

## **(C) Common items for both Grenville Fisheries Facility and Grand Etang Road**

### **2-2-4 Implementation Plan**

#### **2-2-4-1 Implementation Policy**

In the implementation of the Project, considering that the Project is implemented under the Japan's Grant Aid Program, the following policies shall be applied.

- (1) To promote smooth construction work, further efforts shall be made to achieve mutual understanding through full exchange of opinions between all the parties concerned; the Ministry of Agriculture, Forestry, Lands & Fisheries, the Ministry of Works, Communications and Public Utilities, the Fisheries Division, the Project Implementation Management Unit (PIMU), the Ministry of Rural Administration, the Planning Office of the Ministry of Finance, the Consultant, and the Contractor.
- (2) Regulation of temporary prohibition of traffic may be necessary. Concrete hour and method shall be discussed with the Grenada side beforehand.
- (3) Since Grenville is the second largest city in Grenada, it seems to be comparatively easy to procure labor and the equipment and materials. In procurement, the equipment and materials of good quality and labor with reliable technique shall be secured under an effective operation plan of construction machinery and skilled labor.
- (4) Prior to commencement of construction work, taking into consideration the influence on surroundings and various problems followed by securing a proper space to which the current activities are to be relocated during the construction work, and working method with the least working volume on the site shall be selected.
- (5) Against noises  
Various noises including noises caused by sheet pile piling, are expected during the construction works. Since a school and a church are near the site, noiseless machinery shall be used as possible.
- (6) To keep the accuracy and quality of construction work the followings shall be considered.
  - 1) Against salt damage  
Since the construction site is subject to salt damage due to proximity to the sea, salt-resistance materials

shall be procured, and aggregate shall be washed in need to maintain its salinity within allowance value. Also the refrigerating equipment to be installed indoors shall be covered with vinyl sheet. During the construction work proper measures against salt damage shall be taken to protect equipment and materials.

#### 2) Procurement of construction equipment and materials

In order not to delay the delivery of main structural materials to be used such critical pass as reclamation (revetment), jetty construction, foundation preparation, building construction, road construction, and bridge construction, the procurement shall be conducted locally as possible, and local methods of construction which has proved effectiveness shall be applied.

(7) Every road improvement site, except the construction site of Vendome Bridge approach roads, on the Grand Etang Road is located at Grenville side from the highest peak point of the Grand Etang Road (about 800m above the sea level). Hence, to consider transportation of construction machineries/material and availability of land for the site office, the site office is planned to be built near the Barthzar Bridge. While, land for the stock yard and parking space for construction machineries will be secured at each construction site.

(8) Within the road improvement works on the Grand Etang Road, there is no detour road only at the Birch Grove Bridge, in where the new bridge is planned to be construction at the same location as the existing bridge. Hence, it is necessary to install a temporally bridge in this site in order to provide path for the ordinary traffic during construction.

### **2-2-4-2 Implementation Conditions**

Major civil/construction works executed in Grenada include the wharf in St. George's Commercial Port, large hotels, St. George's University (Medical), Pt. Salines International Airport, trunk roads in the island, revetments, Government complex building, and National Stadium. As established contractor, there exist American firms which have the headquarters in Miami and Caribbean companies which have the key point in Trinidad and Tobago.

(1) Local contractors which have the key point in Trinidad and Tobago are executing broadly various project in both public and private sectors. Generally speaking, fosterage of professionals and firms of medium standing is delayed and training of engineers and experts is not adequate. Introduction of construction technique from abroad is required. When similar scale construction works are planned

concurrently, it is anticipated that a serious lack of engineers may take place. Similarly a shortage as well as a rise of price of necessary construction equipment and materials may take place. It is essential to seize the market condition of the construction industry during the implementation of the Project.

- (2) The annual rainfall in Grenville is as small as 1,000 to 1,150 mm, but squalls come down frequently throughout the year. Average temperature is 26.8 (31.3 at the highest and 22.3 at the lowest) and humidity is as high as 75 to 84% throughout the year (78% at yearly average), and thus the working circumstance is rather severe. The Government is on a five-day working week, but some construction firms work at a site on Saturday and Sunday. Special care shall be exercised in security, delivery of materials, and preparation of temporary stock yard during the construction work.
- (3) All-out or partial closing of road may be necessary during the road construction work. Consultation with Police and authorities concerned must be thoroughly conducted. Detours shall be carefully investigated and given publicity.
- (4) The rainy season in Grenada is between May and October, and the rainy season and the dry season are clearly separated. Generally, more rainfall is recorded at the beginning and the end of the rainy season, and local downpour is expected occasionally. Under the implementation schedule, every construction work in the river is planned to be completed during the dry season. However, even for the construction works of superstructures, heavy rainfalls and water level of the river may greatly affect the construction works. Therefore, it is necessary to consider appropriate preparation and countermeasures for the heavy rainfalls in order not to stop works of placing concrete for the construction of beams and cross sectional structure formation works (cross beams and slabs to fill gaps).

### **2-2-4-3 Scope of Works**

#### **(1) Fisheries facility**

The Followings shall be borne by the Grenada side on the fisheries facility. Necessary utility (electricity, water, and telephone) must be supplied to the site prior to the commencement of the Project. Other construction works and procurement of equipment and materials are conducted by Japan side.

#### **Scope of works borne by the recipient country**

- 1) Removal of structural obstacles at site  
(Mooring buoys, benches in the site, cutting tree, and so on)
- 2) Connection works of electricity
- 3) Connection works of water supply
- 4) Connection works of telephone
- 5) Acquisition of alternative land for continuous public services and other necessary measure
- 6) Procurement of furniture and fixtures in the facility

#### **(2) Road Improvement**

The obligatory works by the Government of Grenada related to the road improvement are listed as follows. These work items should be executed before commencement of the construction works. Other construction works and procurement of equipments/machineries are responsibility of the Government of Japan.

#### **Items of the Obligatory Works by the Government of Grenada**

- 1) Land acquisition of the planned area of the road improvement works.
- 2) Lease lands for the site office, stock yard of construction materials, and parking space for construction machineries.
- 3) Replacement of electric cables in the area affected by the construction works
- 4) Replacement of a water supply pipe attached on the Birch Grove Bridge.

### **2-2-4-4 Consultant Supervision**

Consultant supervision is conducted with attention paid to the following points.

- (1) As the Project advances, the Consultant shall enhance contact with the implementing Ministry/Agency so that smooth construction works can be conducted. From the standpoint of connection of Japan side works, detailed arrangement regarding process and specification of relocation space, detour, removal of existing buildings, restricted area, and leveling of site ground shall be made in advance.
- (2) Prior to the commencement of the work the Consultant shall examine carefully the construction planning and working diagrams submitted by the Contractor, and inspect the appropriateness of the plan of temporary works, progress schedule, quality of materials to be used, construction method, etc.
- (3) On the completion of the Project the Consultant shall check the final contents of works in conformity with the designed specifications, and give proper instructions to the Contractor when modifications are required.
- (4) The Project Manager is responsible for comprehensive execution management of the Project with technical assistance of the civil engineer and the architect of the Team. Civil engineers (Road

engineer and Bridge engineer) will assist the project manager for the supervision of the road improvement construction works.

## 2-2-4-5 Procurement Plan

Construction materials available locally are confined to sand/gravel for aggregate and earth for banking. Aggregate and ready-mixed concrete can be procured from local traders. Apart from local stock, cement, reinforcing bar, structural steel, and plywood panel are imported from Trinidad and Tobago, United States, Venezuela, Brazil and others.

Construction materials (cement, reinforcing bar, wooden form, metal form etc.) are in principle to be procured locally. Materials unavailable locally or unsuitable for the Project due to inferior quality or poor stock are to be procured in Japan or the third countries and transported to Grenada by sea.

Construction machinery for building construction is available locally, while a working craft for civil engineering must be brought in from Trinidad and Tobago or other neighboring countries.

**Table 2-44 Procurement list**

Items	Transportation method
Construction machinery	
Crane boat	Procured from third countries by ship
Work boat	Procured from third countries by ship
Anchor lift boat	Procured from third countries by ship
Tug boat	Procured from third countries by ship
Diver's boat	Procured from third countries by ship
Sheet pile driver (Silent type)	Procured from third countries by ship
Crawler crane	Procured from third countries by ship
Rubber tired roller	Procured from third countries by ship
Vibration roller	Procured from third countries by ship
Asphalt finisher	Procured from third countries by ship
Concrete vibrator	Procured from third countries by ship
Hydraulic breaker	Procured from third countries by ship
Concrete pump vehicle	Procured from third countries by ship
Concrete plant	Procured from third countries by ship
General construction materials	Procured locally Partly Trinidad & Tobago or USA

## **2-2-4-6 Implementation Schedule**

Generally speaking, when a Japan's Grand Aid project is extended, Exchange of Note between Japan and the recipient country is made, then a tender will be conducted based on the tender documents prepared by Consultant and approved by the Client to select a contractor. And then, after the construction contract, the contractor will begin the works. Implementation steps of the Project is as follows;

### **(1) Detail design work**

The Consultant will work out a detail design based on the Basic Design Study Report, and prepare the tender documents to select a contractor. The work will take some 5.5 months.

### **(2) Tender**

After the completion of the detail design, tenderers will be invited by a public announcement of the Project in Japan and selected for the tendering through qualification investigation. The implementing agency of Grenada then holds the tendering to determine the Contractor in the presence of the parties concerned. From the announcement to conclusion of the Construction Contract, about 2.0 months will elapse.

### **(3) Construction work**

On the verification of the Construction Contract by the Government of Japan, the construction work will start. When the works borne by the Grenada side is completed without delay, the construction work will finish in about 18 months.



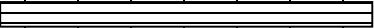











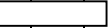





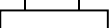



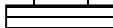
The Implementation Schedule is shown on the following page.

**Table 2-45 Implementation schedule (Fisheries facility)**

[illegible]

Note: Refer to Table 2-46 for the Implementation Schedule on the Grand Etang Road.

**Table 2-46 Implementation Schedule (Grand Etang Road & Bridge)**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Hair-pin Curve Section				(Preparatory Works)																
										(Embankment Works, Cutting Works)										
										(Retaining Wall, Drainage)										
													(Base Course)							
													(Pavement Works)							
													(Other Works)							
Approach Road of Vendome Bridge							(Preparatory Works)													
										(Approach Road)										
										(Rehabilitation of Bridge)										
Birch Grove Bridge				(Preparatory Works)																
				(Construction of Detour Road)																
					(Demolition of Existing Bridge)															
						(Construction of Sub-structure)														
											(Construction of Superstructure)									
													(Embankment Protection)							
													(Approach Roads, Railing)							
																(Cleaning)				
Barthzar Bridge				(Preparatory Works)																
					(Construction of Sub-structure)															
						(Construction of Superstructure)														
													(Embankment Protection)							
													(Approach Roads, Railing)							
																(Cleaning)				
St. Cyr Great River Bridge									(Preparatory Works)											
									(Rehabilitation of Bridge)											

Note: Refer to Table 2-45 for the "Detail design."



## 2-3 Obligation of Recipient Country

Respective Scope of works for the project borne by the government of Grenada and Japan is shown in following table. The cost for the works borne by the recipient country is estimated at about EC\$43,500, and the details are shown on the Appendices attached.

**Table 2-47 Respective Scope of works for the project borne by the both government**

Contents of work	Japan	Grenada
0. Securing necessary land for construction of fish market facility & fish landing jetty Securing necessary land for improvement of Grand Etang Road and Bridges		
1. Land acquisition, site preparation, measure to continue public services by providing alternative land during the construction period		
2. Extension of infrastructure to the site (electricity, water supply, telephone)		
3. Fish market construction work (1) Shore protection, fish market, fishermen's jetty, parking lots etc (2) Fence, plantation (3) ) Secure land for temporary yard for construction		
4. Grand Etang road construction work (1) Road construction work (2) Bridge construction work (3) Secure land for temporary yard for construction		
5. Import procedure, customs clearance (1) Transportation to Grenada and internal transportation (2) Tax exemption and customs clearance		
6. Payment of commission to Japanese bank regarding Banking arrangement (B/A)		
7. Legal advantage or favor for embarkation, disembarkation and stay at Grenada of Japanese people for the project		
8. Effective and efficient management of the Grant aid project facilities		
9. Bearing of all the cost incurred in construction of facilities, transportation of furniture, & material and installation works that cannot be covered by the Grant aid		
10. All the procedure of application for approval or authorization regarding construction work		
11. Exemption of all taxes levied on equipment, materials and services to be obtained in Grenada by contractors		

Note: Items with      mark are essential matter for implementation of this project. In case this prerequisite won't fulfil, it's impossible to implement this project.

## 2-4 Project Operation Plan

The operation and management of the proposed facilities are performed by the Fisheries Division which have experience in operation/management of the existing fishery centers. Since the fish market and landing jetty are the public facility, adequate fees or charges are posed on users in accordance with the benefit principle. This revenue goes to the national treasury, and a Governmental budget is appropriated for the operation and management of the facilities. Also the road is maintained by a national budget.

### 2-4-1 Fish Market Operation Plan

#### (1) Operation plan

Details of the operation/management of the proposed fish market include the management of market facilities, operation of ice-making/cold storage equipment, and maintenance of landing jetty and parking lot. Major tasks of the fish market are collecting fees and charges (for retailing booth, cold storage facility, landing jetty, and parking lot) and selling ice. Also such routine works as cleaning the premises and refuse disposal must be conducted. These works will be carried out by the following ten staffs.

**Table 2-48 Staffs for the fish market**

Position	No.	Contents of duties
Manager	1	A person in charge for total activity in fish market Contact to local fishermen and fisheries officer Recording activity, submitting report
Accountant	1	Accounting Collecting using fee, bookkeeping
Operation	3	Scaling work of fish catch Collecting using fee of fish market Recording, submitting report
Cleaner and security	2	Cleaning Security
Supervisor	1	Watching trading in retailing area
Clerk	2	Administrating work from supervisor office
Total	10	

## (2) Fish market management cost

In accordance with the benefit principle, charges and fees are collected. This revenue goes to the national treasury and the operation/management cost is supplied by a budget. The followings are details of annual cost.

The estimated annual operation/management cost is EC\$193 thousand. Revenue of proceeds of ice and charge for using facilities is estimated at EC\$ 212 thousand. This revenue will cover the cost with a profit of EC\$ 19 thousand.

**Table 2-49 Annual maintenance cost** ( Unit: EC\$1,000 )

Income		Expenditure		Note
Items	Amount	Items	Amount	
Facility rentals	211.9	Personal expense	67.9	
		Worker 3 persons	49.9	
Scaling fee	44.0	Security 2 persons	18.0	
Retailing booth rental	7.2	Direct expense	112.6	
Fish storage	19.8	Electricity bill	101.1	
Sale of ice	140.9	Water bill	11.5	
		Maintenance expense	13.0	
		Maintenance of fish market	2.0	For maintenance
		Maintenance of cold storage	10.0	For maintenance
		Other (Jetty, external)	1.0	For maintenance
Sub-total (a)	211.9	Sub-total (b)	193.5	
Income and expenditure (a) - (b) = 211.9 – 193.5 = 18.4				

Note: Renewal charge is not included in the above expense.

Ground of calculation on the revenue and expenditure is as follows.

### (1) Income

Revenue includes rental fee of retailing booth, storage fee of cold store, and proceeds of ice.

a) Handling charge: EC\$ 44,000

According to handling volume a charge will be collected. Unit charge of EC\$ 0.11 /kg (conversion of EC\$ 0.05/pound) is applied.

$$I_a = 400 \text{ t/year} \times \text{EC\$ } 0.11/\text{kg} \times 1,000 \text{ kg/t} = \text{EC\$ } 44,000.$$

b) Rental fee of retailing booth: EC\$ 7,200

Monthly fee/booth of EC\$ 40 is contracted.

$$I_b = 15 \text{ booths} \times \text{EC\$ } 40 \times 12 \text{ months} = \text{EC\$ } 7,200.$$

c) Storage charge: EC\$ 19,800

The unit price is as same as the rental fee of retailing booth. Storage plan is 120 tons/year (30% of afternoon landings) plus 60 ton/year (reservation for the next day selling during high fishing season).

$$I_c = (120 \text{ t/year} + 60 \text{ t/year}) \times \text{EC\$ } 0.11 \times 1,000 \text{ kg/t} = \text{EC\$ } 19,800.$$

d) Proceeds of ice: EC\$ 140,910

The current unit price of EC\$ 0.15/pound is applied. Based on the converted price of EC\$ 0.33/kg and annual production of 610 tons,

$$I_d = 610 \text{ t/year} \times \text{EC\$ } 0.33/\text{kg} \times 1,000 \text{ kg/t} = \text{EC\$ } 140,910.$$

## (2) Expenditure

Expenditure consists of labour cost, direct cost, and maintenance cost..

a) Personal expense: EC\$67,900

Position	@ ( EC\$ )	Number	Amount ( EC\$ )
Manager		1	(Fisheries Division bear this expense)
Account (Assistant manager)		1	(Fisheries Division bear this expense)
Operation		3	(Fisheries Division bear this expense)
Supervisor	23,900	1	23,900
Clerk	13,000	2	26,000
Sub-total		8	49,900
Security and cleaner	9,000	2	18,000
Total		10	67,900

b) Direct cost: EC\$47,050

Item of expense	@(EC\$)	Quantity	Amount ( EC\$ )
Electricity bill	\$0.4076/kwh	680kwh/day	101,166 (365 days)
Water bill	\$3.30/kl	11.65kl/day	11,533 (300 days=52 weeks $\times$ 6 days)
Total			112,699

c) Maintenance cost: EC\$ 130,000

As an annual maintenance cost, EC\$ 2,000 for the buildings, EC\$ 10,000 for the cold storage facility, and EC\$ 1,000 for the landing jetty and exterior facilities, totaling EC\$ 130,000 is provided.

## 2-4-2 Maintenance of Road and Bridges

### (1) Maintenance plan

After completion of improvement works for road and bridges, the maintenance items, frequency, and contents of works listed in the following table are necessary to maintain road and bridges in healthy condition.

**Table 2-50 Maintenance of Road and Bridges**

Category	Frequency	Item	Contents of Works
Maintenance of Bridges	Annual	Expansion joint	Cleaning around expansion joints
		Shoe	Cleaning around shoes
		Drain pipe	Cleaning of drain pipes
		Metal railing	Inspection of damages
		River-bed protection	Inspection and rehabilitation during dry season
Maintenance of Road	Annual	Pavement	Rehabilitation of potholes, etc
		Shoulder	Weeding
		Embankment	Inspection and rehabilitation, if there will be any erosion
		Slope	Inspection and rehabilitation, if there will be any erosion on the slope
		Guard fence	Inspection of damages

### (2) Maintenance cost

The annual maintenance fee for road and bridge sections, which will be improved under the Grant Aid Program, is estimated as EC\$27,000, as shown below:

\* Inspection and maintenance of bridges (annual)

- Cleaning around expansion joints and shoes	EC\$ 6,000
- Cleaning of drain pipes	EC\$ 1,000
- Inspection of damages on metal railings	EC\$ 1,000
- <u>Inspection and rehabilitation of river-bed protection</u>	<u>EC\$ 3,000</u>

Sub-total EC\$11,000

\* Inspection and maintenance of road (annual)

- Inspection and rehabilitation of pavement	EC\$ 7,000
- Weeding on shoulders	EC\$ 1,000
- Inspection and rehabilitation of embankment	EC\$ 3,000
- Inspection and rehabilitation of slope	EC\$ 3,000

- <u>Inspection of damages on guard fences</u>	EC\$ 2,000
Sub-total	EC\$16,000
*Annual maintenance fee for road and bridges	EC\$27,000

These maintenance works will be carried out by the Project Implementation Management Unit (PIMU) of the Ministry of Works, Communications and Public Utilities. Since the annual maintenance costs for both bridges and road sections mentioned above are calculated to be less than 0.5% of the ordinary budget of PIMU, it can thus be judged that the PIMU has sufficient capacity to carry out the maintenance work for the road sections and bridges under this project after completion of construction.

## **Chapter 3   Project Evaluation and Recommendations**

## **Chapter 3 Project Evaluation and Recommendations**

### **3-1 Project Effect**

When this project is carried out, about 40,000 people including fishermen, fish retailers and distributors and users of fish market living in three parishes in the east coast centering Grenville will be directly benefited. It will help revitalize the distribution of fisheries products in areas centering Grenville and the fish marketing system to the metropolitan area will be greatly improved. As a result, the project will benefit indirectly the whole population of about 100,000 of the country.

The implementation of the project will bring the following effects and thus the project is reasonable and meaningful as a Grant Aid project.

#### **(1) Direct effect**

##### **1) Grenville fisheries complex**

- a) Construction of a landing jetty will enable fishermen to prepare for sailing out for fishing, land their catches and moor their boats without being in seawater. Time required for these works on a daily basis will be also shortened.
- b) New opening of a Grenville fisheries complex is expected to have the following effect.
  - Increasing the number of booths for fish retailing from six (6) to fifteen (15) will solve monopoly, and free competition of fish trading will be encouraged and services will be improved.
  - Building an ice making plant that can produce two (2) tons of ice a day necessary for trading, shipping and distribution of fish at the Grenville fish market as well as a cold storage facility in which fish can be stored in fish boxes will promote the use of ice, which will lead to the improvement of product quality.
  - The existing fish market was constructed 30 years ago and there is not enough space to handle all fish brought in to the market. Under the project, constructing big enough fish handling facility for such works as receiving, weighing and gutting, and building toilets and shower for office workers, market-related workers and fishermen separately will help improve the food sanitary condition.
- c) Construction of new workshop will eliminate the need to transport fishing equipment to other areas such as the capital of St. George's. Fishing boats, outboard motor and fishing gears can be repaired there, facilitating the maintenance of the boats.

##### **2) Grand Etang Road**

Because the Grand Etang Road runs across the mountainous area in the central island, there are many sections difficult to drive due to narrow parts, steep gradients and sharp curves. It is a bottleneck for



commercial vehicles that transport fisheries and other local products and materials for the production of such products. Improving the road conditions of sections that hinder smooth traffic the most and replacing bridges will bring the following effects.

- a) Improvement in access to the metropolitan market
- b) Decrease in loss due to transportation

(2) Indirect effect

1) Correction of gap between the western and eastern parts of the island

When the project is implemented and its goals are achieved, it will have the following effects.

- a) Promotion of fisheries in the east coast of the Grenada Island
- b) Increase in fishermen's income as a result of a)
- c) Correction of gap between the western and eastern parts of the island

2) Improvement of fishermen's living conditions

Construction of the fisheries complex and improvement of conditions of the road that connects the eastern and western parts of the island will have the following effects including the improvement of fishermen' living conditions.

- a) Promotion of sustainable and effective use of fisheries resources
- b) Improvement of fishermen's skills
- c) Stabilization of fish production
- d) Promotion of stable income and living of fishermen
- e) Contribution to easing poverty, decreasing unemployment and improving people's welfare and living conditions, which are basic policy of the national development

The following shows what effects the project will have and how much it will ease current problems.

**Table 3-1 Effects of and improvement of situations by the project**

<b>Current situations and problems</b>	<b>Project contents</b>	<b>Effects and the degree of improvement</b>
1. Grenada government plans to promote export of fisheries products and satisfy substantial demand for its people and tourists. However, the distribution system of marine products in the east coast is less developed than that of the west coast where the capital of St. George's is situated, which prohibits the implementation of well-balanced fisheries development policy. As a result, fisheries development falls behind in the east coast.	Construction of Grenville fisheries complex and improvement of the road that connects the metropolitan area and Grenville	When the Grenville fish complex is constructed and the Grand Etang Road connecting the metropolitan area and Grenville is improved, fish trading between the metropolitan area and Grenville fish market will become active and the volume of distribution in the domestic market will be stabilized, which will further rise consumer demand.

2. Although the east coast has good conditions for fishing, with many fishermen and young successors, there is no landing jetty and the fish market is superannuated, small and such works as washing and removing gills and guts of fish are conducted outdoor. Fish production is not planned and because there are excessive catches during the high fishing season and there is no stable marketing route, a big portion of the catches is not used effectively.	Construction of the fisheries facilities that will be the base for fishing activities (construction of landing jetty and Grenville fish market, improvement of ice making facility, construction of fishermen's lockers and workshop)	When the Grenville fisheries complex is constructed, use of ice for fish retail sales will increase and freshness of the fish will be maintained, improving the product quality. This will enable stable marketing of the products from the east coast centering Grenville to the metropolitan area. Ice is hardly used for retail sales. When the project is completed, it will become easy to obtain flake ice suitable for retail distribution.
3. Because the Grand Etang Road traversing the island runs through a mountainous area at the height of 600 to 700 meters, it has many narrow parts, steep gradients and sharp curves. Thus the road is extremely dangerous for drivers of commercial trucks that transport marine and agricultural products and materials. Urgent improvement of the Grand Etang Road to improve its safety is necessary for promoting the distribution of marine products mainly from Grenville and economy in the region.	Improvement works of the Grand Etang Road (Works based on the discussions on priority: improvement of the road, bridges)	When the sections of the Grand Etang Road that are difficult to drive, including narrow parts and steep gradients, as well as superannuated narrow bridges, traversing the Grenada Island will become as easy as driving around the island, and thus promotion of the east coast centering Grenville of the island and distribution of fisheries and other local products will be promoted. When the road becomes safer, traffic will increase and distribution will be promoted.

## 3-2 Recommendations

Implementation of the project should have some sustainable effects and positive involvement of Grenada government is needed to allocate staff and secure budget, which are the main problems at present. Thus we would like to suggest the following.

### (1) Allocation of staff

In order to use the facility effectively and achieve the goal of the project-improvement of the fish marketing system in the east coast of the island centering Grenville, sustainable and effective use of fisheries resources and correction of the developmental gap between the east and west coasts, Grenada government needs to establish a cooperative system with fishermen who directly benefit from the project and fishermen's association for the maintenance and management of such facility as landing jetty and fishermen's lockers that are to be newly constructed as well as the maintenance and management of the Grenville fish market on which the government of Grenada has achieved some success in the past. It also needs to allocate staff appropriately for such maintenance and management.

## (2) Securing budget

A total of about EC\$193,000 (about 8.7 million yen) is estimated to be required annually as maintenance and management costs of the fisheries complex. After the new facilities are completed, about EC\$212,000 (9.56 million yen) of income is expected for selling ice and such fees as facility usage fee. The fisheries complex is expected to generate an annual profit of about EC\$19,000 (about 850,000 yen,) and thus it will be able to maintain and manage the facility by itself. About EC\$27,000 is expected to be necessary annually as maintenance and management costs of the parts of the road and bridges to be improved under the project. It is about 0.1 percent of the budget of the Ministry of Public Works allocated for road works (Grenada government's own budget for fiscal 2001), and thus the government is believed to be able to manage the costs.

However, because the durability of the facility and equipment, in general, is limited and thus they need to be renewed sooner or later, it is important to accumulate funds with part of business profits. The government of Grenada needs to make a plan to secure budget for the maintenance of the facility and equipment and the road and bridges and replacement of equipment.