

- (2)-1-3. To develop the database for forest fire prevention and management.
- (2)-1-4. To assist in provision of information about forest fire prevention using Internet and other information technologies.
- (2)-2. To assist local governments in forest fire prevention activities and management.
  - (2)-2-1. To facilitate campaigns by local government.
  - (2)-2-2. To introduce the outputs of the project in the training conducted by the Indonesian government.
  - (2)-2-3. To provide the information about forest fire prevention using Internet and other information technologies.
- (2)-3. To analyze the behavior of large-scale forest fires and their causes.
  - (2)-3-1. To analyze and announce behavior of the large-scale forest fire and its causes
- (3). Activities on examination of methods and techniques for increasing and strengthening local residents' willingness and capability in participatory forest fire prevention management.
  - (3)-1. To monitor IGB (Integrate Green Belt) at Berbak NP and SALT (Sloping Agricultural Land Technology) at Nanga Pinoh.
    - (3)-1-1. To monitor and evaluate the green belt and plantation area.
    - (3)-1-2. To monitor and evaluate the effectiveness of the participatory forest fire prevention.
    - (3)-1-3. To monitor and evaluate the change of local people's activities and behavior.
  - (3)-2. To study the applicability of participatory forest fire prevention management methods.
    - (3)-2-1. To conduct socio-economic studies.
    - (3)-2-2. To conduct studies on the applicability of the methods developed in IGB and SALT.
    - (3)-2-3. To propose the development of participatory forest fire prevention and management method.
    - (3)-2-4. To examine and propose the dissemination method and techniques for participatory forest fire prevention.

### **3) Inputs**

#### **3-1) Inputs from Japanese side**

##### **a) Expert**

Long-term experts of following areas will be dispatched for technical transfer to the counterparts of Indonesian governments. Some expertise may be covered with other long-term experts.

- a) Chief advisor
- b) Project coordinator
- c) Participatory forest fire prevention management
- d) Extension and public relation
- e) Initial forest fire suppression
- f) Early Warning and Detection system

Short-term experts will be also dispatched on satellite data processing, awareness methods, socio-economic studies, fire suppression, training methods and others for smooth implementation of the project.

##### **b) Provision of equipment**

JICA will prepare and provide the following categories of items.

- a) Machinery, equipment, tools, spare parts and material to conduct this project.
- b) Others for supporting project activities.

### **c) Training in Japan**

Indonesian counterpart personnel connected with the project will be received for technical training in Japan.

Approximately 3 persons per year × 5 years × 1~3 months.

### **3-2) Inputs from the recipient country**

#### **a) Staff allocation**

Sufficient number of counterparts will be assigned in:

The Directorate of Forest and Estate Fire Control. (Jakarta and Bogor offices)

The Directorate of Nature Conversation Area

Berbak National Park Management Centre.

Bukit Tiga Puluh National Park Management Centre.

Gunung Palung National Park Management Centre.

Way Kambas National Parks Management Centre.

#### **b) Building, facilities and equipment**

- Administrative and operational costs.
- Provision of land, building, facilities and equipment for project.

#### **4) Important assumption and risk analysis**

- Good collaboration will be maintained among all levels of government including central, provincial, district, sub-district and village levels.
- There will be no significant reduction in counterpart budget for forest fire prevention and management activities. Also there is no significant organizational reform in central and local governments.
- There are no extreme climate change and environmental disruption throughout Indonesia after the completion of the project.
- There are neither significant forest policy including forest fire policy reform nor organizational reform in central and local governments involved in forest fire prevention and management activities.
- Other projects related with (e.g. other JICA projects for the Ministry of Forestry) would not dramatically change.

## **6. Project justification**

### **1) Equity and public spending**

The Indonesian forest is important resources and treasure for the people of Indonesia at present and in future. This project is to protect national parks that is priority area among Indonesian forest.

International society also has interest in the conservation of Indonesian tropical rain forest and reduction of haze problem. Indonesian government has made commitment to take necessary action immediately in CGI meetings. This project is expected to assist one of these actions taken by Indonesian government.

## 2) Reasons for assistance from JICA

Japan has a technical advantage especially in remote sensing technology and training and drill of fire fighting. And also, as one of the major donor countries to Indonesia, JICA has to support forest fire prevention, which is one of the most crucial issues in CGI

## 3) Expected effects of the project

### 3-1) Effects for the development policy framework

The Ministry of Forestry already committed to take necessary action for forest fire in the international society. UNDP, ITTO and other donor agencies also recommended policy framework and draft action plan. Remaining problem is, however, how to make them effective in the field level. This JICA project focuses on capacity building of various kinds of staff from central government to field level, thereby enhancing operational capacity to implement fire prevention and initial suppression. It is expected that Indonesian government acquires capacity to protect 14,753,000 ha of national parks from forest fire after the project.

### 3-2) Effects for the socio-economy

#### a) Description of the beneficiaries

First group of the beneficiaries is the counterparts of the central government in the Directorate of Forest Fire Control and also in the Directorate of Conservation Area. Second group of the beneficiaries is the staff of target national park management centres. This project will conduct training and develop the commander of fire prevention and initial suppression working as extension and promotion worker routinely and act as commander of fire fighting in field level when the fire emerged. Some of other national park management centres and local government staff are also invited in this training. Training for the Early Warning and Detection system personnel will be conducted. Third group is people surrounding the target national parks who may also have benefit to get the knowledge and technology in the participatory forest fire prevention management. Finally, Indonesian nationals are the most important beneficiaries who are the owners of the natural resources of national parks.

#### b) Number of the beneficiaries

| Beneficiary group  | Number   |
|--|--|
| 1) the counterparts  | 5 counterpart in the Directorate of Forest Fire Control<br>1 counterpart in the Directorate of Conservation Area<br>5 X 4 counterpart in the target National Park Management Centres   |
| 2) staff of the National Park Management Centres                           | 40 X 4 + staff of the target National Park Management Centres as forest fire prevention manager and commander<br>2 X 4 + staff staff of the target National Park Management Centres as the Early Warning and Detection system operator |
| 3) Group of people surrounding the national parks and Indonesian nationals |  |

**c) Contents of the benefits**

| Contents   | Technology transferred  |
|--|---|
| Technology of data processing and system operation on the Early Warning and Detection System         | Counterparts in the central government and the system staff of the target National Park Management Centres + local government staff |
| Planning and development technology of forest fire prevention and initial suppression model          | Counterparts in the central government and the staff of the target National Park Management Centres                                 |
| Planning and development technology of initial suppression training curriculum and training material | Counterparts in the central government and the staff of the target National Park Management Centres                                 |
| Extension and training technology on forest fire drill   | Counterparts in the central government and the staff of the target National Park Management Centres                                 |
| Technology on Participatory Forest Fire Prevention Management  | Counterparts in the central government and the staff of the target National Park Management Centres                                 |
| Technology on extension and public relation  | Counterparts in the central government  |

**3-3) Effects from the technical standpoints**

**a) Number of counterparts**

| Counterpart Organization   | Number of counterpart   |
|--|---|
| Directorate General of Forest Protection and Nature Conservation | 2<br>(Include the director general and assistant staff of director general) |
| Directorate of Forest Fire Control                               | 7<br>(Including the director and each counterpart for each experts)         |
| Directorate of Conservation Areas                                | 2<br>(Include the director and assistant staff of director)                 |
| Bukit Tiga Puluh NP  | 7<br>(Include the general manager and each counterpart for each experts)    |
| Berbak NP  | 7<br>(Include the general manager and each counterpart for each experts)    |
| Way Kambas NP  | 7<br>(Include the general manager and each counterpart for each experts)    |
| Gunung Palung NP   | 7<br>(Include the general manager and each counterpart for each experts)    |
| Total  | 39  |

## b) Contents of the capacity building

| Contents of Capacity Building   | Target Beneficiaries  |
|---|---|
| Capability of system operation (including data processing and system operation of the Early Warning and Detection System) | Counterparts in the central government and the system staff of the target National Park Management Centres + local government staff |
| Capability of planning and development of forest fire prevention and initial suppression model                            | Counterparts in the central government and the staff of the target National Park Management Centres                                 |
| Capability of planning and development of initial suppression training curriculum and training material                   | Counterparts in the central government and the staff of the target National Park Management Centres                                 |
| Capability on extension and training of forest fire prevention and initial suppression                                    | Counterparts in the central government and the staff of the target National Park Management Centres                                 |
| Capability of Participatory Forest Fire Prevention Management   | Counterparts in the central government and the staff of the target National Park Management Centres                                 |
| Capability on extension and public relation   | Counterparts in the central government  |

### 3-4) Economical benefits

It is quite difficult to calculate economic benefit because economic values of natural resources are difficult to estimate. It has already been mentioned some of the flow data on the damage by haze previously. And also Based on the data on "Policy of Forest and Land Fire Control in Indonesia: Paradox and Implication" by Hariadi Kartodihardjo and et. Al, in the Impacts of Fire and Human Activities on Forest Ecosystems in the Tropics, September 1999, sponsored by JICA, and Kebakaran Hutan dan Lahan di Indonesia 1998, value of asset loss by fire of 1997-1998 is assumed as 380.34 billion Rupiah in Sumatra. However, they are just part of the benefits. The following elements may be incorporated into the calculation.

#### i) Flow

- Sales loss of wood damaged by forest fire
- Cost for forest fire suppression
- Compensation for damage of forest fire
- Loss of tourism industry
- Decreases of harvest on forest resources

#### ii) Stock

- Stock values of tropical rain forest lose by the fire
- Stock values of CO<sub>2</sub> lose by the fire
- Stock values of genes and environment lose by the fire

### 4) Overall Project Justification

Based on the model developed in this project, Indonesian government extend the model to all over the Indonesia and that could be effectively protect Indonesian forest from the forest fire with participating the people surrounding the forest.

As the conclusion, this project is suitable to give enough impact and meaning to Indonesian people in present and in future.

## 7. Monitoring and evaluation

### 1) Monitoring

Monitoring activities would be conducted as follows. Monitoring should be conducted based on the activities on PO: Plan of Operation.

| Time                           | Person                     | Monitoring   |
|--------------------------------|----------------------------|--|
| Every half year for five years | JICA experts + counterpart | Monitoring Report; Monitoring Report will be prepared to examine the progress of each activity, constraints and countermeasures, changes in conditions and achievement of outputs by the time of the monitoring. (Annex 4) |

### 2) Evaluation

| Time                               | Person                | Evaluation  |
|------------------------------------|-----------------------|---|
| Mid-term evaluation<br>(Oct, 2003) | Joint evaluation team | The outline of the evaluation criteria and its check points are shown in <u>Annex 5</u> |
| Evaluation<br>(Oct, 2005)          | Joint evaluation team |   |

## 8. Annexes

Annex 1: PDM: Project design matrix

Annex 2: PO: Plan of Operations

Annex 3: TOR of the long-term experts

Annex 4: Monitoring Report

Annex 5: Evaluation Items

## Annex 1: Project Design Matrix (PDM)

### PDM for Forest Fire Prevention Management Project Phase II

Project Name: Forest Fire Prevention Management Project Phase II

Period of Cooperation: 5 years (2001/4 - 2006/4)

Implementing Agency in Beneficiary Country: DG-Forest Protection and Nature Conservation (PKA), Ministry of Forestry

Project Area: Jakarta, Bogor (Main Office), Bukit Tiga Puluh National Park (Riau/Jambi), Way Kambas National Park (Lampung) and Gunung Palung National Park (West Kalimantan)

Version: March 9, 2001

| Narrative Summary  | Verifiable Indicators   | Means of Verification   | Important Assumption  |
|--|---|---|---|
| <p><b>Overall Goal</b><br/>Indonesian forest, especially those in national parks, are protected from forest fire.</p>  | <p>Forest fire in the Indonesian national parks is controlled and it is confirmed by various data, such as area damaged by forest fire inside and outside of national parks.</p>  | <p>1. The area of national park damaged by forest fire from the official report of the Ministry of Forestry.</p>  | <p>1. Good collaboration will be maintained among all levels of government including central, provincial, district, sub-district and village levels.<br/>2. There will be no significant reduction in counterpart budget for forest fire prevention and management activities. Also there is no significant organizational reform in central and local governments.<br/>3. There are no extreme climate change and environmental disruption throughout Indonesia after the completion of the project.</p> |
| <p><b>Project Purpose</b><br/>Forest fire prevention and initial suppression activities (which are sustainable, feasible and replicable with Indonesian resources) to protect national parks are carried out.</p>  | <p>a) To hold workshops/seminars to disseminate the results of the project to national park managers at the end of the project period and to conduct questionnaire survey (asking about feasibility, sustainability and applicability of the project's results in their national parks). More than 50% of the attendants show the willingness to implement or affirmative opinion to the results of the projects.<br/>b) Effectiveness of the project outputs was confirmed by the performance of drills and actual operation of initial fire suppression with quantitative data such as response time, damaged area and number of participants in the target national parks.</p>   | <p>1. Project report and evaluation report.<br/>(Evaluation team need to conduct questionnaire surveys and analysis when evaluation is conducted)</p>   | <p>1. There are neither significant forest policy including forest fire policy reform nor organizational reform in central and local governments involved in forest fire prevention and management activities.</p>  |
| <p><b>Output</b><br/>(1). The capacity of the Indonesian Government to engage in forest fire prevention and initial suppression of fires in forest areas, and especially those that may expand to national parks, is improved and strengthened.<br/>(2). The awareness of people of the necessity for forest conservation and forest fire prevention is increased and strengthened.<br/>(3). Methods and techniques for increasing and strengthening local residents' willingness and capability in participatory forest fire prevention management is examined.</p> | <p>(1)-a) Hot spot data have been transferred from the Directorate of Forest Fire Prevention to target national park management centres and local governments more than once a day during the dry season.<br/>(1)-b) Corresponding to the hot spot data, actions such as confirmation of the hot spot site and initial suppression were taken by target national park management centres and feedback was reported to the Directorate of Forest Fire Prevention. The feedback ratio was increased to more than 50%.<br/>(1)-c) Warning information (such as KBD) was effectively used in the patrol and announcement to local residents by the staff of target national park management centres and local governments.<br/>(1)-d) Hazard map of forest fire and operational plan for initial suppression were developed and utilized by the staff of target national park management centres.<br/>(1)-e) More than 160 staff of target national park management centres were trained for initial suppression.<br/>(1)-f) Appropriateness of training curriculum and materials were confirmed by the questionnaire survey.<br/>(1)-g) Drill for initial suppression by Indonesian initiatives was conducted more than once a year at each national park.<br/>(2)-a) Nation-wide campaigns were conducted more than once a year.<br/>(2)-b) Conduct sampling survey before and after the intervention (such as campaigns) and confirmed the increase of people's awareness of forest conservation and forest fire prevention by more than 10%.<br/>(2)-c) The access to the home page and other information from the project was increased.<br/>(3)-a) Management of IGB and SALT (developed in the project phase I) was monitored and the report was prepared on their sustainability and effectiveness.<br/>(3)-b) More than 100 local people attended the meeting for participatory forest fire prevention management or village meetings were conducted more than three times a year.</p> | <p>1-3 except 2-b)<br/>- Project reports by counterparts and experts<br/>- Report by national park management centres including training results of fire suppression drill and field training<br/>- Questionnaires survey to staff of national park management centres and others.<br/>2-b) Questionnaires survey</p> | <p>1. Other projects related with (e.g. other MCA projects for the Ministry of Forestry) would not dramatically change.</p>   |

# Annex 1: Project Design Matrix (PDM)

| Activities  | Narrative Summary   | Input  | Indonesia   | Important Assumption |
|---|---|--|---|----------------------|
| <p><b>Activities on strengthening and improvement of the capacity of the Indonesian Government to engage in forest fire prevention and initial suppression of fires in forest areas, and especially those that may expand to national parks.</b></p> <p>(1)-1. To improve the Early Warning and Detection system using satellite information.</p> <p>(1)-1-1. To develop the automatic system of hot spot data processing. (C/P of central government)</p> <p>(1)-1-2. To develop the forest fire monitoring techniques. (C/P of central government)</p> <p>(1)-1-3. To study techniques of the warning systems. (C/P of central government)</p> <p>(1)-1-4. To collect weather and climate information. (C/P of central government)</p> <p>(1)-1-5. To improve the feedback system. (target national parks)</p> <p>(1)-1-6. To develop the map for forest fire management using satellite information. (target national parks)</p> <p>(1)-2. To disseminate the Early Warning and Detection system to the field level.</p> <p>(1)-2-1. To improve the techniques of hot spot data processing at the provincial level.</p> <p>(1)-2-2. To improve the techniques of hot spot data processing at the national park level.</p> <p>(1)-3. To provide information related to early detection and warning using satellite images to the national parks and surrounding areas.</p> <p>(1)-4. To analyze hot spot data collected by the project and field surveys.</p> <p>(1)-4-1. To analyze the hot spot data by the land use and others.</p> <p>(1)-4-2. To analyze the hot spot data by the field surveys.</p> <p>(1)-5. To improve the field-level forest fire management system using KBDI (Keerih-Byram Drought Index) method.</p> <p>(1)-5-1. To disseminate and extend KBDI method.</p> <p>(1)-5-2. To develop the techniques of announcement to the people surrounding the national parks using KBDI.</p> <p>(1)-6. To develop the curriculum for the human resources development for fire-fighting.</p> <p>(1)-6-1. To develop training courses according to the technical levels.</p> <p>(1)-6-2. To develop training curriculums.</p> <p>(1)-6-3. To develop training materials.</p> <p>(1)-7. To conduct the training for fire fighting.</p> <p>(1)-8. To develop a forest fire prevention and initial suppression model in the national parks.</p> <p>(1)-8-1. To develop and propose patrol systems.</p> <p>(1)-8-2. To develop and propose fire prevention systems by rangers.</p> <p>(1)-8-3. To develop and propose organizing techniques of people surrounding the national parks for forest fire prevention.</p> <p>(1)-9. To issue warnings based on analysis of past and current hot spot data.</p> <p>(1)-9-1. To provide information on hot spot patterns based on land use.</p> <p>(1)-9-2. To provide hot spot information and satellite images to facilitate Indonesian government's actions.</p> <p>(1)-9-3. To develop techniques for announcement to local people using the hot spot information.</p> | <p><b>Input</b></p> <p>Japan</p> <p>1. Long term experts: 5 persons x 5 years<br/>(Chief Advisor, Project Coordinator, Participatory Forest Fire Management, Promotion and Extension, Initial Forest Fire Suppression, and Early Warning and Detection System)</p> <p>Short term experts: 3~4 persons per year x 1~2 months.</p> <p>2. Training of counterpart personnel in Japan:<br/>Approximately 3 persons per year x 5 years x 1~3 months.</p> <p>3. Provision of equipment for the project activities.</p> <p>4. Establish the training field for forest fire management (Bukit Tiga Puluh NP)</p> <p>5. Provision of technical exchange program with IICA team in other neighboring countries and provision of training to/from neighboring countries.</p> | <p><b>Indonesia</b></p> <p>1. Government staff as counterpart personnel and project staff.</p> <p>1-1. The Directorate of Forest and Estate Fire Control (Jakarta and Bogor)</p> <p>• Assign the counterparts as needed for the project.</p> <p>1-2. The Directorate of Nature Conservation Area Development</p> <p>• Assign the counterparts as needed for the project.</p> <p>1-3. Berbak National Park Management Office.</p> <p>• Assign the counterparts as needed for the project.</p> <p>1-4. Bukit Tiga Puluh National Park Management Office.</p> <p>• Assign the counterparts as needed for the project.</p> <p>1-5. Gunung Palung National Park Management Office.</p> <p>• Assign the counterparts as needed for the project.</p> <p>1-6. Way Kambas National Park Management Office.</p> <p>• Assign the counterparts as needed for the project.</p> <p>2. Administrative and operational costs.</p> <p>3. Provision of land, building, facilities and equipment for project.</p> | <p><b>Precondition</b></p> <p>1. Local communities are not opposed to the project.</p> <p>2. Community members and local governments participate in the project.</p> <p>3. Land owners does not stand against establishment of green belts in their land for the project.</p> <p>4. The national parks does not stand against implementation of social forestry methods and techniques insurrounding the national park.</p> |                      |



## Annex 1: Project Design Matrix (PDM)

|  |  |  |
|--|--|--|
| <p>Activities</p> <p>(2). Activities on increasing and strengthening of the awareness of people of the necessity for forest conservation and forest fire prevention.</p> <p>(2)-1. To assist in forest fire prevention activities and management by the central government.</p> <p>(2)-1-1. To assist in nationwide campaigns.</p> <p>(2)-1-2. To introduce the outputs of the project in the training conducted by the Indonesian government.</p> <p>(2)-1-3. To develop the database for forest fire prevention and management.</p> <p>(2)-1-4. To assist in provision of information about forest fire prevention using Internet and other information technologies.</p> <p>(2)-2. To assist local governments in forest fire prevention activities and management.</p> <p>(2)-2-1. To facilitate campaign by local government.</p> <p>(2)-2-2. To introduce the outputs of the project in the training conducted by the Indonesian government.</p> <p>(2)-2-3. To provide the information about forest fire prevention using Internet and other information technologies.</p> <p>(2)-3. To analyze the behavior of large-scale forest fires and their causes.</p> <p>(2)-3-1. To analyze and announce behavior of the large-scale forest fire and its causes</p> <p>(3). Activities on examination of methods and techniques for increasing and strengthening local residents' willingness and capability in participatory forest fire prevention management.</p> <p>(3)-1. To monitor IGB (Integrate Green Belt) at Betbak NP and SALT (Sloping Agricultural Land Technology) at Nanga Pinoh.</p> <p>(3)-1-1. To monitor and evaluate the green belt and plantation area.</p> <p>(3)-1-2. To monitor and evaluate the effectiveness of the participatory forest fire prevention.</p> <p>(3)-1-3. To monitor and evaluate the change of local people's activities and behavior.</p> <p>(3)-2. To study the applicability of participatory forest fire prevention management methods.</p> <p>(3)-2-1. To conduct socio-economic studies.</p> <p>(3)-2-2. To conduct studies on the applicability of the methods developed in IGB and SALT.</p> <p>(3)-2-3. To propose the development of participatory forest fire prevention and management method.</p> <p>(3)-2-4. To examine and propose the dissemination method and techniques for participatory forest fire prevention.</p> |  |  |
|--|--|--|

## Annex 2: Plan of Operations (PO)

### PO: Plan of Operation (Draft)

Project Name: Forest Fire Prevention Management Project Phase II  
 Period of Cooperation: 5 years (2001/4 - 2006/4)  
 Implementing Agency in Beneficiary Country: DG-Forest Protection and Nature Conservation (PKA), Ministry of Forestry  
 Project Area: Jakarta, Bogor (Main Office), Bukit Tiga Puluh National Park (Kiau/Jambi), Way Kambas National Park (Lampung) and Gunung Palung National Park (West Kalimantan)  
 Version: March 9, 2001

| (Activities)   | (Schedule) |   |   |   |   | (Target) | (Implement targets and sites) | (Expected Results)   | (Person in Charge) | (Equipment) | (Cost) | (Remarks)  |
|--|------------|---|---|---|---|----------|-------------------------------|--|--------------------|-------------|--------|--|
|  | 1          | 2 | 3 | 4 | 5 |          |                               |  |                    |             |        |  |
| (1) Activities on strengthening and improvement of the capacity of the Indonesian Government to engage in forest fire prevention and initial suppression of fires in forest areas, and especially those that may expand to national parks. |            |   |   |   |   |          | (CP of central government)    | early warning and detection system   |                    |             |        |  |
| (1)-1. To improve the early warning and detection system using satellite information.  |            |   |   |   |   |          | (CP of central government)    | <ul style="list-style-type: none"> <li>① Problems and issues on sustainable system management are found and solution are provided.</li> <li>② Hazes and other information is provided after GMS-5 (Himawari) is abolished.</li> <li>③ Frequencies of providing information about hot spots are improved on real time.</li> </ul> |                    |             |        | <ul style="list-style-type: none"> <li>① Will be conducted after year 2002.</li> <li>② Consultant for technical development is needed.</li> <li>③ Facilities and equipment are needed for receiving and analyzing data.</li> </ul> |
| (1)-1-1. To develop the automatic system of hot spot data processing.  | ○          | ○ | ○ | ○ | ○ |          | (CP of central government)    |  |                    |             |        |  |
| (1)-1-2. To develop the forest fire monitoring techniques (using MTSAT data)   |            |   |   |   |   |          | (CP of central government)    |  |                    |             |        |  |
| (1) To develop the techniques.   |            |   | ○ | ○ | ○ |          |                               |  |                    |             |        |  |
| (2) To test the system.  |            |   | ○ | ○ | ○ |          |                               |  |                    |             |        |  |
| (3) To conduct workshop and training.  |            |   | ○ | ○ | ○ |          |                               |  |                    |             |        |  |
| (1)-1-3. To study techniques of the warning systems.   | ○          | ○ | ○ | ○ | ○ |          | (CP of central government)    | <ul style="list-style-type: none"> <li>① Warning information about drying processes is provided.</li> <li>② The Indonesian government conducts short-term forest fire prevention activities effectively using this warning information.</li> </ul>   |                    |             |        | <ul style="list-style-type: none"> <li>① Initial development will be conducted by short-term expert who is dispatched in January 2001.</li> </ul>  |
| (1) To develop the techniques.   | ○          | ○ | ○ | ○ | ○ |          |                               |  |                    |             |        |  |
| (2) To test the techniques.  |            |   | ○ | ○ | ○ |          |                               |  |                    |             |        |  |
| (3) To conduct workshop and training.  |            |   | ○ | ○ | ○ |          |                               |  |                    |             |        |  |

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Annex 2: Plan of Operations (PO)

|  |   |  |  |  |  |   |   |   |  |  |  |  |                                    |
|--|---|--|--|--|--|---|---|---|--|--|--|--|------------------------------------|
| (1)-8-2. To develop and propose fire prevention systems by rangers.  | ○ |  |  |  |  |   |   |   | system of warning using XBDI is established.   |  |  |  |                                    |
|  |   |  |  |  |  |   |   |   | ① Core forest fire fighting organizations are established by national park management office staff.<br>② Clear and effective training and drills are conducted according to technical levels.                      |  |  |  |                                    |
| (1)-8-3. To develop and propose organizing techniques of people surrounding the national parks for forest fire prevention.                   |   |  |  |  |  | ○ | ○ | ○ | ① Participatory suppression is conducted widely by transfer of knowledge and skills to local people.<br>② Extension for forest fire prevention is effectively conducted by local people's participation in drills. |  |  |  |                                    |
| (1) To conduct village level meetings for organize the village people on forest fire fighting.   |   |  |  |  |  | ○ | ○ | ○ |  |  |  |  |                                    |
| (2) To conduct conference meeting for promotion.   |   |  |  |  |  | ○ | ○ | ○ |  |  |  |  |                                    |
| (3) To conduct joint fire fighting drills.   |   |  |  |  |  | ○ | ○ | ○ |  |  |  |  |                                    |
| (4) To conduct workshop for establish the activities above 2-1-1 ~ 3.  |   |  |  |  |  | ○ | ○ | ○ |  |  |  |  |                                    |
| (1)-9. To issue warning based on analysis of past and current hot spot data.   |   |  |  |  |  |   |   |   | (C/P of central government and target national parks)  |  |  |  | early warning and detection system |
| (1)-9-1. To provide information on hot spot patterns based on land use.  |   |  |  |  |  |   |   |   |  |  |  |  |                                    |
| (1)-9-2. To provide hot spot information and satellite images to facilitate Indonesian government's actions.                                 |   |  |  |  |  | ○ | ○ | ○ | C/P of central government  |  |  |  |                                    |
| (1)-9-3. To develop techniques for announcement to local people using the hot spot information.  |   |  |  |  |  | ○ | ○ | ○ | C/P of central government  |  |  |  |                                    |
| (2). Activities for increasing and strengthening the awareness of people on the necessity of forest conservation and forest fire prevention. |   |  |  |  |  |   |   |   |  |  |  |  |                                    |
| (2)-1. To assist in activities of forest fire prevention and management by the central government.   |   |  |  |  |  |   |   |   | C/P of the central government  |  |  |  | promotion and extension            |
| (2)-1-1. To assist in nationwide campaign.   |   |  |  |  |  |   |   |   |  |  |  |  |                                    |
| (1) To assist in campaign activities   |   |  |  |  |  | ○ | ○ | ○ |  |  |  |  |                                    |
| (2) To conduct workshop.   |   |  |  |  |  | ○ | ○ | ○ |  |  |  |  |                                    |









## Annex 3

## TOR of the Long Term Expert

| 1. Position of the Expert                 |  |
|---|--|
| 1) Job Title:                             | Chief Advisor  |
| 2) Working Site:                          | JICA Forest Fire Prevention Management Project   |
| 3) Position in the Project:               | Leader of the project  |
| 4) Required Qualification:                | a) Position in the Team: Leader  |
|   | b) Education: University Graduate or above   |
|   | c) Necessary Qualification: Experience of project management, especially in forestry area.   |
|   | d) Necessary Experience as the Specialist: More than 10 years of forestry  |
|   | e) Experience of Class Room Training:  |
|   | f) Required Language(s) : English  |
|   | g) Required Language Skill of f): Fluent enough on read, write and speak:  |
| 2. Counterpart(s) Working with the Expert |  |
| 1) CP/1                                   | The Directorate of Forest Fire Control   |
| 2) CP/2                                   | The Directorate of Conservation Areas  |
| 3) CP/3                                   | National Park Management in Berback NP   |
| 4) CP/3                                   | National Park Management in Bukit Tiga Puluh NP  |
| 5) CP/5                                   | National Park Management in Gunung Palung NP   |
| 6) CP/6                                   | National Park Management in Way Kambas NP  |
| 3. Activities                             |  |
| 1) Site                                   | Please mentioned if different with 1. 2):  |
| 2) Duration                               | a) Project Duration: 5 years   |
|   | b) Start Date (Planned): April 15, 2001  |
| 3) Reporting Person(s)                    | - JICA H/Q<br>- JICA Jakarta Office<br>- Directorate General of Protection and Nature Conservation   |
| 4) Job Descriptions                       | Activity 1: Project Management<br>Activity 2: Coordination with Counterpart Organization<br>Activity 3: Coordination with external organization including donor agencies and other JICA projects<br>Activity 4: Coordination with the Japanese agencies including the Embassy of Japan |

TOR of the Long Term Expert

| 1. Position of the Expert   |  |
|---|--|
| 1) Job Title:   | Project Coordinator  |
| 2) Working Site:  | JICA Forest Fire Prevention Management Project   |
| 3) Position in the Project:   | Administration management of the project   |
| 4) Required Qualification:  | a) Position in the Team: Leader  |
|   | c) Education: University Graduate or above   |
|   | c) Necessary Qualification: Experience of project coordination as project coordinator  |
|   | d) Necessary Experience as the Specialist: More than 10 years in administration  |
|   | e) Experience of Class Room Training:  |
|   | f) Required Language(s) : English  |
| g) Required Language Skill of f): Fluent enough on read, write and speak: |  |
| 2. Counterpart(s) Working with the Expert                                 |  |
| 1) CP/1   | The Directorate of Forest Fire Control   |
| 2) CP/2   |  |
| 3) CP/3   |  |
| 4) CP/3   |  |
| 5) CP/4   |  |
| 3. Activities   |  |
| 1) Site   | Please mentioned if different with 1. 2):  |
| 2) Duration   | a) Project Duration: 5 years   |
|   | b) Start Date (Planned): April 15, 2001  |
| 3) Reporting Person(s)  | - Chief Advisor<br>- JICA H/Q (Administration staff)<br>- JICA Jakarta Office (Administration staff)   |
| 4) Job Descriptions   | Activity 1: Administration management in the project<br>Activity 2: Coordination of experts activity in the team<br>Activity 3: Coordination with counterpart organization in administration management<br>Activity 4: |

TOR of the Long Term Expert

| 1. Position of the Expert                 |   |
|---|---|
| 1) Job Title:                             | Expert of the Early Warning and Detection System  |
| 2) Working Site:                          | JICA Forest Fire Prevention Management Project  |
| 3) Position in the Project:               | Expert in the field of the Early Warning and Detection System   |
| 4) Required Qualification:                | a) Position in the Team: Expert<br>b) Education:<br>c) Necessary Qualification: Qualification of IT<br>d) Necessary Experience as the Specialist: More than 10 years in system development, system operation or network management.<br>e) Experience of Class Room Training:<br>f) Required Language(s) : English<br>g) Required Language Skill of f): Fluent on read, write and speak:   |
| 2. Counterpart(s) Working with the Expert |   |
| 1) CP/1                                   | Early Detection and Warning System  |
| 2) CP/2                                   | Early Detection and Warning System in Bukit Tiga Puluh National Park Management Centre  |
| 3) CP/3                                   | Early Detection and Warning System in Berbak National Park Management Centre  |
| 4) CP/3                                   | Early Detection and Warning System in Way Kambas National Park Management Centre  |
| 5) CP/4                                   | Early Detection and Warning System in Gunung Palung National Park Management Centre   |
| 3. Activities                             |   |
| 1) Site                                   | Please mentioned if different with 1. 2):   |
| 2) Duration                               | a) Project Duration: 5 years<br>b) Start Date (Planned): April 15, 2001   |
| 3) Reporting Person(s)                    | - Chief Advisor<br>- Project Coordinator<br>-   |
| 4) Job Descriptions                       | Activity 1: Improvement of the Early Warning and Detection System<br>Activity 2: Application Development of the Early Warning and Detection System to the field<br>Activity 3: Analysis of hot spot data collected in the project<br>Activity 4: Improvement of forest fire prevention and initial suppression management system in the Early Warning and Detection area using KBDI method and others.<br>Activity 5: Coordination of short term experts on the Early Detection and Warning System area |

TOR of the Long Term Expert

|  |   |
|--|---|
| <b>1. Position of the Expert</b>                 |   |
| 1) Job Title:                                    | Expert of the Initial Forest Fire Suppression   |
| 2) Working Site:                                 | JICA Forest Fire Prevention Management Project  |
| 3) Position in the Project:                      | Expert in the field of the Initial Forest Fire Suppression  |
| 4) Required Qualification:                       | a) Position in the Team: Expert   |
|  | b) Education:   |
|  | c) Necessary Qualification:   |
|  | d) Necessary Experience as the Specialist: More than 3 years in forestry and fire suppression   |
|  | e) Experience of Class Room Training:   |
|  | f) Required Language(s) : English   |
|  | g) Required Language Skill of f): Fluent on read, write and speak:  |
| <b>2. Counterpart(s) Working with the Expert</b> |   |
| 1) CP/1  | Initial Forest Fire Suppression   |
| 2) CP/2  | Initial Forest Fire Suppression in Bukit Tiga Puluh National Park Management Centre   |
| 3) CP/3  | Initial Forest Fire Suppression in Berbak National Park Management Centre   |
| 4) CP/3  | Initial Forest Fire Suppression in Way Kambas National Park Management Centre   |
| 5) CP/4  | Initial Forest Fire Suppression in Gunung Palung National Park Management Centre  |
| <b>3. Activities</b>                             |   |
| 1) Site  | Please mentioned if different with 1. 2):   |
| 2) Duration                                      | a) Project Duration: 5 years  |
|  | b) Start Date (Planned): April 15, 2001   |
| 3) Reporting Person(s)                           | - Chief Advisor<br>- Project Coordinator<br>-   |
| 4) Job Descriptions                              | Activity 1: Development of forest fire prevention and initial suppression model<br>Activity 2: Development of training curriculum for development of commander level fire fighter<br>Activity 3: Analysis of hot spot data collected in the project<br>Activity 4: Advise on development of field training facilities and equipment<br>Activity 5: Coordination of short term experts on the Initial Forest Fire Suppression area<br>Activity 6: Cooperation with the expert of Extension and Public Relation |

**TOR of the Long Term Expert**

|  |   |
|--|---|
| <b>1. Position of the Expert</b>                 |   |
| 1) Job Title:                                    | Expert of the Participatory Forest Fire Prevention Management   |
| 2) Working Site:                                 | JICA Forest Fire Prevention Management Project  |
| 3) Position in the Project:                      | Expert in the field of the Participatory Forest Fire Prevention Management  |
| 4) Required Qualification:                       | a) Position in the Team: Expert   |
|  | b) Education:   |
|  | c) Necessary Qualification:   |
|  | d) Necessary Experience as the Specialist:  |
|  | e) Experience of Class Room Training:   |
|  | f) Required Language(s) : English   |
|  | g) Required Language Skill of f): Fluent on read, write and speak:  |
| <b>2. Counterpart(s) Working with the Expert</b> |   |
| 1) CP/1  | Participatory Forest Fire Prevention Managemt   |
| 2) CP/2  | Participatory Forest Fire Prevention Management in Bukit Tiga Puluh National Park Management Centre   |
| 3) CP/3  | Participatory Forest Fire Prevention Management in Berbak National Park Management Centre   |
| 4) CP/3  | Participatory Forest Fire Prevention Management in Way Kambas National Park Management Centre   |
| 5) CP/4  | Participatory Forest Fire Prevention Management in Gunung Palung National Park Management Centre  |
| <b>3. Activities</b>                             |   |
| 1) Site  | Please mentioned if different with 1. 2):   |
| 2) Duration                                      | a) Project Duration: 5 years  |
|  | b) Start Date (Planned): April 15, 2001   |
| 3) Reporting Person(s)                           | - Chief Advisor<br>- Project Coordinator<br>-   |
| 4) Job Descriptions                              | Activity 1: Monitoring of IGB and SALT<br>Activity 2: Development of method and technology on Participatory Forest Fire Prevention Management<br>Activity 3: Cooperation with the expert of Extension and Public Relation |

TOR of the Long Term Expert

|  |  |
|--|--|
| <b>1. Position of the Expert</b>                 |  |
| 1) Job Title:                                    | Expert of the Extension and Public Relation  |
| 2) Working Site:                                 | JICA Forest Fire Prevention Management Project   |
| 3) Position in the Project:                      | Expert in the field of the Extension and Public Relation   |
| 4) Required Qualification:                       | a) Position in the Team: Expert  |
|  | b) Education:  |
|  | c) Necessary Qualification:  |
|  | d) Necessary Experience as the Specialist:   |
|  | e) Experience of Class Room Training:  |
|  | f) Required Language(s) : English  |
|  | g) Required Language Skill of f): Fluent on read, write and speak:   |
| <b>2. Counterpart(s) Working with the Expert</b> |  |
| 1) CP/1  | Extension and Public Relation  |
| 2) CP/2  | Extension and Public Relation in Bukit Tiga Puluh National Park Management Centre  |
| 3) CP/3  | Extension and Public Relation in Berbak National Park Management Centre  |
| 4) CP/3  | Extension and Public Relation in Way Kambas National Park Management Centre  |
| 5) CP/4  | Extension and Public Relation in Gunung Palung National Park Management Centre   |
| <b>3. Activities</b>                             |  |
| 1) Site  | Please mentioned if different with 1. 2):  |
| 2) Duration                                      | a) Project Duration: 5 years<br>b) Start Date (Planned): April 15, 2001  |
| 3) Reporting Person(s)                           | - Chief Advisor<br>- Project Coordinator<br>-  |
| 4) Job Descriptions                              | Activity 1: Assistance of extension and public relation activities conducted by the central government<br>Activity 2: Assistance of extension and public relation activities conducted by the local governments<br>Activity 3: Assistance for development of forest fire prevention and initial suppression model in the target national parks and support extension, promotion for local resident by national park management centre staff.<br>Activity 3: Cooperation with donor agencies and other JICA project team for assist the chief advisor |

Monitoring Report (No.     )

Name of Project:

Project Period:

Comment; Project Director

Signature \_\_\_\_\_

Date: \_\_\_\_\_

Comment; Project Manager

Signature \_\_\_\_\_

Date: \_\_\_\_\_

Comment; Chief Advisor

Signature \_\_\_\_\_

Date: \_\_\_\_\_

\*JICA replies to above-mentioned comments/requests if necessary.



MONITORING REPORT No. \_\_\_\_\_  
(Issues and Countermeasures)

Date:

Name of the Project:

| Issues                 | Countermeasures   |
|------------------------|---|
| (Description of Issue) | Countermeasures taken by Project (Recipient country-side) |
|                        | Countermeasures taken by Project (Japanese-side)          |
|                        | Request to JICA   |

(Achievement of Project Purpose)

Date

\*For the effective evaluations, it is strongly recommended to monitor the project purpose level indicator(s) regularly.

|  |                                 |
|--|---------------------------------|
| Project Purpose  | <Achievement>                   |
| If there is any advancement/delay compared with the original plan, please clarify the causes and influencing factors in columns below. |                                 |
| Output Achievement Level   |                                 |
| Changes in Important Assumptions / Pre-conditions  | <Outputs→Project Purpose Level> |
|  | <Activities→Outputs Level>      |
|  | <Pre-conditions>                |
| Recommended Countermeasures  |                                 |

MONITORING REPORT No. \_\_\_\_\_  
 (Achievement of Output)

Date: \_\_\_\_\_  
 (Name: \_\_\_\_\_ )

|  |                            |
|--|----------------------------|
| Output<br><Plan>   | <Achievement>              |
| If there is any advancement/delay compared with the original plan, please clarify the causes and influencing factors in columns below. |                            |
| Progress of each<br>Activity   |                            |
| Changes in Important<br>Assumptions / Pre-<br>conditions   | <Activities→Outputs Level> |
|  | <Pre-conditions>           |
| Recommended countermeasures  |                            |

(Progress of Activity)

Date:

(Name: \_\_\_\_\_ )

|  |                   |
|--|-------------------|
| Activity<br><Plan>   | <Progress Report> |
| If there is any advancement/delay compared with the original plan, please clarify the causes and influencing factors in columns below. |                   |
| Changes in Pre-conditions  |                   |
| Input Level  |                   |
| Other factors  |                   |
| Recommended countermeasures  |                   |

**Evaluation Items****1 Achievement of the Project**

The achievement level of the project activities in terms of inputs, activities, outputs and project purpose, as the Achievement of the Project, is assessed in comparison with the original plan such as R/D, TSI, PDM and PO.

**1-1 Inputs**

- (1) Accomplishment of the inputs from Japanese side in comparison with the plan
- (2) Accomplishment of the inputs from Indonesian side in comparison with the plan

**1-2 Activities**

- (1) Progress of the activities and the results of corresponding targets in PO
- (2) Degree of difference between the plan and actual condition
- (3) Reasons and constraints for the slipping and postponement

**1-3 Output**

- (1) Achievement level of the outputs planned on the PDM

**1-4 Project Purpose**

- (1) Achievement level of the project purpose planned on the PDM

**2 Evaluation criteria****2-1 Efficiency**

Efficiency of the project implementation is assessed by analyzing the productivity of the implementing process. It is to evaluate the relationship between outputs and inputs in terms of timing, quality and quantity, and to reexamine availability if alternatives strategy to produce the outputs more efficiently. The evaluation questions to be checked are considered as follows:

**(1) Timing, quality and quantity of inputs**

- Have the inputs been delivered on schedule?
- Is the timing of the inputs assumed to have been appropriate in comparison with the outputs obtained?
- Are the quality and quantity of the inputs assumed to have been appropriate in comparison with the outputs obtained?

**(2) Relationship between outputs and inputs**

- Have the outputs been attained on schedule?
- Are there any differences between the original plan?
- Do counterparts have enough knowledge and experiences developed through the Project?
- What factors can be considered to cause delay or obstructs the realization of the outputs?

**(3) Linkage between other cooperation schemes****2-2 Effectiveness**

Effectiveness is assessed by analyzing the extent to which the outputs and project purpose of the Project have been achieved or/and can be expected to be achieved at the time of evaluation. The evaluation questions to be checked are considered as follows:

**(1) Project purpose**

- To what extent has the project purpose been achieved in comparison with the achievement of the outputs?
- To what extent have outputs contributed to the achievement of project purpose?
- What factors can be considered to cause delay or obstructs the realization of the project purpose?
- When will the project purpose be attained?

(2) Outputs

- To what extent has the outputs been achieved?
- How much have the activities been proceeded on schedule of the initial plan?
- To what extent have the activities contributed to the achievement of the outputs?
- Are there any outputs and activities have been changed during the Project?

(3) Important assumptions

2-3 Impact

Impact of the project activities will be identified by focusing mainly on positive and negative impacts caused by the Project, which are not originally expected in the project plan. The evaluation questions to be checked are considered as follows:

- Has project purpose contributed to the realization of the overall goal?
- Are there any impacts on social, economical, institutional and environmental aspects predicted by the continuation of the Project?
- What are the causes for the impacts which will be occurred?

2-4 Relevance

Relevance is clarified by examining whether the outputs, project purpose and overall goal are still in keeping with the needs of the beneficiaries and the development policy of the Republic of Indonesia at the time of the evaluation. The rationale of the Project, especially the relationships between each item in the narrative summary, is also reviewed on the PDM. The evaluation questions to be checked are considered as follows:

(1) Overall goal

- Is the overall goal consistent with the Government policy, such as National Development Plan?
- Is the overall goal consistent with needs of the beneficiaries?

(2) Project purpose

- Does the project purpose contribute to the achievement of the overall goal?
- Is the project purpose consistent with the objectives of the implementing organization?

(3) Relationships between outputs, activities and inputs

- Are relationships between outputs, activities and inputs appropriate?
- Are the outputs, activities and inputs adequate for achievement of the project purpose?

2-5 Sustainability

Sustainability of the Project is clarified by examining whether the project activities and benefits are likely to continue after the Project is completed. It will be forecasted by examining the institutional and management capacity, financial condition, technical ability, ownership of the implementing organization, etc. The evaluation questions to be checked are considered as follows:

(1) Institutional aspect

- Has the implementing organization obtained the ability to continue the activities?
- Is it expected the Government will continue to support?
- Is it expected the counterparts will continue to be assigned at the same positions?

(2) Financial aspect

- Has the implementing organization secured necessary financial and human resources for continuing the activities?

(3) Technical aspect

- Will the inputs of the Project, such as facilities, equipment, transferred techniques, etc. be fully utilized after the Project?
- Has the Project developed the techniques which are appropriate for beneficiaries in terms of the their technical levels?
- Have counterparts fully obtained the developed techniques and knowledge?
- Have the Project raised the interest of target communities in community forestry?