and cargo transportation on railways.<br>Reduction of heavy cargo trucks on Route 4. |
| Inputs<br>(Project Cost) | Loan from donors.<br>Domestic budget. |

| **J. Transportation** | **J-2** |
|---|---|
| Project Name | Container Distribution Center Project |
| Backgrounds | The exporters around Phnom Penh pay high land transportation costs for containers because of its location. There are several small inland container depots but a larger facility is required. |
| Project Purposes | To improve and rationalize container inflows and outflows. |
| Target Year<br>(Project Period) | 2003-04 Feasibility Study<br>2005-06 Construction |
| Beneficiaries<br>(Target Group,<br>Target Area) | Both exporters and importers. Transportation companies. |
| Activities | - Bonded Inland Container Depot for both Phnom Penh Port and Sihanoukville Port.<br>- One-stop service for all documentation for export and import including custom clearance.<br>- Electric Data Interchange.<br>- Including a Container Freight Station for cargoes less than a container load. |
| Executing<br>Organization | MOC, MPWT, Two Port Authorities, and Department of Customs.<br>A private company under PFI contract can operate the yard. |
| Outputs (Results) | Decrease the total cost of container transportation for both export and import.<br>Decrease the number of empty containers. |
| Inputs<br>(Project Cost) | Loan from financial institutions.<br>PFI is also appropriate. |

**J. Transportation** **J-3**

| | |
|---|---|
| Project Name | Container Lane Project |
| Backgrounds | The Route 4 continues to work as the most important arterial road for export and import in Cambodia. As the development of northern side of Sihanoukville Area, the container trucks are required to carry lengthy transportation on Route 4.<br>A new route between Stueng Hav and Prey Nob is now under construction by Engineering Command of Cambodian Armed Force to be competed in 2004. This project utilizes this new route specialized for heavy trucks. |
| Project Purposes | To improve access between Srae Ambel and Sihanoukville. |
| Target Year<br>(Project Period) | 2007 |
| Beneficiaries<br>(Target Group,<br>Target Area) | Exporters and importers. |
| Activities | After the construction work by Engineering Command;<br>- Reclassification of new route to national road.<br>- Upgrade the pavement suitable for heavy tucks.<br>- Establish a toll collection system |
| Executing Organization | MPWT, PAS and AZ Distribution. |
| Outputs (Results) | Reduction in travel time for container trucks.<br>Improvement of safety on road transportation. |
| Inputs<br>(Project Cost) | PFI of operation and maintenance by AZ Distribution can be introduced. |

| **J. Transportation** | **J-4** |
|---|---|
| Project Name | Sihanoukville Urban Transport Project |
| Backgrounds | The urban population in Sihanoukville is growing rapidly for the coming decade. However, its urban infrastructure is too weak to hold the growing population. Consequently, the condition will be worsened unless significant upgrade is not made.<br>There are some City Master Plans prepared for different purpose.<br>Of urban infrastructure, this project focuses on the improvement of urban rods in Sihanoukville. |
| Project Purposes | To revise the urban road network from the long-term perspective.<br>To separate traffic flow of container trucks from passenger transport.<br>To provide better commuting methods for the future EPZs.<br>To improve air quality. |
| Target Year<br>(Project Period) | 2003-2005 Urban transport master plan and feasibility study<br>2006-2007 Detailed design and financing<br>2005-2008 Construction |
| Beneficiaries<br>(Target Group,<br>Target Area) | Sihanoukville residents.<br>Transportation operators. |
| Activities | - Preparation of urban transport master plan<br>- Public transportation development<br>- Traffic management improvement<br>For those require construction work:<br>- Project selection and land acquisition<br>- Environment Impact Assessment (EIA) |
| Executing<br>Organization | MPWT and Sihanoukville Municipality. |
| Outputs (Results) | Improvement of urban transport in Sihanoukville. |
| Inputs<br>(Project Cost) | Loan or grant from various financial institutions.<br>Government budget.<br>Private Finance Initiative is also appropriate. |

**J. Transportation** **J-5**

| | |
|---|---|
| Project Name | New Phnom Penh Port Project |
| Backgrounds | The existing Phnom Penh Port started to accept container vessels in 2002. The Port became another gateway for external trade. However, the current port location has some problem in facility and surrounding environment.<br>Several ideas have been prepared by public sectors. |
| Project Purposes | The new Phnom Penh port should be located in the downstream area from the current port location. The new port should be equipped with appropriate container handling equipments for river vessels. |
| Target Year<br>(Project Period) | 2005-6 Site selection / Feasibility study<br>2007-9 Construction |
| Beneficiaries<br>(Target Group,<br>Target Area) | Both importers and exporters. |
| Activities | Site selection and acquisition<br>Initial Environment Examination (IEE)<br>Environmental Impact Assessment (EIA)<br>Setup of an operating agency. |
| Executing Organization | An independent agency for construction and operation. It can be either private or public. It is also possible to be a concessionaire from MPWT. |
| Outputs (Results) | Increase of containers handled at Phnom Penh port.<br>Decrease of container-shipping tariff from Phnom Penh. |
| Inputs<br>(Project Cost) | Loan from various financial institutions.<br>Private Finance Initiative is also appropriate. |

**J. Transportation** **J-6**

| | |
|---|---|
| Project Name | Phnom Penh Urban Transport Project |
| Backgrounds | Traffic congestion in Phnom Penh is a growing problem and JICA prepared the Urban Transport Master Plan in 2001. It is necessary to implement the proposed projects. |
| Project Purposes | To mitigate the traffic congestion.<br>To improve air quality. |
| Target Year<br>(Project Period) | 2002-2005 Detailed design and financing<br>2003-2008 Construction |
| Beneficiaries<br>(Target Group,<br>Target Area) | Phnom Penh residents.<br>Transportation operators. |
| Activities | - Outer Ring Road<br>- Public transportation development<br>- Traffic management improvement<br>For those require construction work:<br>- Project selection and land acquisition<br>- Initial Environment Examination (IEE)<br>- Environmental Impact Assessment (EIA) |
| Executing Organization | MPWT and Phnom Penh Municipality. |
| Outputs (Results) | Decrease of traffic volume in inner city. |
| Inputs<br>(Project Cost) | Loan or grant from various financial institutions.<br>Government budget.<br>Private Finance Initiative is also appropriate. |

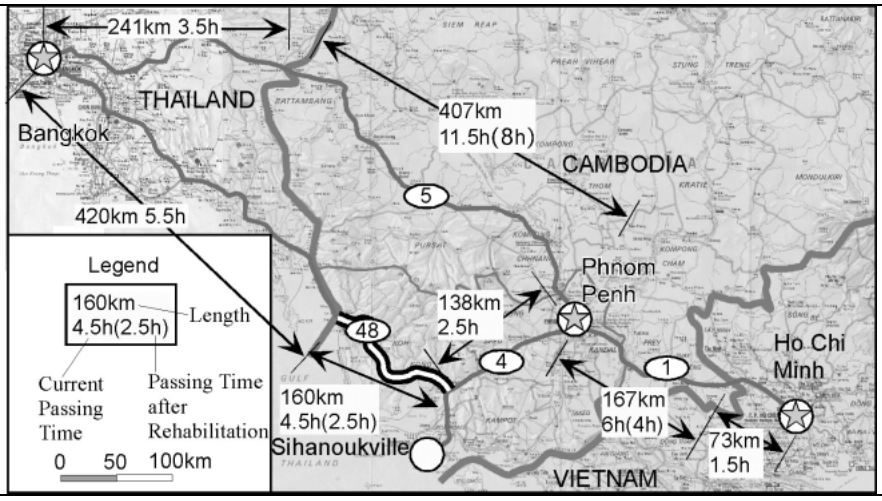
**J. Transportation** **J-7**

| | |
|---|---|
| Project Name | Kampot Urban Infrastructure Development Project |
| Backgrounds | Kampot is a growing urban core along Route 3. The city is attracting the international tourists headed for Bokor. In addition, it will be another gateway to ocean for small-scale trade.<br>However, its urban facilities are outdated to accommodate new activities. |
| Project Purposes | The project intends to improve urban facilities of Kampot City. It includes the followings;<br>- New bridge,<br>- Port wharves,<br>- Urban roads,<br>- Water supply, and<br>- Power distribution |
| Target Year<br>(Project Period) | 2003-5 Bridge and wharf construction<br>2005-7 Other infrastructure |
| Beneficiaries<br>(Target Group,<br>Target Area) | Kampot residents.<br>Tourists to Bokor |
| Activities | Construction of new facilities by the central government.<br>Operation and maintenance by the city. |
| Executing Organization | MPWT and Kampot City<br>Other relevant infrastructure agencies. |
| Outputs (Results) | Increase the amenity of urban life.<br>Increase the number of tourist stays in Kampot.<br>Trade promotion through Kampot Port. |
| Inputs<br>(Project Cost) | Budget from MPWT, Provincial government and Kampot Municipality.<br>Water supply can adopt a PFI. |

**J. Transportation** **J-8**

| | |
|---|---|
| Project Name | Rural Road Maintenance System Development Project |
| Backgrounds | The single-digit national roads in the region have been rehabilitated to fair condition. On the other hand, the lower level roads, including double-digit national roads, remain poor conditions. Currently, several donor-assisted projects for rural roads are in progress.<br>Because most rural roads are earth road with traffic volume less than 50 vehicle per day, the maintenance work requires local labor force and small equipment rather than heavy machineries and skilled technicians. |
| Project Purposes | This project is intended to establish a sustainable and effective system and institution especially for low-traffic rural roads. Participation for maintenance work from villagers is the most important element. |
| Target Year<br>(Project Period) | 2007 |
| Beneficiaries<br>(Target Group,<br>Target Area) | Rural residents. |
| Activities | Select one province for pilot project area. Takaev or Kampot is appropriate in the region.<br>Capacity building and reorganization of Department of Rural Development of the provincial government.<br>Technical cooperation for Road Sub-Committees under Commune Planning and Budgeting Committees to prepare their planning activities.<br>Securing fund sources for rural roads.<br>Provision and rental of small equipment for maintenance work.<br>Mobilization and organization of villagers for annual maintenance work. |
| Executing Organization | MRD, Province and Rural Development Committee. |
| Outputs (Results) | Establishment of sustainable road maintenance system for rural roads. |
| Inputs<br>(Project Cost) | -Expert for rural road maintenance.<br>-Community organizers for maintenance fund pooling<br>-Provision of small-scale construction machineries.<br>-Rice or other foods to provide villagers as remuneration in kind during the early stage. |

**J. Transportation** **J-9**

| | | | | |
|---|---|---|---|---|
| Project Name | Route 48 Upgrading Project | | | |
| Backgrounds | The National Route 48 is a new coastal route which connects Sihanoukville and Eastern Seaboard in Thailand. It will enhance the industrial linkage between Thailand and Cambodia. The Royal Thai Army almost completed the upgrade to laterite pavement but it is far from stable transportation for all seasons.<br>Thai Prime Minister pledged additional support for four bridges and asphalt pavement in November 2002. However, it has been frozen since January 2003. | | | |
| Project Purposes | This project intends to construct four bridges and to pave the whole route to asphalt. In some mountainous area, road geometry is to be improved. | | | |
| Target Year (Project Period) | 2006 | | | |
| Beneficiaries (Target Group, Target Area) | Sihanoukville industrial companies.<br>Kaoh Kong residents. | | | |
| Activities | Feasibility Study (Traffic Demand Forecast)<br>Detailed Design<br>Construction | | | |
| Executing Organization | MPWT. | | | |
| Outputs(Results) | Creation of new trading route between Thailand and Cambodia. | | | |
| Inputs (Project Cost) | (Rough estimate)<br>US$ 50 million for pavement of 160km.<br>US$ 10 million for four bridges (total length of 1,600m) | | | |
| Finance | MPWT budget and donor assistance.<br>Construction by PFI is also possible. | | | |
| Implementation Schedule | Activity | 2003 | 2004 | 2005 |
| | Feasibility Study (Demand Forecast) | === | | |
| | Detailed Design | | ==== | |
| | Construction (-2007) | | == | ==== = |
| Evaluation (Including Results of IEE) | This contributes to industrial promotion.<br>IEE is necessary for all aspects. | | | |
| SW of EIA ( if necessary),Mitigation for Impacts | Intensive EIA is necessary for natural environment. | | | |
| Location Map |  | | | |

| | |
|---|---|
| **Project Image Photo etc.** |  Mountainous Section  Lowland Section |

| **K. Water Resources** | **K-1** |
|---|---|
| Project Name | Master Plan Study on National Water Resources Development and Management |
| Backgrounds | Though Cambodia has rich water resources for irrigation and water supply uses, the development of water resources is still in primitive condition. Irrigation area ratio to the whole rice field is only 16.6%, which is caused by low rice products particularly during the dry season. The low service ratio for water supply is also observed that only 14% of the urban people are supplied water through pipe connection, and 40% of the population depended on the ground water through deep wells.<br><br>Water resources development and management is therefore important and urgently needed to improve living standard of the people, but there is no comprehensive master plan for development yet. Nationwide Master Plan Study is therefore required for the further development of water resources for irrigation, hydropower, water supply, and flood control purposes. |
| Project Purposes | - To prepare inventory of water users for all the river system and groundwater,<br>- To identify possible development area for irrigation, drainage, hydropower, flood control and so on,<br>- To estimate water demand for irrigation, domestic, industrial water,<br>- To identify possible dam/reservoir sites for irrigation, water supply, hydropower and flood control purposes,<br>- To formulate long-term improvement plan for water supply,<br>- To formulate basin conservation / management plan<br>- To propose institutional arrangement, regal set-up and capacity building measures for efficient project implementation and O&M.<br>- To propose human resources development plan for water administration,<br>- To formulate environmental management plan<br>- To formulate master plan for integrated water resources development for the whole country. |
| Target Year<br>(Project Period) | - Mater Plan Study (2003- 2006)<br>- Target Year of Master Plan : 2025 or 2030 (20 years) |
| Beneficiaries<br>(Target Group,<br>Target Area) | - Target Group: all water users ,<br>- Target Area: All river system except along the Main Mekong River, |
| Activities | - Data collection and development of GIS data base,<br>- Field inspection,<br>- Hearing survey / Public consultation meetings,<br>- Various Technical Seminars / Workshops, |
| Executing Organization | Ministry of Water Resources and Meteorology (MOWRAM), Cambodia National Mekong Committee (CNMC) |
| Outputs (Results) | - Long term water resources development plan,<br>- National inventory or water users,<br>- Manual for drinking water treatment,<br>- Nation-wide GIS data base,<br>- Simulation model for rainfall-runoff model for all the river system<br>- Master Plan of Water Resources Development and Management |
| Inputs<br>(Project Cost) | 250 M/M<br>1,000 million J.Yen. |

| **K. Water Resources** | **K-2** |
|---|---|
| Project Name | Improvement of Meteorological / Hydrological Observation Network (include Surface/Groundwater Quality Monitoring) and Establishment of the Database/Information System |
| Backgrounds | Meteorological and hydrological data are most basically and important information for the planning/improvement of water resources development & management and any other infrastructures.<br>Cambodia's meteorological and hydrological stations are very few. Although a lot of meteorological and hydrological stations were stopped to observe due to civil war and lack of financial resources for operation and maintenance. There are many areas in which water-related information is simply not available or extremely limited, e.g. groundwater quality, quantities and impacts of water use, consumption and return flows by irrigation schemes. Particularly, the Kaoh Kong province has no hydrological station (river flow, height, water quality) at present. |
| Project Purposes | - To strengthen the capacity of MOWRAM to acquire, archive, and disseminate data and information on surface water and groundwater quality, water quantity (river flows, lake levels and aquifer levels), water use, and climate,<br>- To establish of data/information system, monitoring networks and mechanisms (including legally binding instructions),<br>- To compile existing data/information and assemble data from other institutions (including NGOs),<br>- To provide a single national repository of information,<br>- To coordinate information strategy of on going projects,<br>- To provided adequate library and information management facilities in MOWRAM and other appropriate institutions for water-related data and information other than hydro-meteorological observations (i.e. project reports, maps, socio-economic information, etc.),<br>- To educate the general public, elected representatives, and non-specialist officials about water- and climate-related issues, |
| Target Year<br>(Project Period) | 2003-2005 |
| Beneficiaries<br>(Target Group,<br>Target Area) | The general population of Cambodia, 13 million in 2000<br>(Target group; Peoples / farmers in the flood prone area in the growth corridor area, Flood prone area and rice field area in the whole growth corridor area) |
| Activities | - inspection of existing meteo-hydrological stations,<br>- installation of additional meteo-hydrological stations,<br>- establishment of meteo-hydrological database/information system<br>- Institutional set-up, Training, seminar, and workshop. |
| Executing Organization | Ministry of Water Resources and Meteorology (MOWRAM),<br>Cambodia National Mekong Committee (CNMC) |
| Outputs (Results) | - new meteo-hydrological stations<br>- network of meteo-hydrological observation /monitoring stations,<br>- communication network system |
| Inputs<br>(Project Cost) | Installation of the telemetry network systems of meteo-hydrological observation /monitoring, and establishment of the database.<br>(JP.Yen 50 million.) |

| **K. Water Resources** | **K-3** |
|---|---|
| Project Name | Strengthening of Database and Information Systems (Drought Forecasting and Early Warning System) |
| Backgrounds | Yearly flooding observed in many places in Cambodia, and structural flood control measures were identified by the various previous studies. However, implementation of the flood control measures will take time due to financial limitation, though the yearly damages seriously affect to the livings of the people in the flood prone area. Flood forecasting and warning will be therefore required, by which people in the flood prone area can prepare flood mitigation activities such as early planting / harvesting, evacuation activities, and so on.<br>In conjunction with the MRC, MOWRAM provides a flood warning service based on near-real time transmission of observations at nine key stations, and a Flood Forecasting Model for the main river of the Mekong. Forecasts are provided to the MRC, Cambodian National Committee for Disaster Management, RGC ministries, and the public, via news media.<br>Also for the draught forecast will be effective to minimize the crop damages by which the people can prepare water storage and also can be acting for water saving for long lasting of reserved water. |
| Project Purposes | - To mitigate flood damages at the flood prone area,<br>- To mitigate draught damages particularly for rain-fed rice field |
| Target Year<br>(Project Period) | 2004-2008 |
| Beneficiaries<br>(Target Group,<br>Target Area) | Peoples / farmers in the flood prone area in the growth corridor area<br>(Flood prone area and rice field area in the whole growth corridor area) |
| Activities | - inspection of existing meteo-hydrological stations,<br>- installation of additional meteo-hydrological stations for flood and draught forecasting,<br>- selection of information sources to forecast flood and draught<br>- establishment of warning dissemination system to the communities,<br>- Institutional set-up to execute flood & draught forecasting and warning,<br>- Preparation of users manual for the preparedness activities for flood and draught<br>- Users training, seminar, and workshop. |
| Executing Organization | Ministry of Water Resources and Meteorology (MOWRAM), MRC, Cambodia National Mekong Committee (CNMC), Cambodian National Committee for Disaster Management, RGC ministries, and the public, via news media |
| Outputs (Results) | - new meteo-hydrological stations<br>- telemetry network of meteo-hydrological observation /monitoring stations,<br>- communication network system between forecasting/warning center and the provincial / municipal offices.<br>- Manual for flood / draught management under communities. |
| Inputs<br>(Project Cost) | Expatriate consultancy in close collaboration with the local counterpart agencies. Installation of the telemetry network systems of meteo-hydrological observation /monitoring, and establishment of the database.<br>(JP.Yen 200 million.) |

| **K. Water Resources** | **K-4** |
|---|---|
| Project Name | Improvement of Urban Water Supply (include Water Supply Development for SPZ) |
| Backgrounds | Service ratio of existing urban water supply system is still low with 51% in the service area of 9 cities/towns in the Growth Corridor Area (including Phnom Penh and Sihanoukville). Particularly, the four areas of the 9 cities/towns were identified limited capacity of the water sources to increase the service ratio of piped water supply, which are Ta Khmau (Takaev), Chbar Mou (Kampong Spueu), Kampong Bay (Kampot) and Sihanoukville. The four areas are identified as the priority areas for improvement of urban water supply system. |
| Project Purposes | - To increase plant capacity and increase water supply service ratio for four towns (Ta Khmau, Chbar Mou, Kampong Bay and Sihanoukville),<br>- To improve the operation and maintenance of water supply system, |
| Target Year<br>(Project Period) | Sihanoukville: 2003-2005 FS+DD, 2006-2010: Construction (Dam, Reservoir at the Kbal Chay River)<br>Other towns: 2003 FS, 2004-2007: DD & Construction |
| Beneficiaries<br>(Target Group,<br>Target Area) | Residents in the four cities/towns |
| Activities | - Feasibility Study<br>- Detailed Design<br>- Preparation of tender document and tendering<br>- Construction |
| Executing<br>Organization | Ministry of Industry, Mines and Energy (MIME), and<br>water supply authorities/company at towns/cities |
| Outputs (Results) | Water supply capacity and service ratio will be increased as follows:<br>1) Ta Khmau: 1,200 -> 3,000 $m^3$/d,19% -> 80%<br>2) Chbar Mon: 1,400 -> 3,200 $m^3$/d,29% -> 80%<br>3) Smach Mean Chey: 1,000 -> 6,000 $m^3$/d,10% -> 80%<br>4) Sihanoukville: 6,000 -> 16,000 $m^3$/d,14% -> 95% (2020) |
| Inputs<br>(Project Cost) | US$ 40 million<br>(including water treatment plant and distribution pipe lines, but excluded dam for Sihanoukville). |

| **K. Water Resources** | **K-5** |
|---|---|
| Project Name | Rehabilitation on Irrigation Schemes |
| Backgrounds | Cambodia is an agricultural country in which 85% of the population consists of farmers. However, only 16.6% of the total rice-growing area were irrigated at present. About 83% of the total cultivated area is rain-fed, and the crop production is often threatened by drought.<br>Issue relates to the high water losses and floods occurring because of the current status of "Pol Pot" irrigation schemes. Poor hydraulic design and irrigation layout stemming from the Khmer Rouge regime, together with lack of financial resources for operation and maintenance, have caused a number of irrigation schemes to deteriorate.<br>Irrigation plays a key role in the efforts to achieve the goal, which is part of the overall national goal of poverty reduction. The Government plans to increase the total irrigated area from 16.6% to 20% by 2003, in addition to the existing irrigated area (MAFF/FAO/UNDP *Agricultural strategies and policy framework for sustainable food security and poverty alleviation*).<br>The Mekong Secretariat has carried out an *Irrigation Rehabilitation Study in Cambodia* under UNDP Funding in 1994 (Halcrow). The 841 existing irrigation systems are assessed, and the 14 top priority schemes for rehabilitation were identified and the pre-feasibility Studies were conducted. As the results, the 8 schemes were found to be feasible. The four of the eight feasible schemes are located within the Growth Corridor Area in Takeo, Kandal and Kampot provinces.<br>After this study, several rehabilitation projects for the existing irrigation schemes were improved and on going by JICA and ADB. |
| Project Purposes | - To conduct detailed design for the above 4 schemes,<br>- To prepare tender documents for the implementation,<br>- To assist tendering for implementation<br>- To implement the rehabilitation works including construction supervision / management. |
| Target Year<br>(Project Period) | 2003-2004: Detailed Design / Tender documents<br>2005 : Tendering<br>2006-2008: Implementation of Rehabilitation Works |
| Beneficiaries<br>(Target Group,<br>Target Area) | Those farmers within the irrigation schemes of the four systems. |
| Activities | - Data collection and Field investigation (include topographic survey),<br>- Detailed Design and preparation of tender documents,<br>- Construction works<br>- Formation / Training of Users corporation<br>- Formation of Operation and Maintenance System |
| Executing<br>Organization | Ministry of Water Resources and Meteorology (MOWRAM),<br>Ministry of Agriculture, Forestry and Fisheries (MOAFF) |
| Outputs (Results) | - Renovated four irrigation systems (Total Area 7,322ha)<br>- Increase rice production (Total : 25,000 ton/yr for the 4 systems)<br>- Annual benefit : US$ 10 million (70% of market price)<br>- Users corporation in each irrigation system,<br>- Institution for operation and maintenance of the system |
| Inputs<br>(Project Cost) | US$120 million |

| **K. Water Resources** | **K-6** |
|---|---|
| Project Name | Flood Control and Mitigation |
| Backgrounds | Yearly flooding observed in many places in Cambodia, and structural flood control measures were identified by the various previous studies. The flooding in Cambodia in year 2000 was reportedly as the worst in the more than 70 years. The official report compiled by the National Committee for Disaster Management (NCDM), put the death toll at 347 and of the 750,000 families affected by flooding. Total physical and direct damage was estimated at US$ 150 million.<br>Structural flood mitigation by embankments etc. is used to a limited extent, except to protect 260 $km^2$ in and around the city of Phnom Penh, and smaller areas elsewhere. Embankments built for other purposes, particularly highways and irrigation infrastructure, also control inundation in some localities.<br>The canal systems used to deliver irrigation water also provide drainage. There are no agricultural drainage schemes as such in Cambodia. There is a drainage scheme in Phnom Penh, consisting of a storm water/sewage pipe/canal system that drains to nine boengs (lakes or depressions). These are then pumped out to the river system. Rehabilitation of the Phnom Penh drainage system is proceeding under a US$36 million project extending from 1998 to 2003. |
| Project Purposes | - To mitigate flood damages at the flood prone area<br>- |
| Target Year<br>(Project Period) | 2008-2015 |
| Beneficiaries<br>(Target Group,<br>Target Area) | Peoples / farmers in the flood prone area in the growth corridor area<br>(Flood prone area and rice field area in the whole growth corridor area) |
| Activities | - inspection of existing flood control and mitigation facilities (include irrigation and urban drainage systems),<br>- data collection, flood damage survey,<br>- hydrological (flood) analysis, modeling.<br>- master plan, F/S, D/D<br>- rehabilitation of existing drainage system and flood protection/ control/ mitigation systems<br>- establishment of new drainage system and flood protection/ control/ mitigation systems,<br>- Institutional capacity building,<br>- Preparation of manual for the preparedness activities for flood<br>- Users training, seminar, and workshop. |
| Executing<br>Organization | MOWRAM, MRC, CNMC, CNC for Disaster Management,<br>Ministry of Public Works and Transportation (MoPW&T) |
| Outputs (Results) | - Drainage system and flood protection/ control/ mitigation systems<br>- Manual for flood / draught management under communities. |
| Inputs<br>(Project Cost) | Expatriate consultancy in close collaboration with the local counterpart agencies.<br>Construction of drainage system and flood protection/ control/ mitigation systems.<br>(JP.Yen 200 million. to the Study Area) |

| **K. Water Resources** | **K-7** |
|---|---|
| Project Name | Community Enhancement of Water Management |
| Backgrounds | While the number of water supply facilities has been expanded in the rural area by efforts of the government and international donors to increases access to safe drinking water and water for agricultural use of the residents, the inadequate level of community participation in the processes of the planning, construction, and evaluation of the water facilities has decreased the effectiveness of the expansion. Such aspects as designs and places of the new water facilities have not fully reflected the users' needs. The maintenance and operation, and cleaning of the facilities require further clarification of responsibilities among the users and self-help efforts from them. In addition, lack of health education to them has hindered their proper water uses to protect their health. |
| Project Purposes | Raising the effectiveness and the sustainability of projects of water supply facility project through promotion of the community participation and building the capacity of the community. |
| Target Year (Project Period) | 2003~2008 |
| Beneficiaries (Target Group, Target Area) | Users of water supply facilities in rural areas |
| Activities | Conducting a pilot project including following activities. 1) Training for district and provincial officials in charge of water supply on participatory planning and on techniques for development/improvement of water supply facilities, 2) Participatory planning of water supply facility, 3) Participatory construction of water supply facilities, 4) TOT for the district and provincial officials on technology and skills for operation and management of water supply facilities, 5) training for community members on above technology and skills, 6) Training for health staff of the provincial health department on health education, 7) health education, 8) participatory training |
| Executing Organization | Provincial department of Hydrology with support from provincial department of health. |
| Outputs (Results) | Increases in convenience of water users, appropriate maintenance and operation of the water supply facilities by them, and decreases in water-borne diseases among them |
| Inputs (Project Cost) | Training on participatory planning, technology for operation and maintenance, construction and improvement of water supply facilities, small scale equipment for maintenance and operation, material for health education |

**L. Electricity** **L-5**

| | |
|---|---|
| Project Name | 220kV Transmission Line between Sihanoukville and Kampot |
| Backgrounds | It is expected that the interconnection transmission line between Phnom Penh and Vietnam (via Takaev) will be constructed with the financial assistance of WB in 2005. Continuously, the transmission between Takaev and Kampot may be constructed by an a<br>ssistance of another international institution. On the other hand, the financial assistance on the construction of transmission line between Kampot and Sihanoukville is not yet decided.<br>The peak power demand in Sihanoukville is estimated to be around 9 MW in 2008 and 30MW in 2015, including supply for EPZ/FTZ. The existing generation capacity of EdC power plant is 10 MW, out of which 5MW is made by over aged generators. Thus, the existing power plant cannot meet the power demand in future.<br>In addition, Sihanoukville combined cycle generation of which F/S was carried out by JICA is planned to be developed and commenced their operation around 2008 or 09 at the earliest if the natural gas is available. In such case, the 220kV transmission line to Sihanoukville must be constructed to feed the power to the power grid, also.<br>Under the circumstance, the construction of new 220kV transmission line between Kampot and Sihanoukville is proposed as an urgent program. |
| Project Purposes | To establish 220kV transmission line between Kampot-Sihanoukville, and to secure the stable power supply for Sihanoukville |
| Target Year (Project Period) | 2008 |
| Beneficiaries (Target Group, Target Area) | Residents in Sihanoukville city and the suburb area, and investors for EPZ/FTZ. |
| Activities | 1. Construction of 220kV transmission line of Kampot-Sihanoukville and Sihanoukville substation (220/115kV)<br>2. Construction of 115kV transmission line and 115/22kV substation in urban area of Sihanoukville<br>3. Expansion of the existing 22kV distribution network |
| Executing Organization | Ministry of Industry, Mines and Energy (MIME) and Electricité du Cambodge (EdC) |
| Outputs (Results) | 1. Securing of reliable power source and meet the growth of power demand<br>2. Providing of the stable and reliable power supply for EPZ/FTZ<br>3. Reducing electricity tariff<br>4. Improve the electrified population |
| Inputs (Project Cost) | |
| Other Donor's Assistance | ADB financed the project of rehabilitation of EdC power plant with 5 MW generators and upgrading of distribution facilities in Sihanoukville in 1998 and 1999, respectively. |

**L. Electricity** **L-6**

| | |
|---|---|
| Project Name | Project for Construction of New Power Plant and Extension of Distribution Network in Sihanoukville |
| Backgrounds | Sihanoukville's generation capacity is 10 MW, consisting of 5 MW (2 units x 2.5 MW) diesel generators provided by ADB project in 1998 and 5 MW aged diesel generators which are kept on standby only for emergency cases. The peak power demand in the city is 4 MW and estimated more than 6 MW in 2008. Furthermore, if EPZ and/or FTZ is commenced in the city in future, the peak demand will increased more in addition to this estimation.<br>Sihanoukville is expected to be connected to the power grid around 2008. The time of construction of combined cycle generation plant of which the F/S was executed by JICA will depend on the natural gas availability. Therefore, it is important for EdC to increase the generation capacity in the isolated power system of Sihanoukville.<br>In addition, the industrial and residential zones in Sihanoukville are expected to be expanded to suburb area from city center in future. Thus, the expansion of the distribution network is necessary. |
| *Project Purposes* | To secure the power generation capacity against the growth of power demand in the city, and to secure the reliable power for EPZ/FTZ at the same time. |
| Target Year (Project Period) | 2005-2006 |
| Beneficiaries (Target Group, Target Area) | Residents in Sihanoukville city and the suburb area, and investors for EPZ/FTZ. |
| Activities | 1. Procurement of diesel generation facilities of 5 -6 MW and transformers<br>2. Procurement of equipment of distribution lines<br>3. Construction of power station buildings and installation of generation equipment<br>4. Construction of distribution lines for connection between existing distribution line and new power plant |
| Executing Organization | Ministry of Industry, Mines and Energy (MIME) and Electricité du Cambodge (EdC) |
| Outputs (Results) | 1. Avoidance of lack of power generation in Sihanoukville<br>2. Stable and reliable power supply for residents and EPZ/FTZ.<br>3. Reducing the operation cost of power plant and the electricity tariff |
| Inputs (Project Cost) | 10 Million US$ |
| Other Donor's Assistance | ADB financed the project of rehabilitation of EdC power plant with 5 MW generators and upgrading of distribution facilities in Sihanoukville in 1998 and 1999, respectively. |

| **M. Telecommunications** | **M-1** |
|---|---|
| Project Name | Nourishment of Qualified IT Related Human Resources<br>(1000 IT Engineer Project) |
| Backgrounds | Although the IT experts and engineers are graduating from the IT faculties of Royal Phnom Penh University and Cambodia Technology of Institute, their IT capability is unspecialized and uncertified. The nourishment of IT experts and engineers, who have a certain standard of technology qualified by formal certification, is necessary. |
| Project Purposes | Nourishment of qualified IT experts and engineers, who have a certain standard of technology, to cope with the increasing IT specialist demand from the private and government sector. |
| Target Year | Short and medium term (2008) |
| Beneficiaries | IT engineers and experts/ IT industries |
| Activities | Introduction of IT technology qualifying examination through Scheme of the Asia Common IT Skill Standard/ Practical Training<br>Rsucation/Training material development by Khmer Language |
| Executing Organization | The National Information Communications Technology Development Authority (NiDA) Royal Phnom Penh University |
| Outputs (Results) | Increase of number of qualified IT engineers and experts( 1000 Engineer /5year)<br>Upgrade of the integrated IT technology of Cambodia<br>Acceleration of the IT development in the governmental service<br>Benefit to the IT development in the private sector |
| Inputs | US$ 1 million |

| **M. Telecommunications** | **M-2** |
|---|---|
| Project Name | Development of Optical fiber cable network between Phnom Penh and Sihanoukville(Growth Corridor IT Platform Development) |
| Backgrounds | The east-west optical fiber cable linking Vietnam-Phnom Penh-Battambang-Thailand was already developed and the connection from Siem Reap by the cable is under construction in Cambodia. The fixed telephone service by the microwave and mobile phone service by the private initiative are available presently in the Study Area. However the capacity of the line of fixed telephone service is limited and the mobile phone service is incapable for the industrial expansion in the Sihanoukville area. |
| Project Purposes | The high speed and large capacity communication devices by means of the optical fiber cable is necessary to cope with the communication demand induced by the modern industrial development. |
| Target Year | Short term (2008) |
| Beneficiaries | Investors in Sihanoukville SPZ and local community as well as local industrial establishments |
| Activities | Construction of the optical fiber cable (O/F) between PP and SNV through Rt.3.<br>Telecommunication capacity of Sihanoukville and the cities in the intermediate area will be improved by the O/F |
| Executing Organization | MPTC |
| Outputs (Results) | Dissolution of digital divide problem in Sihanoukville and the intermediate area<br>Improvement of IT environment in Sihanoukville and the intermediate area<br>Improvement of telecommunication environment in Sihanoukville and major cities in the intermediate area. |
| Inputs | 15.4million USD |