

B. Telecommunications Equipment & Materials

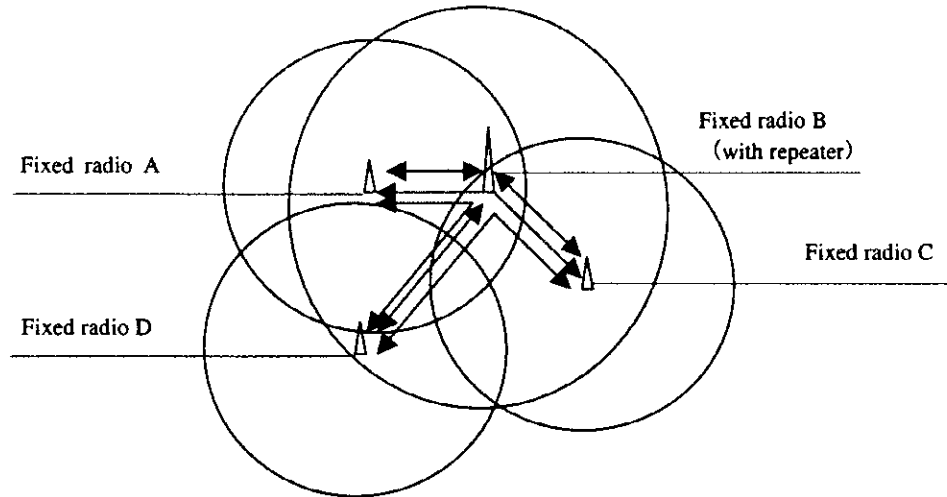
B.1 Wireless Communications System for Repeater Station

Generally, the distance for VHF and UHF wireless communications is roughly determined by the elevation of the antenna: 2 to 3 km for handy units and 5 to 10km for mobile units. To establish a longer communication reach of 20 to 50km a repeater station will be established. This station will adopt the VHF for short and medium communications range, and the HF for long communications range. A professional system will be selected as this allows a fixed radio frequency and facilitates operation.

The repeater station coverage is planned at 30km (see Fig. 2.11 ~ Fig. 2.16 for the wireless communications network planned for the area within the national park).

With a repeater (In case B station is used as a repeater station)

The use of B station as a repeater will expand the coverage of the repeater station to three to five times larger than that of a fixed station, thereby allowing direct communication with all stations (A, B, C, D) within the area of coverage.



Without a repeater

Communications can only be established between fixed stations A & B and B & C. A station can only receive information from station C through station B. Station D, on the other hand, cannot receive any communication from either stations (A, B, C).

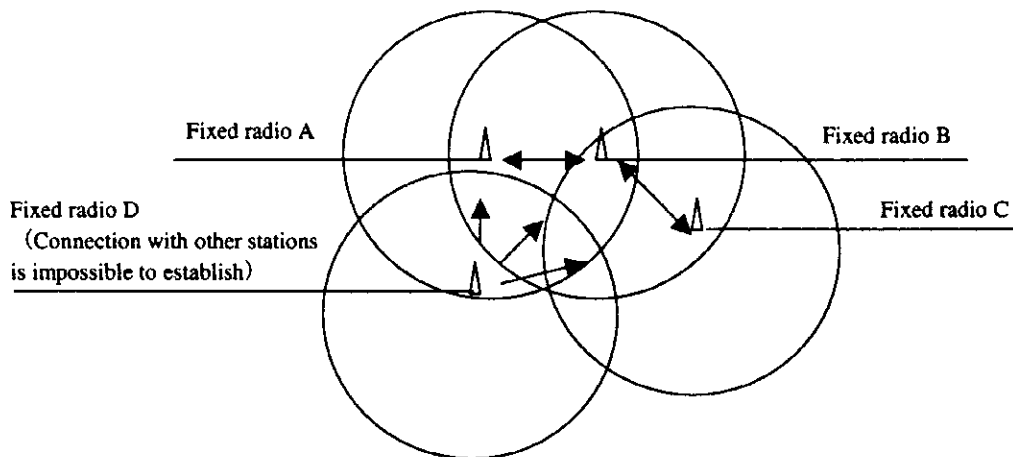


Fig. 2.11 Repeater Diagram

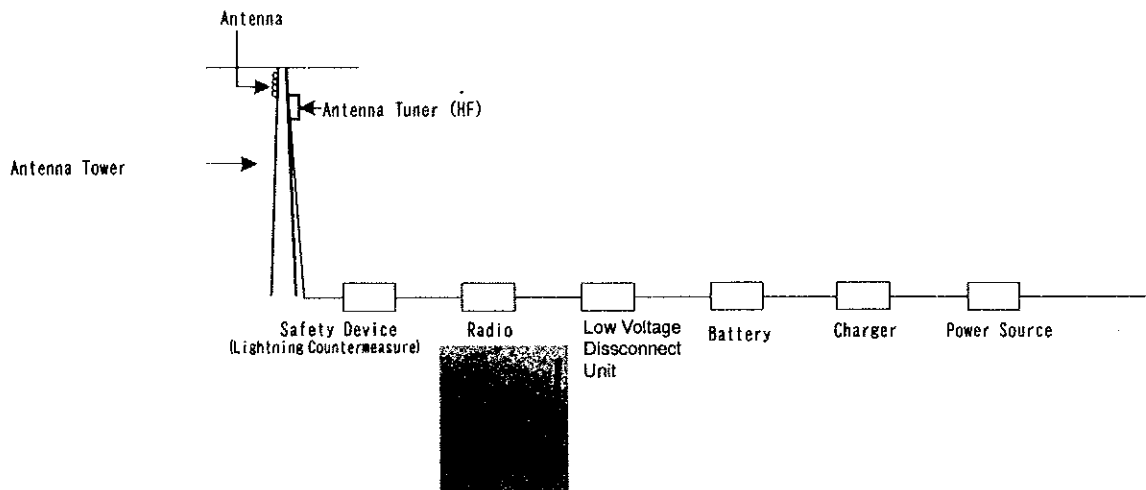


Fig. 2.12 Wireless Communications System Diagram

B.2 Wireless Communications System for the Fixed Station

A VHF for short-medium distances and an HF for long distances will be established. A professional system will be procured as it will allow a fixed radio frequency and facilitate operations.

The repeater station coverage will be 30km (see Fig. 2.13 ~ Fig. 2.16 for the wireless communications network planned for the area within the national park).

B.3 Mobile Wireless Communications System

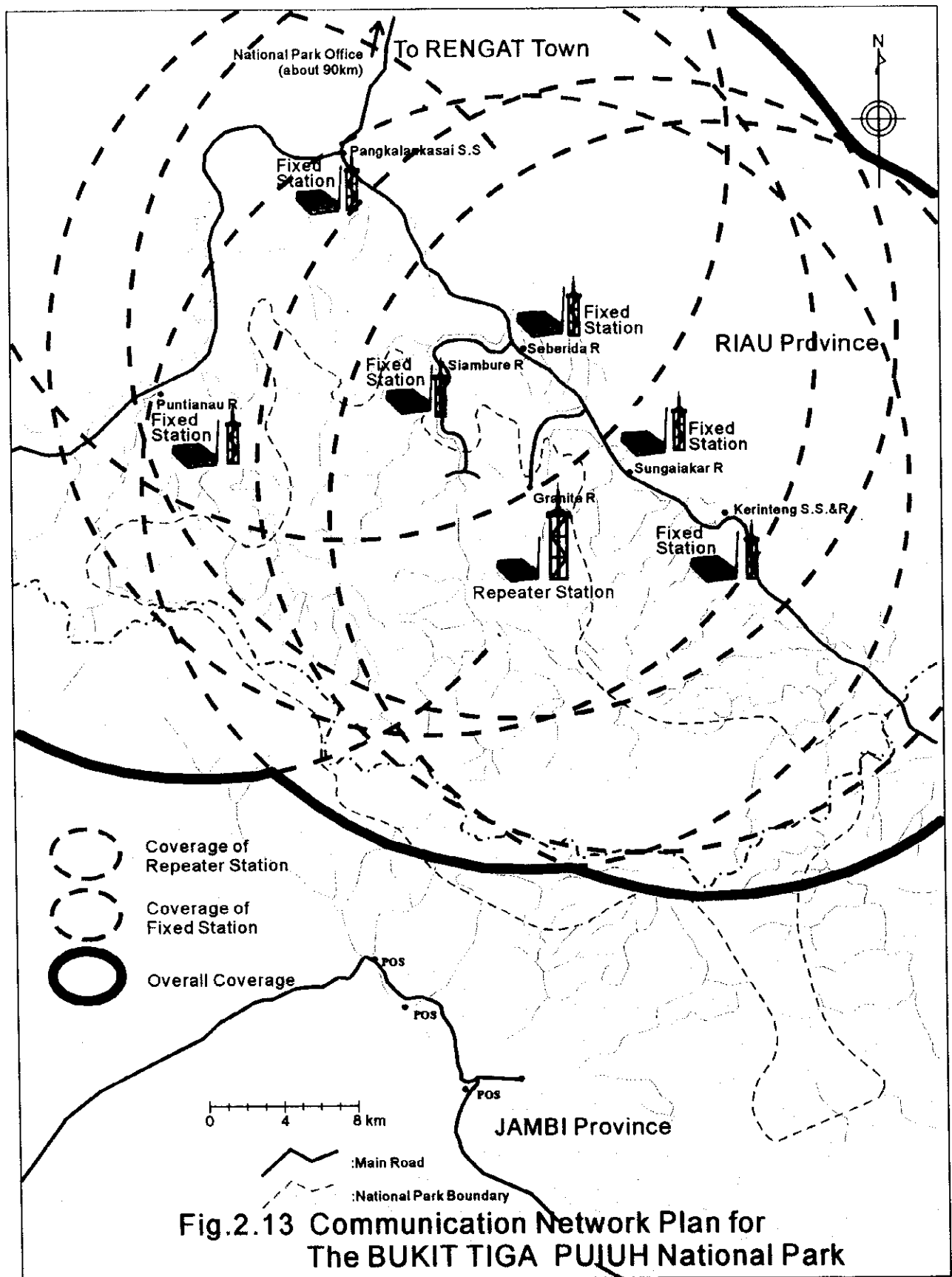
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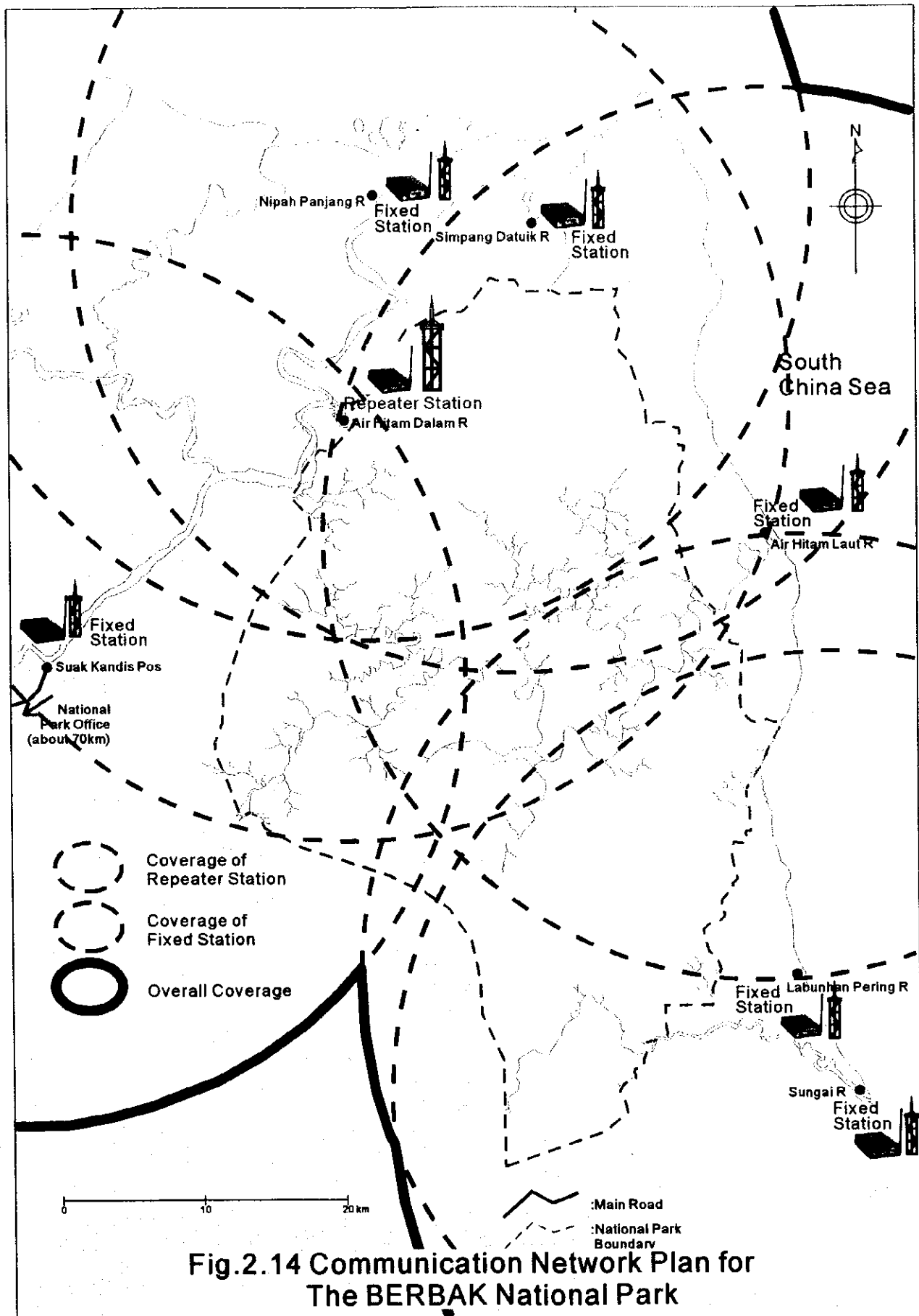
B.4 Portable Wireless Communications System

A VHF wireless communications system with a waterproof case will be loaded onto the motor boat. A professional system will be procured as it will allow a fixed radio frequency and facilitate operations.

B.5 Handy Wireless Communications System

A VHF and handy communications system will be provided.





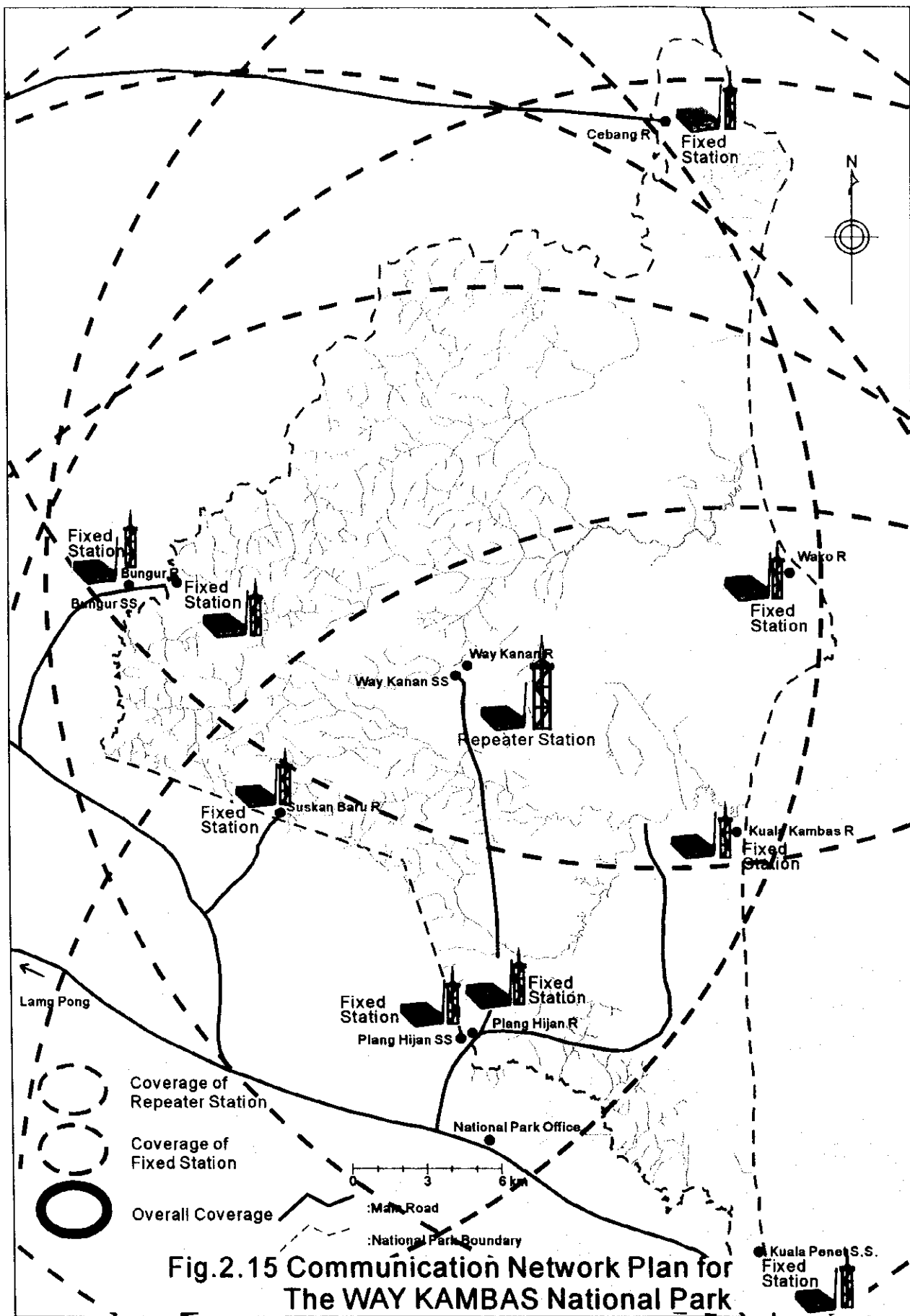


Fig.2.15 Communication Network Plan for The WAY KAMBAS National Park

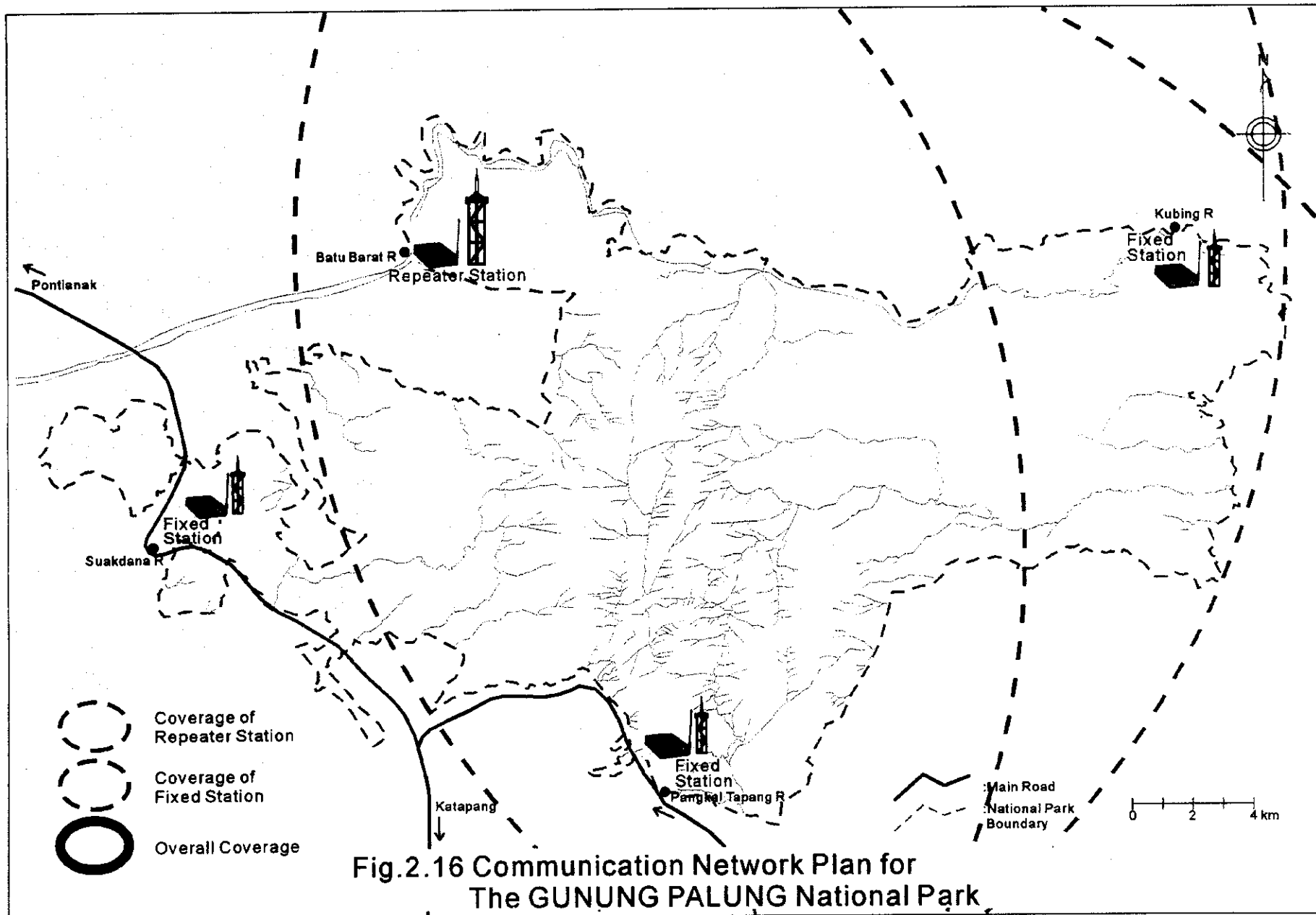


Fig.2.16 Communication Network Plan for The GUNUNG PALUNG National Park

Table 2.17 List of Main Equipment & Materials

No.	Equipment / Material	Main Specification & Structure	Qty	Use & Appropriateness of Standards
A	Early Detection & Fire Fighting Activities			
A-1	4 wheel drive vehicle	4 wheel drive; 7-8 passenger capacity (3 rows of seats); diesel; 2.8 liter capacity Class	4	Transport of fire fighting troop, and inspection of forest fire incidents.
A-2	Pick-up truck	4 wheel drive; 5 passenger capacity (double cabin); diesel, 0.8 ton loading capacity; 2.8 liter capacity	6	Transport of fire fighting troop, fire fighting equipment and materials; inspection of forest fire incidents.
A-3	Motorcycle	125cc displacement; off-road type	14	Inspection of forest fire incidents.
A-4	Motor Boat	Small (Japanese boat; 40Hp; kerosene; 17ft) Medium (40Hp; kerosene x 2; 20ft)	7	Speedy inspection of forest fire incidents in wetland areas where rivers, creeks can be found; for fire fighting activities
A-5	Weather observation unit	Humidity gage, rainfall gage, simple wind direction & velocity gage, instrument screen	4	Continuous monitoring of climate and meteorological observations during fire outbreaks.
A-6	Binocular	7 power binocular; 50mm object lens; water resistant	21	Monitoring of forest fire incidents; for early detection and communication.
A-7	Pump C	Engine pump C; 6m x 1 suction; 20m x 3 for conveyance; strainer, nozzle, divider with clamp	20	Installed as primary pump near the water source, for water conveyance.
A-8	Pump D	Engine pump D; 6m x 1 suction; 20m x 3 for conveyance; strainer, nozzle, divider with clamp	20	Installed as secondary pump to receive water from the primary pump for spraying at site on fire.
A-9	Pressure regulator	Pressure regulating valve for pump D connection	20	Connected to the secondary pump as a mediating tool for conveyance of water relayed to the secondary pump from the primary pump all the way to the site on fire.
A-10	Hose	65A; 1.3Mpa, Machino metal fittings	500	Connected to the primary and secondary pumps for water conveyance.
A-11	Backpack	For carrying the hose (about 3 hoses per backpack)	177	For the transport of the hoses
A-12	Backpack shooter	For fire extinguishing; water storage 4capacity of about 18 liter's	120	Immediate fire fighting at close range; water is supplied through the secondary pump.
A-13	Chainsaw	Small; about 14 inches	20	Construction of fire prevention zone.
A-14	Power mower	Carried on the shoulder; about 30cc	20	"
A-15	Portable floodlight	Single bulb with generator	12	Illumination for night patrol and monitoring, and fire fighting activities at night.
A-16	Portable water tank (5m ³)	Knockdown water tank; 5,000 liter capacity	20	A knockdown and easily transportable water tank to provide and store water for fire fighting activities.
A-17	Tent	Square structure; about 3.6 x 5.4m in dimension	12	Temporary headquarters and fire fighting troop rest place during fire.
A-18	Hand tool set	5 sets of handy tools for fire extinguishing/	28	Used for fire fighting activities, cutting of plants for protection against fire, and hole digging.
A-19	Personal computer	Pentium III 750MHz; Windows 98, OFFICE 2000, Arc View, with UPS1kVA	4	Used for dissemination and educational activities regarding forest fire prevention measures
A-20	Printer	Color ink jet printer; A3, 600dpi	4	"
A-21	Television set	24 inches; multi-functional	4	"
A-22	Video	Multi-functional VHS	4	"
A-23	Projector	Overhead liquid crystal projector; over 1024x768 resolution	4	"
A-24	Bulldozer	About 80HP; operating weight of about 6,500kg; cabin type; hitch	1	Construction of fire prevention zone and forest roads.
A-25	Backhoe	Small wheel type; operating weight of about 3,300kg; bucket capacity of 0.1m ³ ; cabin type	1	Construction of forest road ditch and also for the construction of fire prevention zones.
A-26	Generator	About 2KW; small generator for the wireless communications system, television, and electric lights.	24	Power source for wireless communications system in areas without electricity.

No.	Equipment / Material	Main Specification & Structure	Qty	Use & Appropriateness of Standards
A-27	Portable GPS	Handy and simple GPS; 12 channels parallel; high altitude and with built-in compass	25	Confirm patrol area, hotspot area, park and village boundary.
A-28	Underground thermometer	Can measure over 1000°C; over 1m temperature probing capacity	6	Measure underground temperature in peat bog area.
A-29	Clinometer with compass	Slope meter with built-in compass (0-90° or 0-150%); reverse gradation of 0-360°	20	Formulation of pump installation plan
A-30	Locker	2000x500x1000 locker for equipment and materials; with door	53	For equipment and material storage
A-31	Steel shelf	2000x500x1000 steel shelf for equipment and materials; with door	40	For equipment and material storage
B	Telecommunications Equipment & Materials			
B-1	Wireless communications system for repeater station	VHF: 146-174MHz and 50W output; HF: 1.8-30MHz and SSB100!; repeater, antenna tuner, 30m high antenna	4	To be constructed in the most appropriate site to establish a communications network between the park office, the subsection and the resort.
B-2	Wireless communications system for fixed station	VHF: 146-174 MHZ and 40W output; HF: 1.8-40MHz and SSB100W; antenna tuner, 15m high antenna	29	Immediate relay of information on fire outbreak by patrol staff, and between the park office, subsection and resort staff.
B-3	Mobile wireless communications system	VHF: 146-174MHz and 40W output; HF: 1.8-30MHz and SSB100W; antenna tuner, antenna	10	To be used to give immediate instructions from the park office and by the patrol staff to immediately report fire incidents/outbreak.
B-4	Wireless communications system for the motor boat	VHF: 146-174MHz and 25W output; antenna; waterproof	7	To be used to give immediate instructions from the park office and by the patrol staff to immediately report fire incidents/outbreak. Select waterproof equipment for loading on the motorboat for use in wetland area where rivers and creeks are found.
B-5	Portable wireless communications system	VHF: 146-174MHz and 5W output; portable type	45	To be used to give immediate instructions from the park office and by the patrol staff to immediately report fire incidents/outbreak.

Chapter 3 Implementation Plan

3-1 Implementation Plan

3-1-1 Implementation Concept

After the exchange of notes (E/N) has been concluded between the Government of Japan and the Government of the Republic of Indonesia, the latter entered into a contract with the Japanese consulting firm recommended by the Japan International Cooperation Agency (JICA), for the preparation of the detail design, tender and contract documents, and the supervision of the works for this project.

In accordance with the contract, the consultant shall prepare the detail design, the tender and the contract documents. With the participation of the representatives of the Government of Indonesia, the consultant shall hold a tender for the procurement of the equipment and materials for this project to select and finalize the contractor for the project.

The contractor shall procure the equipment and materials for the project under the guidance and supervision of the consultant, and provide all the services stipulated in the contract for the completion of the project.

The procurement and the supervision of the manufacturing of the equipment and materials shall be carried out in accordance with the following policies.

- (1) The procurement and the supervision of the manufacturing of the equipment and materials shall be completed within a period of approximately 12 months from the date the E/N is signed.
- (2) A Japanese firm experienced in equipment and materials procurement and with numerous similar business dealings with neighboring countries, including Indonesia, will be selected to ensure that the large number of equipment and materials to be procured is delivered within the specified schedule.
- (3) Factors that may impede the progress of the project shall be eliminated by holding detailed discussions with relevant authorities to ensure that the obligations of the recipient government such as the acquisition of land for the facilities and the preparations for the construction of the required facilities (warehouse, garage, anchorage, etc.) are completed prior to the commencement of the project.
- (4) Preparations shall be secured in advance with the cooperation of the Indonesian side to ensure the smooth execution of the various procedures required for the implementation of this project.

- Issuance of a long-term visa to allow the Japanese Consultant and the Japanese Contractor to stay in Indonesia to carry out the services, as stipulated in the contract, for the completion of the project.
 - Tax exemption for equipment and materials manufactured in Indonesia that shall be procured by the Japanese Contractor for the project.
 - Tax exemption and customs clearance for equipment and materials imported from Japan or other countries.
- (5) The Contractor shall construct an office as a communication base for the project in Indonesia, in order to be able to be in close contact with the responsible Indonesian government agency, the JICA office in Jakarta, and other authorities relevant to the implementation of the project-type assistance program.
- (6) The Consultant shall bear witness to the following services that the Contractor has to provide under the contract: test operations, e.g. pump installation, water spraying, wireless communications, etc., and the handing over of the equipment and materials to the Government of Indonesia.

3-1-2 Implementation Conditions

(1) Traffic and Telecommunications

The equipment and materials shall be delivered to the back regions of the Sumatra Peninsula and the Kalimantan Island. A widely undulating asphalt national road extends from Sumatra and the town of Jambi to the town of Rengat. The road extending from the town of Pekanbaru of Riau Province to the town of Rengat is only partly paved and in poor condition. The muddiness of this road particularly in the rainy season also affects traffic on the national road. Therefore, the transportation of the equipment and materials will be planned with due consideration of site conditions in the rainy and dry seasons.

Telephones and facsimile machines can be used to establish communication between the national capital, Jakarta, and every national park office. Communication between the park office and its subsections and resorts, however, is made with the rangers acting as messengers.

(2) Electricity

The national park offices and some subsections are provided with electricity (220V), although blackouts sometimes occur.

(3) Materials for Wireless Communication System Antenna Installation

Construction materials such as wood, sand, gravel, aggregates, pipes, cement, reinforcing bars, steel frames, etc., can be procured locally.

(4) Site for Wireless Communication System Antenna Installation

Each national park office has satisfactorily secured the site required for the installation. The leveling of the land shall be carried out by the Indonesian side. However, the target ground height shall be determined in consideration of the potential impacts of the water level of rivers and creeks in the rainy season.

(5) Equipment and Materials Procurement Plan

Equipment that can be easily operated and maintained by the implementing agency shall be selected for procurement. The selection shall give preference over the following type of equipment: those that the local technicians find easy to operate, those with spare parts that are easy to obtain, and those that are easy to maintain.

3-1-3 Scope of Works

The implementation of this project under the grant aid scheme of the Japanese government would result in the division of the required works between the Japanese Side and the Indonesian Side as shown in the table below.

Item	Obligations of the Japanese Side	Obligations of the Indonesian Side
Site		<ul style="list-style-type: none">• Acquisition & arrangement of the site for wireless antenna installation (should be promptly carried out)• Acquisition of equipment & materials storage area• Acquisition & preparation of route for equipment & materials transport
Equipment & Material Procurement	<ol style="list-style-type: none">(1) Equipment & Materials Procurement<ul style="list-style-type: none">• For early detection and initial fire fighting activities• For telecommunications• Spare parts(2) Sea & Inland Transport and Delivery of Equipment & Materials(3) Installation & Test Operation of Telecommunications Equipment & Materials	<ul style="list-style-type: none">• Exemption of equipment and materials from customs, duties and other related taxes.• Procedures required for the importation and transport of the equipment and materials.• Exemption of Japanese individuals/entities involved in the implementation of this project from any taxes, levies imposed on Japanese nationals.• Payment of the fee for bank negotiations (e.g. A/P) relevant to the implementation of the grant aid scheme.

3-1-4 Consultant Supervision

(1) Implementation Design Policy

- The team members who participated in the basic design study shall mainly carry out the supervision of the implementation design, preparation of the tender documents, and the execution of the construction work.
- The details of the implementation design study shall be finalized and carried out under the approval of the JICA and the Government of Indonesia.
- The team for the completion of the implementation design works shall consist mainly of the experts involved in the basic design study, and shall conclude a contract with the Consultant and carry out the field survey, detailed design, project cost estimation, and the preparation of the tender documents.
- For the bidding and contract services, the Consultant shall form an assisting group to ensure that the works are smoothly carried out to completion.

(2) Obligations of the Consultant in the Detailed Design Phase

- Preparation of the detailed design (antenna for telecommunication system)
- Preparation of the specifications for equipment procurement
- Preparation of the equipment procurement schedule
- Preparation of the tender documents
- Calculation of the target bid
- Preside over the bidding
- Prepare the contract document

(3) Obligation of the Consultant in the Equipment Production Supervision Stage

- Inspection and approval of the equipment production diagram and materials
- Confirmation of the shipment of the equipment
- Confirmation of the measures to be taken by the Indonesian side (tax exemption measures, B/A, etc.)
- Supervision of progress in delivery conditions
- Supervision of the finishing touches to the installation of the wireless communication system antennae
- Reporting the progress of the works to the concerned agencies of Indonesia and Japan
- Inspection of the procured equipment and materials and confirmation of the hand

over of these equipment and materials.

- Confirmation of payments, and assist in the implementation of various procedures

(4) Required Consultant Experts

The aforementioned services will require the following experts.

A. Detailed Design Phase

Chief Engineer	1, Leader
Equipment Engineer	1, preparation of tender & contract documents, preparation of the specifications

B. Supervision Phase

Chief Engineer	1, spot assignment (at the commencement of the works)
Equipment Engineer	2, spot assignment (at the planning, intermediate and inspection of completed works stage)
Facility Engineer	During the installation of the wireless facilities

3-1-5 Procurement Plan

All the equipment and materials to be procured for this project shall be delivered to the offices of the target national parks, the subsections, and the resorts. In this regard, the various facilities required for the storage of these equipment and materials will be prepared in Indonesia. The equipment and material procurement plan (from date of commencement until delivery), therefore, will be made in consideration of the progress of the construction of these storage facilities.

Although the equipment and materials for procurement are diverse in type, most have a low unit price and only a small quantity will be procured. Since the partial procurement by equipment type would likely raise the unit price of the equipment, the possibility of going into a blanket contract will be examined instead.

The specifications of every equipment have been roughly mentioned in previous sections. However, the specifications to be finalized shall be most appropriate in terms of frequency of use, ease in future procurement, the technical skills of the employees/staff.

For park offices that already have fire fighting equipment and materials, the compatibility of these equipment and materials with those to be procured, their ability to be supplemented, and ease in operation will be seriously considered before finalizing the plan.

(1) Initial Fire Fighting Equipment & Materials

The compatibility of existing equipment and materials with the computer, scanner and printer will be seriously considered. Japanese or Indonesian made copying machine, video camera and television sets may be used or purchased.

A lot of the 4 wheel drive vehicles, e.g. pick-up trucks, in Jakarta City are made in Japan. There are also many distributors of these vehicles in the city. Therefore, in view of repair and the purchase of spare parts, Japan made vehicles will be procured. For expendables, the materials to be procured will be mainly made in Indonesia. A few will be made in Japan.

(2) Telecommunications Equipment & Materials

The equipment and materials to be procured will be made in Japan. The installation of the antenna will be carried out according to the standards of Indonesia.

(3) Heavy Machinery

The selection of heavy machinery, such as the bulldozer and the backhoe, will be made with due consideration of ease in operation and durability to ensure long-term use.

3-1-6 Implementation

(1) Implementation Design

The implementation design will commence right after the contract with the Consultant is concluded and the approval of the Government of Japan is received. It will be based on the basic design and will entail the following activities: study work in Indonesia, work in Japan, and the preparation of tender documents including the various design layouts and the specifications. Discussions will be held with the Indonesian government on the details of the implementation design and to acquire the government's approval. The implementation design is expected to require 3 months to complete.

(2) Installation of Wireless Antenna

- Confirm the communications sections
- Confirm ground conditions and surrounding environment of the site for the installation
- Material procurement & transport
- Installation of wireless communication system antenna

(3) Equipment & Material Procurement

- Equipment and material procurement will commence upon the Japanese government's approval of the contract of the Contractor. The manufacture of the equipment and materials will take 3 months, from the date of commencement until the equipment is completed, while the packaging in Japan, sea transport, sea and overland transport to and in Indonesia, customs clearance, hand over and delivery will all take a period of 4 months.
- These equipment and materials will be delivered to the building specified within the offices in the national parks.

Table 3.1 Implementation Work Schedule

Calendar		4	5	6	7	8	9	10	11	1	2	3
Total months		1	2	3	4	5	6	7	8	9	10	11
Exchange of Notes		▼										
Contract of Consultant			▼									
Tender Stage	Confirmation of the Project		■									
	Preparation of Tender Documents		□									
	Approval of the Tender Documents			■								
	Announcement of the Tender			▼								
	Explanation of the Tender			□								
	Opening of the Tender				▼							
	Evaluation of the Tender				■							
	Contract of Contractor					▼						
	(Verification of the Government of Japan)						▼					
	Manufacture the Equipment	Meeting with the Contractor						□				
Approval of the drawing of the Equipment							□					
Procurement Stage								■				
Factory inspection									□			
Meeting about instration										■		
Transportation											■	
Adjustment of the Equipment												■
Instration of the Equipment												■
Inspection and Delivery												■

3-1-7 Obligations of the Government of Indonesia

The government organization that has full responsibility of the project is the Director General of Nature Protection and Conservation (DGNPC) under the Ministry of Forestry.

The local cooperation system is mainly centered on how to counter-act forest fires, and these measures or activities are carried out by every national park office, subsection and resort.

This project will be implemented under the grant aid scheme of Japan and will therefore be subject to the Japanese budgetary system. Accordingly, the respective departments of the Indonesian side shall carry out the following without delay at every project stage:

- (1) Enter into a contract with a Japanese consulting firm in accordance with the exchange

of notes (E/N)

- (2) Enter into a contract with a Japanese firm (contractor) in accordance with the exchange of notes (E/N)
- (3) Establish an A/P with a Japanese Bank that deals with foreign exchange transactions immediately after the contract is concluded, for the payment of the contract price as agreed under the contract.
- (4) Abide by agreements made between banks by paying the fee imposed for establishing an A/P immediately after the A/P is established.
- (5) Approve the construction of an office and the allocation of staff that the Contractor deems necessary for the implementation of the project.
- (6) Promptly issue a visa for the Japanese Consultant and Contractor to allow them to stay and sojourn in Indonesia for the completion of their services for the implementation of the project.
- (7) Acquire and prepare the sites required to place the equipment and materials of the Contractor.
- (8) Construct and improve roads for the transport of the equipment and materials.
- (9) Exempt the equipment and materials to be procured from taxes.
- (10) Take the measures required to expedite customs clearance of equipment and materials imported from Japan or other countries and payment of the customs clearance fee when required.
- (11) Attend the inspection of the facilities, equipment and materials (as requested by the Consultant) at every project phase.
- (12) Promptly issue the certificate of completion of work required at every project phase.

The amount to be shouldered by the Indonesian side for the implementation of this project is estimated at 90 million Rp (see table below).

Table 3.2 The Indonesian Side's Share of the Project Expenses

unit: thousand Rp

Work Classification	Total	Breakdown	Remarks
Construction of a storage area	66,000	2,000 x 33 places	
Construction of a garage	10,000	1,000 x 10 places	
Construction of an anchorage	14,000	2,000 x 7 places	
Total	90,000		

3-2 Operation and Maintenance Plan

(1) Basic Policy for Operation and Maintenance

The following basic policies will be adopted to ensure appropriate and efficient operation and maintenance:

- All facilities, equipment and materials constructed and procured for this project under the grant aid scheme of Japan shall be placed under the jurisdiction of the DGNPC of the Ministry of Forestry.
- DGNPC shall be responsible for the operation and maintenance of the nursery facilities while assistance from the JICA experts are being received, and shall strive to strengthen the system and supervise the entire activity.
- DGNPC shall organize a Fire Fighting Committee (tentative name) with the forest management department, the province and the districts, and carry out regular meetings with the committee, encourage exchange of opinions and conduct training to ensure the effective use of the facilities, equipment and materials.
- DGNPC shall carry out management guidance and educational programs to promote fire fighting services at the offices of the 4 target national parks, to ensure the effective use of the facilities, equipment and materials.
- For the sustainable operation and maintenance of the national park offices, DGNPC shall, at an early stage, establish an organization that would fully carry out the functions of the fire fighting system. DGNPC shall also allocate a budget for the execution of the organization's responsibilities.
- The guidance and educational programs of the DGNPC and the national park offices should not only be restricted to the staff of the park offices, but shall also include the area residents, to ensure the sustainable and efficient use of the fire fighting facilities, equipment and materials.
- DGNPC shall properly implement operation and maintenance to keep the fire

fighting facilities, equipment and materials in good condition and constantly ready for use in emergency cases.

- DGNPC shall always work on understanding the activities of the residents by regularly carrying out village patrol and monitoring activities, and understanding the conditions of forests and fields and lands made arable by the slash-and-burn cultivation method.
- Always have full and accurate understanding of the usage of the offices, storage area, and garage in the national park offices, subsections and resorts.

(2) Operation and Maintenance System

After the completion of the project and the handing over of the facilities, equipment and materials to the counterpart agency, the DGNPC shall form a committee made up of the staff of the forest management department and provincial and district residents for each of the natural park office.

To ensure that the aforementioned basic policies are properly adhered to, the committee shall regularly hold a meeting, report on the progress of the training, guidance and educational activities, and devise, publish, and revise facility operation and maintenance standards.

1) Personnel Plan

The personnel required for the national park management activities is as shown in the table below.

Table 3.3 Personnel Plan

Work Classification	Responsibility	No. of Staff	Remarks
Head of the Office	Overall supervision (including preparation of annual plan)	1	
Administration and accounting	<ul style="list-style-type: none"> • Plan for the use and management of every facility • Plan for the use and management of every equipment • Operation plan and management of vehicles and heavy machinery • Management of electric bills, gasoline expenses, water bills, etc. • Budgeting and fund management • Training program planning and management 	3 to 5	National Park Office
Monitoring, patrolling and communications	<ul style="list-style-type: none"> • Patrol and monitoring activities for the park and the villages • Communications and transmission of messages • Training in fire fighting activities • Management of mother trees, saplings and nurseries in the parks 	20-30	Assistant rangers, including rangers in subsections and resorts.

Work Classification	Responsibility	No. of Staff	Remarks
	<ul style="list-style-type: none"> • Management and recording of animals in the park • Locating hotspot areas and survey of the area • Installation of bulletin boards • Installation of trekking instructions • Installation of buffer zones 		
Training, monitoring, fauna and flora observations, assessment, and public relations	<ul style="list-style-type: none"> • Training program plan • Resident survey • Preparation of educational texts • Monitoring and assessment activities • Fauna and flora observations • Cultivation and seed gathering, raising of seedlings • Research on fauna and flora • Management of exhibitions and forest product fair 	5-10	Rangers of subsections and resorts

(3) Operation and Maintenance Expenses

The budget for the national park offices varies slightly by national park. The budget prepared by the DGNPC of the Ministry of Forestry of Indonesia, including the ordinary national budget, is as shown in page 1-19.

In this page, studies will be carried out assuming the operations to be executed by the Indonesian side only (expenses for project-type assistance are not considered).

The annual operation and maintenance expenses for every facility and equipment decided by the Ministry of Forestry of Indonesia for budget allocation will be adopted for the operation and maintenance plan. The operation and maintenance budget shall cover the following expenses: travel expenses, labor cost, transportation expenses, fuel expenses, electric and water bills, etc. The expenses for the Indonesian government employees shall be excluded as they are included in the general budget. In accordance with the details of this project, the annual expenses of the national park offices for the equipment and materials to be procured are calculated as shown in the table below.

Table 3.4 Annual Operation and Maintenance Expenses for Procured Equipment and Materials

Unit: Rp 9,000 = USD1.00

Equipment	Annual Maintenance Cost (Rp)	Bukit Tiga Puluh	Berbak	Way Kambas	Gunung Palung
		Qty Thousand Rp	Qty Thousand Rp	Qty Thousand Rp	Qty Thousand Rp
4 wheel drive vehicle	4,850,000	4,850	4,850	4,850	4,850
Pick-up truck	4,000,000	(2) 8,000	(2) 8,000	(3) 8,000	(2) 8,000
Motorcycle	875,000	(2) 1,750	(3) 2,625	(5) 4,375	(4) 3,500
Speedboat (2 engines)	3,600,000	-	3,600	-	-

Equipment	Annual Maintenance Cost (Rp)	Bukit Tiga Puluh	Berbak	Way Kambas	Gunung Palung
		Qty Thousand Rp	Qty Thousand Rp	Qty Thousand Rp	Qty Thousand Rp
Motorboats (1 engine)	2,200,000	-	(2) 4,400	(2) 4,400	(2) 4,400
Weather observation unit	550,000	550	550	550	550
Binocular	250,000	(4) 1,000	(5) 1,250	(8) 2,000	(4) 1,000
Fire fighting pump C	350,000	(5) 1,750	(5) 1,750	(6) 2,100	(4) 1,400
Fire fighting pump D	350,000	(5) 1,750	(5) 1,750	(6) 2,100	(4) 1,400
Pressure regulator	250,000	(5) 1,250	(5) 1,250	(6) 1,500	(4) 1,000
Hose	250,000	(125) 31,250	(125) 31,250	(150) 37,500	(100) 25,000
Backpack	100,000	(45) 4,500	(45) 4,500	(51) 5,100	(36) 3,600
Backpack shooter	250,000	(30) 7,500	(30) 7,500	(40) 10,000	(20) 5,000
Chainsaw	250,000	(5) 1,250	(5) 1,250	(6) 1,500	(4) 1,000
Power mower	750,000	(5) 3,750	(5) 3,750	(6) 4,500	(4) 3,000
Portable floodlight	750,000	(3) 2,250	(3) 2,250	(3) 2,250	(3) 2,250
Portable water tank	750,000	(5) 3,750	(5) 3,750	(6) 4,500	(4) 3,000
Tent	500,000	(3) 1,500	(3) 1,500	(3) 1,500	(3) 1,500
Hand tool set	500,000	(6) 3,000	(7) 3,500	(11) 5,500	(4) 2,000
PC	1,500,000	1,500	1,500	1,500	1,500
Printer	750,000	750	750	750	750
Television set	400,000	400	400	400	400
Video	400,000	400	400	400	400
Projector	400,000	400	400	400	400
Bulldozer	4,500,000	4,500	-	-	-
Backhoe	4,500,000	4,500	-	-	-
Generator	1,000,000	(6) 6,000	(6) 6,000	(9) 9,000	(3) 3,000
Portable GPS	750,000	(6) 4,500	(7) 5,250	(8) 6,000	(4) 3,000
Underground thermometer	750,000	(1) 750	(3) 2,250	(1) 750	(1) 750
Clinometer with compass	500,000	(5) 2,500	(5) 2,500	(6) 3,000	(4) 2,000
Locker	250,000	(14) 3,500	(12) 3,000	(24) 6,000	(9) 2,250
Steel shelf	250,000	(10) 2,500	(10) 2,500	(12) 3,000	(8) 2,000
Fixed radio unit (repeater)	2,500,000	2,500	2,500	2,500	2,500
Fixed radio unit	1,500,000	(8) 12,000	(7) 10,500	(10) 15,000	(4) 6,000
Mobile radio unit	500,000	(3) 1,500	(6) 3,000	(6) 3,000	(5) 2,500
Portable radio unit	200,000	(9) 1,800	(13) 2,600	(13) 2,600	(9) 1,800
Total		129,650	128,325	154,525	97,200
Percentage in total annual budget for 2000		19%	11%	10%	13%
2000 Budget of National Park Offices	Ordinary National Budget	242,421	233,879	418,031	139,330
	Total Budget	688,198	1,218,124	1,562,661	736,010
Percentage in total annual budget for 2001		8%	7%	7%	6%
2001 Budget of National Park Offices	Ordinary National Budget	349,070	451,094	794,671	348,324
	Total Budget	1,553,720	1,788,557	2,370,761	1,584,317

At present, every national park office works on strengthening their administrative systems

and have been granted a high increase rate for their annual budget. The operation and maintenance cost for the facilities and equipment constructed and procured under this study is estimated to only occupy a small percentage of the annual budget of the park offices and will not cause any additional financial burden at all. However, there is no guarantee that the same budgetary measures will be adopted for fiscal 2002.

Chapter 4 PROJECT EVALUATION & RECOMMENDATIONS

4-1 Project Verification • Justification & Benefits

The evaluation of this study will be carried out in accordance with the Basic Design Study Guideline which was compiled under the supervision of the Study Team. A conclusion will be made after a comprehensive analysis of the real nature of the study, the extent of the impacts of the study, the operation and maintenance and the budget of the Government of Indonesia, and the evaluation of the appropriateness of implementing the study under the grant aid scheme. Recommendations will also be made on how to operate and maintain the procured equipment to ensure effective and appropriate use, in order to attain the targets of the study.

(1) Study Targets & Projected Benefits

1) Priority Target

- Check the spread of forest fire to prevent forest fires in target national parks.

2) Project Targets

- Provide appropriate forest fire fighting equipment to the 4 target national parks.

3) Activities and Results that can be Expected

The equipment that will be provided under this project will enable the offices managing the national parks to systematically carry out fire fighting activities, and this is expected to produce the following results:

- Reinforcement of the organizational functions of the subsections and the resorts by planning the patrol and monitoring activities of the rangers in the parks.
- Reduction of the time it takes from the notification of the detection of fire to the mobilization of a fire fighting troop, from about half a day to 1 to 2 hours.
- Change in fire fighting methods: from inefficient methods using tree branches or bamboos to the use of water spraying methods
- The accurate follow up on hotspot information received from the central government and the understanding of accurate information on problems in the national parks and the target area regarding slash and burn cultivation and devastated lands would enable early detection of fire.

(2) Problems in National Park Management

1) Causes of Forest Fire and Countermeasures

As previously mentioned, forest fire in the national parks are mostly due to man-made activities (bonfires, smoldering cigarette butts, etc.). Fire outbreaks often occur out at the river and roads in the park vicinity, which are used by infractors to transport the trees, animals, fish, and tree sap that they have illegally collected from the park. These activities are a daily occurrence in the park. The carelessness of park visitors is also another factor that may have contributed to fire outbreaks in the park.

To cope with these conditions, the national park offices set up signboards and carry out patrol and monitoring activities. Patrol and monitoring activities are not satisfactory, however, due to the absence of necessary equipment and materials. In particular, the absence of equipment necessary for information relay and initial fire fighting delays the immediate mobilization of troops for initial fire fighting, and because of this, the fire tends to spread.

Except for the Way Kambas National Park, the park offices that manage the three other target national parks are located far from the national parks, and this makes the management of subsections and resorts quite difficult.

2) Forest Fire Problems

The 1997 forest fire that broke out due to the abnormally dry conditions triggered by the El Niño phenomenon was left unchecked due to the inability of the national park offices to deal with the situation as a result of a lack of a communication system and appropriate fire fighting equipment and tools. Another series of forest fires broke out in the following years (1998, 1999, 2000) in these national parks (except for Way Kambas). Fortunately, the forest fire scale was small and not much damage was reported.

The forest fire conditions and fire fighting activities in the parks are as outlined below.

- In 1997, flying sparks from the slash and burn activity in Bukit Tiga Puluh national park caused fire on the slopes near the mountain top at the northern section of the park. Insufficient fire fighting equipment and the inaccessibility of the site affected by the fire left park authorities no recourse but to wait for the rainy season (March) to start to fully extinguish the fire. No fire broke out in 1998 and 1999. In 2000, fire broke out by the road side near the Shambuli resort and affected 24ha within a week, and another one by the side of the road across Granite resort which affected 4ha in 2 days. Residents say, however, that together with the park rangers, they were able to extinguish the fire by thrashing using tree branches.

- In Berbak, the fire that was ignited to clean the fields in the surrounding area spread and affected about 42ha along the northern park boundary, 124ha and 42ha along the Air Hitom Lout River in the central section of the park, and 100ha at the southern extremity of the park. Even with the cooperation of some of the residents in thrashing the fire with tree branches, it took 1 to 3 months in the rainy season to finally extinguish the fire. No fire broke out in the following three years of 1998, 1999, 2000.
- In Way Kambas, a number of fire incidents break out every year and in many areas. The outbreak is attributed to hunting, resource collection and illegal felling activities that abound in the park. Fire incidents were difficult to cope with in 1997 due to the lack of appropriate fire fighting equipment and because a wide area was affected. In 1999, however, the fire fighting activities of the rangers were relatively successful with the aid of jet shooters, and the help of some residents who thrashed the fire with tree branches. The forest fire incident in 1997 affected 8 places totaling 29,000ha and took 3 months to extinguish. In 1999, 14 places were affected (5,246ha in total) and it took 20 days to extinguish the fire (10 days for mobilization and another 10 for fire fighting). In 2000, the damages vary by season: 5 places (480ha) from February to May, 1 place (600ha) in April, 7 times in a total of 7 places (959ha) from June to September. Fire fighting activity required one month on average.

The rate of the spread of the fire in the affected area is calculated by adding the period the fire occurred and the time require to extinguish it minus the frequency of occurrence, and is summarized in the table below.

Table 4.1 Affected Area, Fire Extinguishing Period & Fire Velocity

National Park	Fire Fighting Activity & Required Fire Extinguishing Time	Affected Area (ha)	Fire Velocity
Bukit Tiga Puluh	The fire in 1997 affected 400ha near the mountain top at a velocity of 400ha/90days = 4.4ha/day. In 2000, the fire took 2 days to extinguish and affected 4ha of land at a velocity of 2ha/day. Another fire took a week to extinguish and affected 24ha at a velocity of 3.4ha/day.	400ha/place 4ha/place 24ha/place	4.4ha/day 12ha/day 3.4ha/day
Berbak	In 1997, the fire that took 30 days to extinguish affected 42ha at a speed of 1.4ha/day. Another fire that took 90 days to extinguish affected 124ha at a speed of 1.4ha/day.	42ha/place 124ha/place	1.4ha/day 1.4ha/day

National Park	Fire Fighting Activity & Required Fire Extinguishing Time	Affected Area (ha)	Fire Velocity
Way Kambas	The 1997 fire affected 8 places and a total of 29,000ha. It took 90 days to extinguish the fire which affected 3,625ha/place at a speed of 40ha/day.	29,000ha/8 places	40ha/day
	In 1999, fire broke out in 14 places totally affecting 5,246ha, that is 375ha/place. The fire took 30 days to extinguish and spread at a rate of 12.5ha/day.	5,246ha/14 places	12.5ha/day
	In 2000, fire extinguishing activities took 20 days with the mobilization of the rangers, residents, etc. and the aid of fire fighting equipment. From February to May fire incidents affected 160ha/place, spreading at a rate of 8ha/day (160ha/20days). In April, fire affected 600ha/place at a rate of 30ha/day. From June to September, the affected area totaled 137ha/place, with the fire spreading at a rate of 6.9ha/day.	480ha/3 places	8ha/day
		600ha/place	30ha/day
		959ha/7 places	6.9ha/day
Gunung Palung	No records		

(3) Systematization & Effects of Fire Fighting Equipment

Of the offices of the 4 target national parks, 3 do not have any fire fighting equipment and tools. The Way Kambas National Park, on the other hand, has been provided with the said equipment several years ago under the international emergency assistance program. This absence of appropriate fire fighting equipment leaves these parks no recourse but to wait for the rainy season to extinguish any fire that may break out. The equipment to be provided under this project shall enable the national park management offices to systematically carry out fire fighting activities and in this regard the following direct and indirect benefits can be expected.

1) Direct Benefits

- Planning the patrol and monitoring activities of the rangers would systematize the functions of the substations and the resorts.
- Instead of half a day, it would only take 1 or 2 hours to mobilize a fire fighting troop from the time the detection of fire is notified.
- Adoption of efficient fire fighting methods, mainly by spraying fire with water instead of the highly inefficient means of putting fire out by tree branches and bamboo trees.
- Follow-up on the hotspot information from the central government will enable accurate understanding of correct information on problems concerning slash and burn and devastated lands in the parks and the study areas, and therefore the early detection of fire.

2) Indirect Benefits

- Preventing forest fire outbreaks will contribute to the protection and conservation of fauna and flora peculiar to these national parks.
- The implementation of a fire fighting training program in the 4 national parks under the project type assistance scheme will make these parks a model in forest fire early detection and fire fighting activities.

Table 4.2 Impacts of Fire Fighting Activities Using the Equipment Provided (Past fire outbreaks were used for the calculation)

National Park	Impacts of Fire Fighting Activities Using the Equipment Provided
Bukit Tiga Puluh	<p>It is not possible to set up a pump for water spraying at the site affected by the fire in 1997. The pump and the water tank will be set up instead at a nearby road, and jet shooting activities will be carried out. A mower and chainsaw will be used to cut trees and weed out the surrounding area to prevent fire from spreading. This would minimize the damage.</p> <p>Notifications and communications will be established within a few days along with the mobilization of a troop of rangers to the site. If the rangers arrive two days later at the site, the fire would have already covered 8.8ha of land. A 3 day fire fighting activity would still limit the spread of the fire to 13.2ha, that is 4.4ha x 3 days. All this would restrict the damage to 10ha.</p> <p>The 2000 fire incident affected 4ha and 24ha of land. Pump set up is possible in these areas, therefore, water spraying would extinguish the fire in the 4ha area in one day, restricting the damage to 1 to 2ha. In the 24ha land, fire can be extinguished in a few days and damage could be limited to less than 10ha.</p>
Berbak	<p>The site affected by the fire is in a swamp, therefore, the fire is bound to spread at a rate much slower than if it happened in the mountain area. Monthly patrol activities would enable early fire detection and emergency contacts/communication could mobilize fire fighting equipment and rangers in a day or two. Since water spraying using a pump is possible in the area, the fire could be extinguished within several days.</p> <p>Either damages could be restricted to within 4.2ha (1.4ha x 3 days).</p>
Way Kambas	<p>The set up of a communications system and the provision of fire fighting equipment would enable early fire detection and notification, and the mobilization of the fire fighting equipment and rangers in a day or two. Although fire broke out in many areas within this park, and often enough, outbreak occurs at different times. Even if fire breaks out in an area with unstable ground conditions (canals, etc.), fire fighting activities can be commenced in 2 to 3 days. Although the number of days needed to extinguish a fire depends on the extent of the fire, the provision of these equipment would held extinguish the fire in 3 to 4 days. These equipment would enable the extinguishing of fire within 7 days of its outbreak, and would reduce damage to about 20 to 30% of damages in the past.</p>
Gunung Paleng	No records

4-2 Technical Cooperation for the Project

4-2-1 Technical Cooperation & Enhancement of the Residents' Awareness

The issues regarding forest fires that have to be addressed are to expedite fire fighting activities to minimize damage and eliminate factors that cause forest fires. The former will entail improvement of technology and the adoption of measures for the efficient use of the equipment, through regular training in emergency notification/communication of fire outbreaks and fire fighting equipment operation. The latter will entail educational activities by the government for the local residents to enhance their understanding of environmental protection issues.

The second phase of the project-type assistance scheme incorporates a program to train the rangers in fire prevention. It is important to train the rangers regularly and repeatedly. Improvements in fire fighting technology would further underscore the importance of the procurement of fire fighting equipment under this project. The Government of Indonesia should also establish early on a system that would enable the training of the rangers of parks not covered by this study based on the results of the training under the project-type assistance program. The creation of a training program to improve fire fighting techniques in Indonesia would have an impact on neighboring countries and minimize damages caused by fire.

Awareness enhancement is an endeavor that would take time. Nonetheless, it is the only means to deepen the residents' understanding of how serious the Indonesian government is in taking measures to protect the environment.

4-3 Concerns

4-3-1 Recommendations

1) Regular Training in Fire Fighting Activities

The effective use of fire fighting equipment requires skilled and experienced rangers and smart operation. Given this pre-requisite, the rangers should be trained regularly at the site. The natural resource protection department should organize a regular training program for the rangers and create a manual on actual fire fighting activities to ensure that such activities are effectively carried out.

2) Transfer of National Park Office Nearby National Park of Jurisdiction

The national park offices are currently located at a range of 70km to 100km from the

national parks of their jurisdiction, hence the supervision and management of substations and resorts surrounding the parks are inefficient. The rangers quick actions based on reliable and systematic commands will reduce and prevent the illegal felling and resource collection activities of the concessionaires and the residents, as well as prevent fire from spreading. It is very important that the rangers get to the site affected by fire on time equipped with the necessary fire fighting equipment and tools.

Locating the national park offices close to the national parks of their jurisdiction would provide various impacts in the promotion of eco-tourism as well as the provision of familiar public services to park visitors.

3) Importance of Community-based Forest Industry

The residents collect fuelwood and plants and hunt animals in the park for economic reasons. These activities, however, are but one of the causes of forest fire and the general problems observed in the national parks. The residents have lived in these areas long before they have been designated as national parks. There is no community based forest industry around the park area that could provide the residents with a means of livelihood. The surrounding area of the park, e.g. reserve forests, is particularly being developed, at a quick pace, by concessionaires into oil palms. To solve the problems of the national parks, the government has to immediately restrict these developments and prepare a site for the development of a community based forest industry, e.g. forest reserve and private forests, that would provide the residents with a means of livelihood. A park management system that takes a community based forest industry into consideration should, therefore, entail protecting and sustaining national parks. By making the residents understand that they can establish a means of livelihood with the national parks and its surrounding forests (forest reserves/protected forests), long term resident participation in the Comprehensive Park Management Plan is possible.

4) Raise the Potential of National Parks & Promoting Eco-tourism

The 4 target national parks are confirmed to be the habitats of numerous fauna and flora. The Shanon diversity index (0 to 5.23; index for the number of inhabiting species per unit area) for Bukit Tiga Puluh is high at 4.66, but the park's potential for tourism development is low. All of the target national parks are out of the way for the general tourists to visit. To improve the economic benefits that the benefits could derive from the park, access conditions should be improved, the parks' potential as tourist attraction sites should be developed, and the number of visitors should be increased. These would then assist the residents to naturally understand the importance of national parks. These cannot be achieved, however, if the economic activities of the residents adversely affects natural

conditions in the park. Natural resource protection in the park would, therefore, not only entail the management of fauna and flora, but also the consideration of the coexistence of the village communities and nature.

As can be gleaned from the aforementioned, the implementation of this project under the grant aid scheme of Japan is extremely beneficial and appropriate. With this in mind, the problems mentioned in the previous sections should be solved in order to further ensure the effective implementation of the project. In particular, the dissemination of the importance of fire prevention to the residents in the vicinity of the national parks, along with the establishment of a system that would allow the republic to independently train the park employees and surrounding residents, is extremely essential.

- Appendices**
- 1. Member List of the Survey Team**
 - 2. Survey Schedule**
 - 3. List of Party Concerned in the Recipient Country**
 - 4. Minutes of Discussion**
 - 5. Cost Estimation Borne by the Recipient Country**
 - 6. References**

Appendices 1. Member List of the Survey Team

Basic Design Study on Improvement of Forest Fire Equipment
In Indonesia

LIST OF THE TEAM MEMBER

No.	Name	Job Title	Occupation	Period (arr.-dep.)
1	OKAMOTO Atsushi	Leader	Assistant Director, Grant Aid Division, Economic Cooperation Bureau, Ministry of Foreign Affairs	2000/11/17- 2000/11/24
2	TAKANO Kenichi	Technical Advisor (Forest Fire Prevention)	National Forest Planning Division, National Forest Department, forest Agency	2000/11/15- 2000/11/25
3	TAKI Akira	Technical Advisor (Fire Prevention)	Section Chief of Guidance and Examination, Extraordinary Disaster Management Division, Fire and Disaster Management Agency	2000/11/15- 2000/11/25
4	ANDO Naoki	Planning Management	Deputy Director, Forestry and Environment Division, JICA	2000/11/15- 2000/11/25
5	NAKAMURA Kinya	Chief Consultant / Operation and Maintenance	Senior Advisor, Overseas Operation Department, KOKUSAI KOGYO Co., Ltd.	2000/10/22- 2000/11/30
6	YAMASE Kazuhiro	National Park Planning	Executive Director, Japan Wildlife Research Center	2000/10/29- 2000/11/22
7	YAMAZAKI Hideto	Forest Fire Prevention / Equipment Planningw	Overseas Operation Department, KOKUSAI KOGYO Co., Ltd.	2000/10/22- 2000/11/30
8	AOKI Junichi	Procurement Planning / Cost Estimation	General Manager, Special Information Planning Department, KOKUSAI KOGYO Co., Ltd.	2000/11/16- 2000/11/30

Basic Design Study on explanation of draft report of Forest Fire Equipment
In Indonesia

LIST OF THE TEAM MEMBER

No	Name	Job Title	Occupation	Period (arr.-dep.)
1	MUTSUYOSHI Emiko	Leader/ Planning Management	First Project Managemant Division, Grant Aid Department, JICA	2001/2/4- 2001/2/10
2	NAKAMURA Kinya	Chief Consultant / Operation and Maintenance	Senior Advisor, Overseas Operation Department, KOKUSAI KOGYO Co., Ltd.	2001/2/4- 2001/2/10
3	YAMAZAKI Hideto	Forest Fire Prevention / Equipment Planningw	Overseas Operation Department, KOKUSAI KOGYO Co., Ltd.	2001/2/4- 2001/2/10

Appendices 2. Survey Schedule

Improvement of Forest Fire Equipment in INDONESIA
Survey Schedule

Day		Official	Group A (Nakamura, Aoki)	Stay	Group B (Yamase, Yamazaki)	Stay
Oct. 22	Sun		Arrive at Jakarta	Jakarta	Arrive at Jakarta	Jakarta
Oct. 23	Mon		Greeting for EOJ,JICA,Expert	Jakarta	Greeting for EOJ,JICA,Expert	Jakarta
Oct. 24	Tue		Greeting for D.G. / BAPENAS	Jakarta	Greeting for D.G. / BAPENAS	Jakarta
Oct. 25	Wed		Preparation for site survey	Jakarta	Preparation for site survey	Jakarta
Oct. 26	Thu		Meeting with DGPNC	Jakarta	Meeting with BAPENAS	Jakarta
Oct. 27	Fri		Leaving for Lang Pong	Lang Pong	Leaving for Lang Pong	Lang Pong
Oct. 28	Sat		Site Survey at Way Kambas N/P, Leaving for JKT	Jakarta	Site Survey at Way Kambas N/P, Leaving for JK	Jakarta
Oct. 29	Sun			Jakarta	Mr.Yamase (arrive at Jakarta)	Jakarta
Oct. 30	Mon		Meeting with DGPNC	Jakarta	Meeting with DGPNC	Jakarta
Oct. 31	Tue		Leaving for Barikpapan	Barikpapan	Leaving for Barikpapan	Barikpapan
Nov. 1	Wed		Site Survey at Kutai N/P	Barikpapan	Site Survey for Kutai N/P	Barikpapan
Nov. 2	Thu		Leaving for JKT	Jakarta	Leaving for Jakarta	Jakarta
Nov. 3	Fri		Leaving for Jambi	Jambi	Leaving for Shin Than	Shin Than
Nov. 4	Sat		Site Survey at Berbak N/P	Jambi	Site Survey for Nanga Pinoh	Shin Than
Nov. 5	Sun			Jambi	Site Survey for Nanga Pinoh	Shin Than
Nov. 6	Mon		Site Survey at Bukit Tiga Pulih N/P	Jambi	Leaving for Pontianake	Pontianake
Nov. 7	Tue		Site Survey at Bukit Tiga Pulih N/P	Jambi	Leaving for Kataban	Kataban
Nov. 8	Wed		Leaving for Jakarta	Jakarta	Site survey for Gunung Palung N/P	Kataban
Nov. 9	Thu		Meeting with DGPNC	Jakarta	Site survey for Gunung Palung N/P	Kataban
Nov. 10	Fri		Meeting with DGPNC	Jakarta	Leaving for Pontianake	Pontianake
Nov. 11	Sat			Jakarta	Leaving for Jakarta	Jakarta
Nov. 12	Sun			Jakarta		Jakarta
Nov. 13	Mon		Meeting with DGPNC	Jakarta	Meeting with DGPNC	Jakarta
Nov. 14	Tue		Meeting with DGPNC	Jakarta	Meeting with DGPNC	Jakarta
Nov. 15	Wed	1	Meeting with Official Member from JPN	Jakarta	Meeting with Official Member from JPN	Jakarta
Nov. 16	Thu	2	Greeting at EOJ,JICA,Expert Mr.Aoki (arriving at Jakarta)	Jakarta	Greeting at EOJ,JICA,Expert Mr.Aoki (arriving at Jakarta)	Jakarta
Nov. 17	Fri	3	Meeting with Technical Cooperation Team	Jakarta	Meeting with Technical Cooperation Team	Jakarta
Nov. 18	Sat	4	Leaving for Jambi	Jambi	Leaving for Jambi	Jambi
Nov. 19	Sun	5	Site Survey at Berbak N/P	Jambi	Site Survey at Berbak N/P	Jambi
Nov. 20	Mon	6	Meeting with DINAS at Jambi	Jambi	Meeting with DINAS at Jambi	Jambi
Nov. 21	Tue	7	Leaving for Jakarta	Jakarta	Leaving for Jakarta	Jakarta
Nov. 22	Wed	8	Meeting/Discussion	Jakarta	Meeting/Discussion	Jakarta
Nov. 23	Thu	9	Meeting and Signing of Minutes of Meeting	Jakarta	Meeting and Signing of Minutes of Meeting	Jakarta
Nov. 24	Fri	10	Greeting at EOJ,JICA,Expert	Jakarta	Greeting at EOJ,JICA,Expert	Jakarta
Nov. 25	Sat	11	Survey for Procurement and Cost Estimation	Jakarta	Survey for Procurement and Cost Estimation	Jakarta
Nov. 26	Sun		Leaving for Jambi	Jambi	Survey for the Equipment	Jakarta
Nov. 27	Mon		Site Survey at Berbak N/P	Jambi	Survey for the Equipment	Jakarta
Nov. 28	Tue		Leaving for Jakarta	Jakarta	Survey for the Equipment	Jakarta
Nov. 29	Wed		Meeting with DGPNC, Report to EOJ,JICA	Fright	Meeting with DGPNC, Report to EOJ, JICA	Fright
Nov. 30	Thu		Arrive at Japan		Arrive at Japan	

Explanation of Draft Report of Forest Fire Equipment in INDONESIA
Survey Schedule

Date		Days	Program		Stay
			A.M.	P.M.	
4 Feb.	Sun	1	Leaving from Narita	Arriving at Jakarta	Jakarta
5 Feb.	Mon	2	Greeting for JICA,Expert	Meeting with DGPNC	Jakarta
6 Feb.	Tue	3	Explanation of Draft Report	Moving to Lampung	Lampung
7 Feb.	Wed	4	Visiting to Way Kambas NP	Moving to Jakarta	Jakarta
8 Feb.	Thu	5	Minutes Discussion	Minutes Discussion	Jakarta
9 Feb.	Fri	6	Meeting with DGPNC, Report to EOJ,JICA	Leaving from Jakarta	Fright
10 Feb.	Sat	7	Arriving at Narita		

Appendices 3.

List of Party Concerned in the Recipient Country

Ir. Jefry Susyatiando

Ir. Elan Djaelan

“

Staff of the Public Relations Department

Appendices 4. Minutes of Discussion

MINUTES OF DISCUSSIONS
ON
BASIC DESIGN STUDY ON THE PROJECT FOR
IMPROVEMENT OF FOREST FIRE EQUIPMENT
IN THE REPUBLIC OF INDONESIA

In response to a request from the Government of the Republic of Indonesia (hereinafter referred to as "Indonesia"), the Government of Japan decided to conduct a Basic Design Study on the Project for Improvement of Forest Fire Equipment (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent the Basic Design Study Team (hereinafter referred to as "the Team") to Indonesia, which is headed by Mr. Atsushi Okamoto, Assistant Director, Grant Aid Division, Economic Cooperation Bureau, Ministry of Foreign Affairs and is scheduled to stay in the country from October 23 to November 29, 2000.

The Team held discussions with the officials concerned of the Government of Indonesia and conducted field surveys at the study areas.

In the course of discussions and field surveys, both parties have confirmed the main items described on the attached sheets. The Team will proceed to further work and prepare the Basic Design Study Report.

Jakarta, November 23, 2000

岡本 敦

Mr. Atsushi Okamoto
Leader
Basic Design Study Team
Japan International Cooperation Agency



Mr. Ir. Harsono
Director General of Protection and
Nature Conservation
Ministry of Forestry

ATTACHMENT

1. Objective of the Project

The objective of the Project is to enhance the capacity of national park offices to cope with forest fire through provision of equipment for monitoring, patrol and initial fire suppression.

2. Project Sites

The sites of the Project are as follows.

- (1) Bukit Tiga Puluh National Park (Riau Province and Jambi Province)
- (2) Berbak National Park (Jambi Province)
- (3) Way Kambas National Park (Lampung Province)
- (4) Gunung Palung National Park (West Kalimantan Province)

3. Responsible and Implementing Agency

The responsible and implementing agency is Directorate General of Protection and Nature Conservation, Ministry of Forestry (hereinafter referred to as "DGPNC").

4. Items Requested by the Government of Indonesia

After discussions with the Team, Indonesian side finally requested the items described in Annex-1. However, both sides agreed that the final items of the Project will be determined by the Japanese side after further study in Indonesia and analysis in Japan.

5. Japan's Grant Aid Scheme

5-1. Indonesian side understands the Japan's Grant Aid Scheme explained by the Team, as described in ANNEX-2.

5-2. Indonesian side will take the necessary measures, as described in Annex-3, for smooth implementation of the Project, as a condition for the Japanese Grant Aid to be implemented.

6. Schedule of the Study

6-1. The consultants will proceed to further site surveys in Indonesia until November 29, 2000.

6-2. JICA will prepare the draft report of the Basic Design Study in English and dispatch a mission in order to explain its contents around February 2001.

6-3. In case that the contents of the report is accepted in principle by the Government of Indonesia, JICA will complete the final report and send it to the Government of Indonesia by April, 2001.

7. Other Relevant Issues

7-1. Place of Deployment of the Equipment

All the equipment procured under the Project shall be deployed and used in Bukit Tiga

Puluh, Berbak, Way Kambas, and Gunung Palung National Park (hereinafter referred to as "the Project Sites").

7-2. Delivery and Handing Over of the Equipment

Delivery, installation and test operation of the equipment will be done in the Project Sites, as necessary. Installation and test operation will be done by the engineers of the manufacturing companies of the main equipment such as portable pump and portable radio unit in order to provide instructions for proper operation and maintenance. After the test operation is completed, the equipment will be handed over to DGPNC.

7-3. Operation and Maintenance of the Equipment

DGPNC will allocate sufficient budget and personnel with appropriate technical skills to ensure proper and effective operation and maintenance of the equipment procured under the Project. DGPNC will also implement periodical field exercises of fire suppression with the procured equipment at the Project Sites. Operations and field exercises of fire suppression will be monitored and recorded by Indonesian side.

7-4. Warehouse

Indonesian side agreed to prepare warehouses to keep the procured equipment properly and safely before the handing over of the equipment.

7-5. Coordination of the Authorities Concerned

DGPNC will coordinate the government authorities concerned, especially Ministry of Finance, Ministry of Foreign Affairs and BAPPENAS, for the smooth implementation of the Project.

List of Equipment requested by the Government of Indonesia

Code	Item	Bukit Tiga	Berbak	Way Kambas	Gunung Palung	Total
For early fire detection and initial fire-fighting						
1	Wagon type vehicle 4X4	1	1	1	1	4
2	Pick up 4X4	2	2	3	2	9
3	Motor bike	2	3	5	4	14
4	Motor boat	0	3	2	2	7
5	Weather observation unit	1	1	1	1	4
6	Binocular	4	5	8	4	21
7	Portable pump (C class)	5	5	6	4	20
8	Portable pump (D class)	5	5	6	4	20
9	Pressure regulator	5	5	6	4	20
10	Hose	125	125	150	100	500
11	Back pack	45	45	51	36	177
12	Back pack shooter	30	30	40	20	120
13	Chain saw	5	5	6	4	20
14	Power mower	5	5	6	4	20
15	Portable Floodlight	3	3	3	3	12
16	Portable water tank (5,000 L)	5	5	6	4	20
17	Tent	3	3	3	3	12
18	Hand tool set	6	7	11	4	28
19	Personal computer	1	1	1	1	4
20	Printer	1	1	1	1	4
21	Television	1	1	1	1	4
22	Video	1	1	1	1	4
23	Projector	1	1	1	1	4
24	Bulldozer	1	0	0	0	1
25	Backhoe	1	0	0	0	1
For communication						
26	Fixed radio unit (Office)	1	1	1	1	4
27	Fixed radio unit (station)	8	7	10	4	29
28	Mobile radio unit	3	6	6	5	20
29	Portable radio unit	9	13	13	9	44
Additional request						
30	Generator	6	6	9	3	24
31	Portable GPS	6	7	8	4	25
32	Underground thermometer	1	3	1	1	6
33	Clinometer with compass	5	5	6	4	20
34	Locker	14	12	24	9	59
35	Steer shelf	10	10	12	8	40

Japan's Grant Aid Scheme

1. *Grant Aid Procedures*

1) Japan's Grant Aid Program is executed through the following procedures.

Application	(Request made by a recipient country)
Study	(Basic Design Study conducted by JICA)
Appraisal & Approval	(Appraisal by the Government of Japan and Approval by Cabinet)
Determination of Implementation	(The Notes exchanged between the Governments of Japan and the recipient country)

2) Firstly, the application or request for a Grant Aid project submitted by a recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to determine whether or not it is eligible for Grant Aid. If the request is deemed appropriate, the Government of Japan assigns JICA (Japan International Cooperation Agency) to conduct a study on the request.

Secondly, JICA conducts the study (Basic Design Study), using (a) Japanese consulting firm(s).

Thirdly, the Government of Japan appraises the Project to see whether or not it is suitable for Japan's Grant Aid Program, based on the Basic Design Study report prepared by JICA, and the results are then submitted to the Cabinet for approval.

Fourthly, the project, once approved by the Cabinet, becomes official with the Exchange of Notes signed by the Governments of Japan and the recipient country.

Finally, for the implementation of the Project, JICA assists the recipient country in such matters as preparing tenders, contracts and so on.

2. Basic Design Study

1) Contents of the Study

The aim of the Basic Design Study (hereafter referred to as "the Study"), conducted by JICA on a requested project (hereinafter referred to as "the Project") is to provide a basic document necessary for the appraisal of the Project by the Japanese Government. The contents of the Study are as follows:

- a) Confirmation of the background, objectives, and benefits of the requested Project and also institutional capacity of agencies concerned of the recipient country necessary for Project's implementation.
- b) Evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from a technical, social and economic point of view.
- c) Confirmation of items agreed on by both parties concerning the basic concept of the Project.
- d) Preparation of a basic design of the Project.
- e) Estimation of costs of the Project.

The contents of the original request are not necessarily approved in their initial form as the contents of the Grant Aid project. The Basic Design of the Project is confirmed considering the guidelines of Japan's Grant Aid Scheme.

The Government of Japan requests the Government of the recipient country to take whatever measures are necessary to ensure its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the organization in the recipient country actually implementing the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country through the Minutes of Discussions.

2) Selection of Consultants

For smooth implementation of the Study, JICA uses (a) registered consultant firm(s). JICA selects (a) firm(s) based on proposals submitted by interested firms. The firm(s)

selected carry(ies) out a Basic Design Study and write(s) a report, based upon terms of reference set by JICA.

The consultant firm(s) used for the Study is(are) recommended by JICA to the recipient country to also work on the Project's implementation after the Exchanges of Notes, in order to maintain technical consistency.

3. Japan's Grant Aid Scheme

1) What is Grant Aid?

The Grant Aid Program provides a recipient country with non-reimbursable funds to procure facilities, equipment and services (engineering services and transportation of the products, etc.) for economic and social development of the country under principles in accordance with the relevant laws and regulations of Japan. Grant Aid is not supplied through the donation of materials as such.

2) Exchange of Notes (E/N)

Japan's Grant Aid is extended in accordance with the Notes exchanged by the Governments concerned, in which the objectives of the Project, period of execution, conditions and amount of the Grant Aid, etc. are confirmed.

3) "The period of the Grant Aid" means the one fiscal year which the Cabinet approves the Project for. Within the fiscal year, all procedures such as exchanging of the Notes, concluding contracts with (a) consultant firm(s) and (a) contractor(s) and a final payment to them must be completed.

However in case of delays in delivery, installation or construction due to unforeseen factors such as weather, the period of the Grant Aid can be further extended for a maximum of one fiscal year at most by mutual agreement between the two Governments.

4) Under the Grant Aid, in principle, Japanese products and services including transport or those of the recipient country are to be purchased.

When the two Governments deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country.

However the prime contractors, namely, consulting, contracting and procurement firms, are limited to "Japanese nationals". (The term "Japanese nationals" means persons of Japanese nationality or Japanese corporations controlled by persons of Japanese nationality.)

5) Necessity of the "Verification"

The Government of recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by the Government of Japan. This "Verification" is deemed necessary to secure accountability to Japanese taxpayers.

6) Undertakings required of the Government of the Recipient Country

In the implementation of the Grant Aid project, the recipient country is required to undertake such necessary measures as the following:

- (1) To secure land necessary for the sites of the Project and to clear, level and reclaim the land prior to commencement of the construction.
- (2) To provide facilities for distribution of electricity, water supply and drainage and other incidental facilities in and around the sites.
- (3) To secure buildings prior to the procurement in case the installation of the equipment.
- (4) To ensure all the expenses and prompt execution for unloading, customs clearance at the port of disembarkation and internal transportation of the products purchased under the Grant Aid.
- (5) To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which will be imposed in the recipient country with respect to the supply of the products and services under the Verified Contracts.

(6) To accord Japanese nationals whose services may be required in connection with the supply of the products and services under the Verified Contracts, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.

(7) Proper Use

The recipient country is required to maintain and use facilities constructed and equipment purchased under the Grant Aid properly and effectively and to assign staff necessary for this operation and maintenance as well as to bear all the expenses other than those covered by the Grant Aid.

(8) Re-export

The products purchased under the Grand Aid should not be re-exported from the recipient country.

(9) Banking Arrangement (B/A)

a) The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"). The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the verified contracts.

b) The payments will be made when payment requests are presented by the Bank to the Government of Japan under an authorization to pay issued by the Government of the recipient country or its designated authority.

Major Undertakings to be taken by Each Government

NO	Items	To be covered by Grant Aid	To be covered by Recipient side
1	To bear the following commissions to a bank of Japan for the banking services based upon the B/A		
	1) Advising commission of A/P		●
	2) Payment commission		●
2	To ensure prompt unloading and customs clearance at the port of disembarkation in recipient country		
	1) Marine(Air) transportation of the products from Japan to the recipient country	●	
	2) Tax exemption and custom clearance of the products at the port of disembarkation		●
	3) Internal transportation from the port of disembarkation to the Project Sites	●	
3	To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work		●
4	To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contract		●
5	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid		●
6	To bear all the expenses, other than those to be borne by the Grant Aid, necessary for the transportation and installation of the equipment		●

B/A: Banking Arrangement

A/P: Authorization to Pay

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MINUTES OF DISCUSSIONS
ON BASIC DESIGN STUDY ON THE PROJECT FOR
IMPROVEMENT OF FOREST FIRE EQUIPMENT
IN THE REPUBLIC OF INDONESIA
(EXPLANATION ON DRAFT REPORT)

In November 2000, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched a Basic Design Study Team on the Project for Improvement of Forest Fire Equipment (hereinafter referred to as "the Project") to the Republic of Indonesia (hereinafter referred to as "Indonesia"), and through discussion, field survey, and technical examination of the results in Japan, JICA prepared a draft report of the study.

In order to explain and to consult the Indonesian side on the components of the draft report, JICA sent to Indonesia the Draft Report Explanation Team (hereinafter referred to as "the Team"), which is headed by Ms. Emiko Mutsuyoshi, First Project Management Division, Grant Aid Management Department, JICA, from February 4 to February 9, 2001.

As a result of discussions, both parties confirmed the main items described on the attached sheets.

Jakarta, February 8, 2001

睦好 絵美子

Ms. Emiko Mutsuyoshi
Leader
Draft Report Explanation Team
Japan International Cooperation Agency

Mr. Ir. Harsono

Mr. Ir. Harsono
Director General of Protection and
Nature Conservation
Ministry of Forestry

ATTACHMENT

1. Components of the Draft Report

The Government of Indonesia agreed and accepted in principle the components of the draft report explained by the Team.

2. Japan's Grant Aid scheme

Indonesian side understands the Japan's Grant Aid Scheme and the necessary measures to be taken by the Government of Indonesia as explained by the Team and described in Annex-2 and Annex-3 of the Minutes of Discussions signed by both parties on November 23, 2000.

3. Schedule of the Study

JICA will complete the final report in accordance with the confirmed items and send it to the Government of Indonesia by the end of April, 2001.

4. Other relevant issues

4-1. List of equipment

Both sides have confirmed the overall list of equipment and materials including the arrangement plan in each national park in Annex-1.

4-2. Necessary measures to be taken by the Government of Indonesia

Indonesian side agreed to take immediate actions for following items by the time of delivery of the equipment and materials.

(1) Land preparation of the site for wireless antenna installation

(2) Preparation of equipment and materials storage area

Particularly the Bungur Resort office building in Way Kambas National Park is required. The Suak Kandis Pos in Berbak National Park is also required to have permanent status.

(3) Equipment and materials transportation

Particularly the roads to the Siambure Resort office in Bukit Tiga Puluh National Park is required to be accessible for transportation.

4-3. Operation and maintenance

The Indonesian side will allocate sufficient budget and personnel for proper operation and maintenance in accordance with the operation and maintenance cost of Indonesian

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standard.

The Indonesian side also will take necessary actions to conduct careful patrol and periodical field exercises of fire suppression as well as collaborative management with local governments, local communities and societies.

4-4. Coordination with the authorities concerned

The Indonesian side will coordinate the government authorities concerned, such as the State Secretariat, the Ministry of Finance, the Ministry of Foreign Affairs, and BAPPENAS for the smooth implementation of the Project.

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List of Equipment

Code	Item	Bukit Tiga Puluh	Berbak	Way Kambas	Gunung Palung	Total
A.For early fire detection and initial fire-fighting						
A-1	Wagon type vehicle 4X4	1	1	1	1	4
A-2	Pick up 4X4	2	1	2	1	6
A-3	Motor bike	2	3	5	4	14
A-4	Motor boat	0	3	2	2	7
A-5	Weather observation unit	1	1	1	1	4
A-6	Binocular	4	5	8	4	21
A-7	Portable pump (C class)	5	5	6	4	20
A-8	Portable pump (D class)	5	5	6	4	20
A-9	Pressure regulator	5	5	6	4	20
A-10	Hose	125	125	150	100	500
A-11	Back pack	45	45	51	36	177
A-12	Back pack shooter	30	30	40	20	120
A-13	Chain saw	5	5	6	4	20
A-14	Power mower	5	5	6	4	20
A-15	Portable Floodlight	3	3	3	3	12
A-16	Portable water tank (5,000 L)	5	5	6	4	20
A-17	Tent	3	3	3	3	12
A-18	Hand tool set	6	7	11	4	28
A-19	Personal computer	1	1	1	1	4
A-20	Printer	1	1	1	1	4
A-21	Television	1	1	1	1	4
A-22	Video	1	1	1	1	4
A-23	Projector	1	1	1	1	4
A-24	Bulldozer	1	0	0	0	1
A-25	Backhoe	1	0	0	0	1
A-26	Generator	6	6	9	3	24
A-27	Portable GPS	6	7	8	4	25
A-28	Underground thermometer	1	3	1	1	6
A-29	Clinometer with compass	5	5	6	4	20
A-30	Locker	14	12	18	9	53
A-31	Steer shelf	10	10	12	8	40
B.For communication						
B-1	Fixed radio unit (repeat station)	1	1	1	1	4
B-2	Fixed radio unit (station)	8	7	10	4	29
B-3	Mobile radio unit(for the car)	3	2	3	2	10
B-4	Mobile radio unit(for the motor boat)	0	3	2	2	7
B-5	Portable radio unit	9	13	13	9	44

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Appendices 5.

Cost Estimation Borne by the Recipient Country

Cost estimation born by the recipient country

Item	Total	Breakdown	Remark
Preparation for the warehouse	66,000,000Rp	2,000,000Rp X 33 places	
Preparation for the garage	10,000,000Rp	1,000,000 X 10 places	
Preparation for anchorage place	14,000,000Rp	2,000,000 X 7 places	
Total	90,000,000Rp		

Appendices 6. References

List of Collected Data/Materials

Data/Materials	General Description
MANUAL DASAR - DASAR PENGENDALIAN KEBAKARAN HUTAN	Published by: JICA Date of Publication: March 2000 Original or Copy: Original Contents: Manual on Forest Fire
Land Fire Control	Published by: FRDC Date of Publication: January 1992 Original or Copy: Copy Contents: Fire Countermeasures
A Handbook on Forest Fire Control	Published by: FAO Date of Publication: March 1996 Original · Print: Print Contents: Manual on Forest Fire
Forest and Land Fires in Indonesia (Plan of Action for Fire Disaster Management)	Published by: UNDP & State Ministry for Environment Date of Publication: September 1998 Original · Copy: Copy Contents: Emergency Action Plan for Forest Fire Incidents
Report on the Activities of the International Emergency Assistance Troops During the Forest Fire in Indonesia	Published by: JICA Date of Publication: November 1997 Original · Copy: Copy Contents: Activities of the Assistance Troops During the Forest Fire
Study on Forest Fires in the National Parks of Indonesia	Published by: JICA Date of Publication: June 2000 Original · Copy: Copy Contents: Study on the site where forest fire broke out
A Review of Fire Projects in Indonesia (1982-1998)	Published by: Rona Denis Date of Publication: September 1998 Original · Copy: Copy Contents: Condition of forest fire projects in Indonesia
Appropriate Forest Fire Equipment for Indonesia	Published by: IFFN Date of Publication: December 1997 Original · Copy: Copy Contents: Fire fighting equipment during forest fire incidents
National Brief on Indonesian Forestry Action Programme	Published by: Ministry of Forestry Date of Publication: November 1997 Original · Copy: Copy Contents: Forestry action programme
Compilation of Decrees on Forest Fire Management	Published by: Ministry of Forestry Date of Publication: November 1997 Original · Copy: Copy Contents: Compiled decrees on forest fire countermeasures

Data/Materials	General Description
Way Kambas Management Plan (1980-1985)	Published by: FAO Date of Publication: September 1979 Original · Copy: Copy Contents: Forestry administration in 1980-85
Suggestions/Response to National Guidelines on the Protection of Forests Against Fire	Published by: IFFM Date of Publication: December 1997 Original · Copy: Copy Contents: Forest fire countermeasures for nature preservation
Information on Conservation Zone in Lampung Province	Published by: NRCH Date of Publication: March 1997 Original · Copy: Copy Contents: Nature reserves in Lampung Province
Materials Distributed in the Seminar on Forest Fires in Indonesia	Published by: JICA Date of Publication: 27 March 2000 Original · Copy: Copy Contents: Explanatory materials on the forest fire prevention plan
Forest and Land Fires in Indonesia (Impacts and their Evaluation)	Published by: UNDP & State Ministry for Environment Date of Publication: September 1998 Original · Copy: Copy Contents: Impacts of forest fires
Forestry Equipment Guide	Published by: ラック International Co., Ltd. Date of Publication: Original · Copy: Original Contents: Inventory on forestry equipment
Environmental Statistics of Indonesia (1994)	Published by: Badan Pusat Statistic Date of Publication: 1994 Original · Copy: Original Contents: Data of the Government of Indonesia on the environment (1994 edition)
National Resource Statistics of Indonesia	Published by: Badan Pusat Statistic Date of Publication: 1997 Original · Copy: Copy Contents: Data on Indonesia's fishing industry, forests, living organisms, mining resources, water resources, soil, etc.
Land Use Conditions Outside of Java in Indonesia	Published by: Badan Pusat Statistic Date of Publication: 1997 Original · Copy: Copy Contents: Data on land use conditions in Indonesia (with the exclusion of Java)
Handbook on Forestry Techniques	Published by: Society for the Diffusion of National Forestry Improvement Measures (社) Date of Publication: July 1998 Original · Copy: Original Contents: Protection, management and use of forest resources
DATA KLIMATOLOGI	Published by: Badan Meteorologi dan Geofisika Date of Publication: 1993 Original · Copy: Copy

Data/Materials	General Description
	Contents: 1992 meteorological data
DATA IKLIM DI INDONESIA	Published by: Badan Meteorologi dan Geofisika Date of Publication: 1991 Original · Copy: Copy Contents: 1989 meteorological data
DATA IKLIM	Published by: Badan Meteorologi dan Geofisika Date of Publication: 1994 Original · Copy: Copy Contents: 1993 meteorological data
Handbook on Indonesia (1997/1998)	Published by: Jakarta · Japan Club Date of Publication: September 1998 Original · Copy: Copy Contents: Outline of Indonesia
National Report (1998)	Published by: The Intelligence Unit Date of Publication: 1998 Original · Copy: Copy Contents: Data on the financial, economic and general conditions in Indonesia
Gross Regional Domestic Product of Provinces in Indonesia by Industry (1994-1997)	Published by: Badan Pusat Statistic Date of Publication: 1998 Original · Copy: Copy Contents: Data on the economy, agricultural and industrial production of every province in Indonesia
Annual Statistics of Indonesia (1998)	Published by: Badan Pusat Statistic Date of Publication: 1998 Original · Copy: Copy Contents: Comprehensive data on national economic statistics, and statistics on the economic and natural conditions of every province in Indonesia (1988 Edition)
Southeast Asia	Published by: Melles Maps Date of Publication: Original · Copy: Original Contents: Topographic map (1:4,000,000)
National Five Year Plan	Published by: Economic Planning Agency Date of Publication: 2000 Original · Copy: Copy Contents: National five year plan (2001-2005)
Topographic Map of National Park (1/50,000, 1/100,000)	Published by: Survey Department Date of Publication: 2000 Original · Copy: Copy Contents: Topographic map of target national park

