REPORT ON
FIELD TESTING ON FOREST FIRE PREVENTION WITH
INDIGENOUS KNOWLEDGE
IN EAST KALIMANTAN

Cooperation among:
BIOMA Foundation
International Tropical Timber Organization (ITTO)
University of Mulawarman (UNMUL)

Samarinda – Jakarta
August, 2002
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It is pertinent to make introduction between facilitators, all members of the Organizing Committee (OC) and training participants before the program starts. This introduction will help both the facilitators and the OC to learn participant's background, thus enable facilitators and the OC to employ the best method in presenting training materials to the audience. Introduction may be made in sessions, depending on number of participants and the time frame. If the time schedule is longer and total number of participant is low, the OC may introduce various attractive games to the participants through playing of the games participant's aspiration can be emerged (objectives and expectations). Training orientation made by conducting a pre-test on participant's understanding before the training is begun. The pre-test is good to be used as evaluation data, specifically to define level of participant's understanding before and after the training.

The pre-test is presented in writing and will be given to individual or groups, depending on participant's level of illiteracy. The next step is delivering of learning contract in the form of training materials or other presented subjects with specific method to assist participants recognizing the content of material for discussion.

GENERAL OBJECTIVES

1. Creating of comfortable situation and condition where all involving parties (participants, facilitator and OC) are familiar to each other.
2. To recognize participant's level of understanding on training material as means of evaluation and grounds in achieving training effectiveness.
3. To clarify participant's objective and expectation following the availability of training material.

SESSIONS

1.1 Creating of Situation and Introduction
1.2 Pre-test
1.3 Learning contract
Session 01.1. Creating of Situation and Introduction

A. Objectives

1. Creating an atmosphere that is psychologically comfortable to participants.
2. Indicating that mental situation can be created through active participation.
3. Training participants can make proper introduction to each other.
4. Assuring and guiding of participant's expectations on their training participation.

B. Topic of Discussion

1. Creating of situation
2. Self-introduction.

C. Methods

1. Lecturing
2. Brainstorming or game playing

D. Equipment, Material and Media

1. Worksheet.
   • 1 (one) transparent sheet (Tr.01.1/1).
     1. Tr. 01.1/1 : Example of Self-picture
2. References
   • See attachment
3. Equipment and Material
   a. OHP
   b. Flipchart
   c. Plano paper
   d. Metaplan or name card
   e. Colored Velt tip marker
   f. Self-adhesive tape
E. Participants
- 20 - 30 (twenty - thirty) people

F. Time
- 45 (forty five) minutes

G. Facilitation Process

<table>
<thead>
<tr>
<th>No.</th>
<th>Stages</th>
<th>Method</th>
<th>Tool, Material and Worksheet</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Facilitator comes forward and greet participants (by observing the position of participant’s seat).</td>
<td>Oral description</td>
<td></td>
<td>5 (five) minutes</td>
</tr>
<tr>
<td>2.</td>
<td>If the position is irregular (one direction, asymmetrical, or crowded), facilitators will instruct participants to re-arrange their seats into a more comfortable position.</td>
<td>Oral instruction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Facilitator inquired participants by asking &quot;How is the situation today, is it more comfortable?&quot; Afterwards, facilitator explains objective and process of this session.</td>
<td>Oral instruction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Distributing of name tags to be attached on the upper part of chest. Next, participants were asked to fill in their name and place of origin (village, institution, etc.)</td>
<td>Drawing and writing</td>
<td>d, e, f</td>
<td>5 (five) minutes</td>
</tr>
<tr>
<td>5.</td>
<td>Distributing of the plano paper and give instruction such as follow: “Draw a picture of yourself in the center and write down your name, status, age and origin (village, agency, institution, etc.)” Facilitator showed an example of self-picture to participants.</td>
<td>Oral explanation</td>
<td>Tr. 01.1/1 a,c, e, f</td>
<td>15 (fifteen) minutes</td>
</tr>
</tbody>
</table>
6. Asked participants to write down the following statements:
   - *The reason I am interested to take the course* ...
   - *The training will be well-implemented if* ...
   - *My expectation after this training is*....
   *My objections regarding this training is*....?

   Brainstorming orally

7. Facilitator give instruction to participants such as follows: "Give your picture a title and those who have finished the picture can come to the front of the class to introduce him/herself and show each self-picture to other participants".

   Oral explanation
   Respective self-picture
   20 (twenty) minutes

8. Posted all pictures on a part of the classroom walls to enable participants examine them during the training.

   F

**Notes:**

* If the majority of participants is illiterate, introduction can be performed by standing in semi-circle position and make their introduction orally, stating reason of participating the training, target achievement after completing the training as well as expectations and objects. All participant's statement must be recorded properly.

* Or, applying other introduction method as described in the appendix.
Example of Self Picture

Name: Lawing Anyeg Manyem
Age: 40 years
Marital status: Widower
Occupation: Head of the village

The reasons I am joining the training: ..................................................

The training will be well-implemented if: ..................................................

Expected results after completing the training: ..........................................

Objections: .................................................................
MATERIAL NO. 01. ORIENTATION AND INTRODUCTION

Session 01.2. Pre-Test

A. Objective

1. To assess level of understanding of participants relating to materials to be presented in the training.
2. To formulate the most effective methods of learning based on the pre-test result.

B. Topic of Discussion

C. Method

1. Written test

D. Equipment, Material and Media

1. Work sheets.
   • Copy of pre-test materials.
2. Reading references
   • ----
3. Equipment and Material
   • ----

E. Participants

• 20 - 30 (twenty-thirty) participants

F. Time

• 30 (thirty) minutes
G. Facilitation Process.

<table>
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<tbody>
<tr>
<td>1.</td>
<td>Opened the session by stating the topic of this session and the objective.</td>
<td>Oral explanation</td>
<td></td>
<td>5 (five) minutes</td>
</tr>
<tr>
<td>2.</td>
<td>Asked participants to adjust their seat into a more comfortable position and to prepare their writing instruments.</td>
<td>Oral instruction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Distributed the pre-test materials to each participant.</td>
<td></td>
<td>Pre-test sheet</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Described to participants on how to fill-in the answer, duration of pre-test and option for inquiries</td>
<td>Oral explanation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Instructed the participants to answer pre-test questions according to their capability and knowledge</td>
<td>Written pre-test</td>
<td></td>
<td>20 (twenty) minutes</td>
</tr>
<tr>
<td>6.</td>
<td>Reminded participants that they still had 5 (five) minutes left to complete their tests.</td>
<td>Oral instruction</td>
<td></td>
<td>5 (five) minutes</td>
</tr>
<tr>
<td>7.</td>
<td>Instructed the participants to submit completed tests to facilitator.</td>
<td>Oral instruction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>The session was ended by saying thank you and goodbye to participants</td>
<td>Oral instruction</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOTE: If number of illiterate participants was high, the class can be separated into groups. Each group consists of 2 to 3 persons and assigns a person that can write to assist his/her group.
TEST MATERIALS

Name: ___________________  Age: ___________________

Member of
Community Origin: _______  Place of Origin: ________________

PLEASE ANSWER THE FOLLOWING QUESTIONS CLEARLY!

1. To the best of your knowledge, please describe 3 (three) functions of forests!
   a. .................................................................
   b. .................................................................
   c. .................................................................

2. To the best of your knowledge, please mention at least 4 (four) effects of forest and land fire!
   a. .................................................................
   b. .................................................................
   c. .................................................................
   d. .................................................................

3. Please mention 2 (two) tenurial law, including the imposed fine in your village regarding land clearing by burning!
   a. .................................................................
   b. .................................................................

4. Please mention 4 (four) techniques or efforts to prevent forest and land fire to the best of your knowledge!
   a. .................................................................
   b. .................................................................
   c. .................................................................
   d. .................................................................
5. Please mention 3 (three) functions of forest and land fire prevention institutions to the best of your knowledge!
   a. ...........................................................
   b. ................................................................
   c. ................................................................

6. Please mention 3 (three) symptoms, premonitions or natural phenomenon believed by local communities to detect the coming of prolonged dry season!
   a. ................................................................
   b. ................................................................
   c. ................................................................

7. In your opinion, who will be responsible to map fire sensitive area?
   ................................................................

8. Please mention at least 4 (four) traditional fire-suppressing tools commonly used in your village!
   a. ................................................................
   b. ................................................................
   c. ................................................................
   d. ................................................................

9. During field-burning activity, what are the precautions that must be noticed to prevent spreading of fire into other forest or field area? Please mention just 4 (four) of them!
   a. ................................................................
   b. ................................................................
   c. ................................................................
   d. ................................................................

10. Please mention 3 (three) elements of fire-triangle that can cause fire!
    a. ................................................................
    b. ................................................................
    c. ................................................................

11. What kind of accident that often happened during fire-suppressing action? How to cure it in traditional way? (Mention 3 will be enough)!
    a. ................................................................
    b. ................................................................
    c. ................................................................
12. Please mention 2 (two) types of fire-resistant partition based on the purpose!
   a. ............................................................................................................
   b. ............................................................................................................

13. Please mention types of traditional communication means commonly used in your village when forest and land fire occur!

   ............................................................................................................
   ............................................................................................................

14. Please mention 2 (two) post forest-fires activities practiced by local community!
   a. ............................................................................................................
   b. ............................................................................................................

15. What kind of vegetation would be suitable to plant in post-fire area?

   ............................................................................................................
   ............................................................................................................

GOOD LUCK!
Session 01.3. Learning Contract

A. Objectives
   1. To clarify rules and compromise among training participants, including facilitators during training course.
   2. To assist the participants to recognize material and topic to be discussed during training course.

B. Topic of Discussion
   1. Rule of conduct
   2. Training materials

C. Methods
   1. Brainstorming.
   2. Answering of question list.

D. Equipment, Material and Media
   1. Worksheet.
      • 1 (one) sheet of OHP (Tr.01.3/1).
         1. Tr.01.3/1: Syllabus of the training material
   2. References
      • ---
   3. Equipment and Material
      a. OHP
      b. Flipchart
      c. Piano papers
      d. Metaplan or name card
      e. Colored marker
      f. Self-adhesive tape
E. Participants
- 20 - 30 (twenty - thirty) participants

F. Time
- 30 (thirty) minutes

G. Facilitation Process.

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<tr>
<td>1.</td>
<td>Facilitator started class by informing the topic and the objective</td>
<td>Oral description</td>
<td></td>
<td>5'</td>
</tr>
<tr>
<td>2.</td>
<td>Participants were requested to express their opinions regarding class rules to be agreed for by the whole class. Facilitator wrote-down each opinion on plano paper.</td>
<td>Brain storming</td>
<td></td>
<td>10'</td>
</tr>
<tr>
<td>3.</td>
<td>Re-read the statements, and give back the question &quot;What kind of punishment will be applied to anyone who violate these rules? Write down under the agreed rules&quot;</td>
<td>Oral description</td>
<td>b, c, e</td>
<td>10'</td>
</tr>
<tr>
<td>4.</td>
<td>Facilitator distributed learning framework or adult learning methodology.</td>
<td></td>
<td>Reading materials</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Facilitators handed out training syllabus and training flowchart.</td>
<td>Oral description</td>
<td>Tr. 01.3/1, a</td>
<td>5 (five) minutes</td>
</tr>
<tr>
<td>6.</td>
<td>Facilitator closed the session and asked participants to give their applause.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:** The agreed rules then attached to the side of the class wall/blackboard and stay there throughout the training, thus can be observed by both participants and training committee.
Flow Chart of Training on Fire Prevention of Tenurial Forest and Land

- **Introduction**
- **Expected Formulation**
- **Rules**
- **Activity Flow Chart**

**BASIC CONCEPT**
- Forest Introduction
- Introduction on Forest and Land Fire Prevention
- Regulation on Fire Management

**FIRE PREVENTION**
- Scope
- Institution and Organization
- Early Warning System and Established Procedure
- Fire Danger Map
- Tools
- Fire Suppression

**FIRE CONTROL**
- Fire Triangle
- Work Safety and First Aid at Accident
- Extinguishing Techniques
- Communication and Reporting

**POST FIRE MANAGEMENT**
- Recovery
- Rehabilitation

**EVALUATION AND FUTURE ACTION PLAN**

**FIELD WORK**
After participants became familiar to each other, facilitator re-described several basic concepts before going further into a more operational-technical material of forest and land fire prevention and suppressing. The first stage of learning was to know the concept of forest and forest area, both through participant term and government forestry law. The next stage of learning was to understand the concept of fire in general, in term of the cause and the impact. Understanding the basic concepts is necessary to assist participants in developing an understanding of training purpose, either those relating to fire prevention, control and post-fire or the whole training material.

**General objective**
To strengthen understanding on forest functions and forest and land fire management as well as the significance to community or training participants.

**Sessions Separation**
Session 2.1. Introduction to Forest and Its Functions
Session 2.2. Introduction to Forest and Land Fire
Session 2.3. Legal Instruments in Forest and Land Fire Management
Session 02.1. Introduction to Forest

A. Objectives

1. To enrich participant's knowledge and understanding on forest;
2. To enable participants in identifying forest type, function and utilization

B. Topic of Discussion

1. Definition of forest and forest area
2. Forest types;
3. Forest functions and utilization

C. Methods

1. Lecture
2. Brainstorming

D. Equipment, Material and Media

1. Worksheet.
   * 3 (three) transparent sheets (Tr.02.1/1 - Tr.02.1/3)
     1. Tr.02.1/1 : Forest definition as stipulated by Forestry Law No.41/1999.
     2. Tr.02.1/2 : Forest classification.
     3. Tr.021/3 : Forest functions and utilization

2. Reading references
   * Introduction to forests.

3. Equipment and Material
   a. OHP
   b. Posters
   c. Flipchart
d. Piano papers  

E. Participants  
- 20 - 30 (twenty - thirty) participants  

F. Time  
- 45' (forty five) minutes  

G. Facilitation Process

<table>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Facilitator started the class by saying greetings or “Good Morning/Good Afternoon” to participants</td>
<td>Oral description</td>
<td></td>
<td>5 (five) minutes</td>
</tr>
<tr>
<td>2.</td>
<td>Brief introduction on this session’s topic</td>
<td>Oral description</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Showing picture illustration/poster of forest while requesting participants to express their opinion: “Based on this picture, what is your definition on forest?”</td>
<td>Question and Answer, Posters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Participants were given time to express their opinion/ideas and facilitator wrote them down in the piano paper.</td>
<td>Brainstorming C, d, f, g</td>
<td></td>
<td>5 (five) minutes</td>
</tr>
<tr>
<td>5.</td>
<td>Facilitator compiled all the participants expressions/ideas and explain definition of forest stipulated by UUPK No. 41/1999 accordingly</td>
<td>Oral description Tr. 02.1/1a.</td>
<td></td>
<td>5 (five) minutes</td>
</tr>
<tr>
<td>6.</td>
<td>Facilitator repeated the question: “According to your experience, what are the benefits and functions of forest to human live?”</td>
<td>Oral questions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Brainstorming on the function of forests and its uses. Facilitator wrote down their answer in the piano paper.</td>
<td>Brainstorming C, d, f, g</td>
<td></td>
<td>5 (five) minutes</td>
</tr>
<tr>
<td>8.</td>
<td>Facilitator compiled participant’s views/ideas, then showed the transparent sheet that describe forest functions and benefits.</td>
<td>Oral description Tr. 02.1/3 Tr. 02.1/2a.</td>
<td></td>
<td>10 (ten) minutes</td>
</tr>
<tr>
<td>No.</td>
<td>Stages</td>
<td>Method</td>
<td>Equipment, Material and Worksheet</td>
<td>Time</td>
</tr>
<tr>
<td>-----</td>
<td>------------------------------------------------------------------------</td>
<td>-----------------</td>
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<td>---------------</td>
</tr>
<tr>
<td>9.</td>
<td>Again, the facilitator raised questions: &quot;Is there any local taboo existed or practiced in your respective village relating to forest and if any, mention it.&quot;</td>
<td>Oral questions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Facilitator requested participants to express their opinion with respect to traditional law or culture practiced in their village. Facilitator then listed all answers in the piano paper.</td>
<td>Brainstorming</td>
<td>C, d, f, g</td>
<td>10 (ten) minutes</td>
</tr>
<tr>
<td>11.</td>
<td>Facilitator compiled the answers based on each place of origin/tribe and read them to participants. If possible, can be enlarged by facilitator's experience or other known traditional practice.</td>
<td>Oral presentation</td>
<td>Brainstorming</td>
<td>5 (five) minutes</td>
</tr>
<tr>
<td>12.</td>
<td>Conclusion and closing of the session.</td>
<td>Oral presentation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:** In case that the following equipment are not available, the facilitator may utilize different equipment to replace the required instruments, such as follow:

1). **OHP.** When OHP is not available, facilitator can read the course materials orally, or write down important points at the piano charts.

2). **FLIPCHART BOARD.** If this facility is unavailable, it facility can be replaced by "white board", or just attaching piano charts at the walls of the class room.
A. DEFINITION OF FOREST

According to Soerianegara (1977), forest in general is an ecosystem dominated by trees and has its specific environment that is different with environment in the outer area.

According to Forestry Law Number 41, 1999, a forest is: a unit of ecosystem in the form of biological resources exposure dominated by trees and its natural environment is a unity that can not be disassociated from one another.

B. FOREST CLASSIFICATION

The various categories of forests in Indonesia include the following:

1. **Litorial forest:** Forest grows under the sea level.
2. **Mangrove forest:** Mangrove forests exist in coastal region, which are constantly or occasionally submerged in the sea-water.
3. **Littoral forest:** Forest on the dry coastal region
4. **Swamp forest:** Forest that can be found on a place with constant fresh water.
5. **Peat swamp forests:** Forest grows in the same region with swamp forest and often defined as swamp forest, but actually an extension of swamp forest.
6. **Lowland forest:** Forests in the altitude of 700 m above sea level and not depending on water.
7. **Lower mountain forest:** Forests in the altitude between 700 - 1,500 m above sea level.
8. **Upper mountain forests:** These type forests exist in the altitude of more than 1,500 m above sea level.
C. FUNCTION AND UTILIZATION OF FOREST

1. Based on the Product and Claim

Based on the UU Pokok Kehutanan RI No. 41 Tahun 1999, Chapter II, article 16, the function of forest in Indonesia is separated into two categories, main function and specific function.

1). The main function covers:

(a). Preserving Function

- Natural Forest Conservation Area: forest with specific characteristic and has the main function of preserving biological diversity and the ecosystem, at the same time also functioning as the life supporting system.
- Natural Forest Protection Area: forest with specific characteristic and has the main function of protecting life supporting system, preserving biological diversity, maintaining of sustainable utilization of biological resource and its ecosystem.
- Hunting Park: area of forest reserved for hunting.

(b) Protection Function

This function has the purpose of protecting the life supporting system to manage hydrology system, prevents floods, controls erosion, prevent seawater intrusion and maintaining of soil fertility.

(c) Production Function

Forest is yielding forest products that give benefits to people.

2). Specific function covering:

(a). Research and Development

The purpose is to increase the capacity of managing forest in sustainable conduct and to enlarge the added value of forest products.
(b). **Education and Training**

Training is required to create human resource equipped with capacity to understand, develop and apply science and technology when managing the forest, in a fair and sustainable manner.

(c). **Religion and Culture**

Forest area accommodates local religious and cultural interests.

Suryohadikusumo (1997), stated a detailed function and benefit of forest as below:

1). **Production function**
   
   Forest production function gives its benefit to those that supply various goods to fulfill human needs, such as: timber, resin (damar) rattan, medicine substances, source of meat and vegetables and so on.

2). **Hydrological function**
   
   Forest carries the function of watershed area as well as keeping of adequate supply of water and preventing the flood.

3). **Ecological function**
   
   Forest has the function of environment-balancing mechanism that systemizes the weather and climate, at the same time absorbing pollution and many other tasks. Forest degradation gives the impact of climate change.

4). **Conservation function**
   
   The function is mainly applied since forest is the area where various plants and animals grow and multiply. Some of them are often of rare species and almost extinct.

5). **Socio-cultural function**
   
   Forest is utilized as the location to perform various social activities, like tourism, ritual practices, educational/training purposes, research and so on.
6). Economic function
Forest provides its contribution as the state’s source of income, employment opportunity (through forest management), tourism and many others.

7). Protective Function
Forest was used as a place for guerilla war, such as happened during the liberation war. In addition, forest is a buffer to block invasion from alien country.

2. Based on extent of utilization
Based on extent of utilization, forest functions and benefits can be categorized into:

1). Direct Benefit
Direct benefit is derived from hydrological and socio-economic functions that can be considered as the origin and resource of income. (Tangible).

2). Indirect Benefit
Indirect benefit from forest can be gained through availability of valuable pre-condition that creates further activities (Intangible).

3. Based on utilizing party
Sudiono (1974) states that based on person or utilized subject, forest functions and benefits can be classified into:

1. Forest utilized by community
   (a). For subsistence purpose;
   (b). For commercial purpose.

2. Forest utilization by government
   (a). For domestic uses;
   (b). For export uses to earn foreign exchange

3. Forest utilization by third party
   (a). For domestic trading;
   (b). For international trading
FOREST DEFINITION

A unit of ecosystem in the form of biological resources exposure dominated by trees, which is in unity with its natural surroundings and can not be disassociated from one another  
(Forestry Law No. 41/1999)
## Indonesian Forest Classification by Altitude

<table>
<thead>
<tr>
<th>Forest Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Litorial forest</td>
<td>Forest that grows below the sea level</td>
</tr>
<tr>
<td>Mangrove forest</td>
<td>Mangrove forests exist in coastal region, which are constantly or occasionally submerged in the sea-water.</td>
</tr>
<tr>
<td>Littoral forest</td>
<td>Forest on the dry coastal region</td>
</tr>
<tr>
<td>Swamp forest</td>
<td>Forest grows in the same region with swamp forest and often defined as swamp forest, but in fact an extension of swamp forest.</td>
</tr>
<tr>
<td>Peat swamp forest</td>
<td>Forest grows in the same region with swamp forest and often defined as swamp forest, but actually an extension of swamp forest.</td>
</tr>
<tr>
<td>Lowland forests</td>
<td>Forests in the altitude of 700 m above sea level and not depending on water.</td>
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<tr>
<td>Lower mountain forests</td>
<td>Forests in the altitude between 700 - 1,500 m above sea level.</td>
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<tr>
<td>Upper mountain forests</td>
<td>These type forests exist in the altitude of more than 1,500 m above sea level.</td>
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</table>
## FOREST FUNCTION AND UTILIZATION

1. Based on product and allocation
   1) Main function
      a) Preservation Function
         • Natural Protection Area
         • Natural Conservation Area
         • Hunting Reserves
      b) Protection Function
      c) Production Function
   2) Specific Function
      a) Research and Development
      b) Education and Training
      c) Religion and Culture

2. Based on Utilization
   1) Direct benefit
   2) Indirect benefit

3. Based on Utilizing Party
   1) Forest Utilization by Community
   2) Forest Utilization by Government
   3) Forest Utilization by the Third Party
MATERIAL 02. BASIC CONCEPT OF FOREST AND FOREST FIRE

Session 02.2. Introduction to the Forest and Land Fire

A. Objective

1. To increase participant's knowledge on forest and land fire
2. To equip participant with competence to identify types of forest fire
3. To supply participant with knowledge on forest and land fire causes and the impacts.

B. Topic of Discussion

1. The cause of forest and land fire
2. The impact of forest and land fire
3. Types of forest and land fire.

C. Methods

1. Lecturing
2. Brainstorming;
3. Group discussion.

D. Equipment, Material and Media

1. Worksheet.
   
   * 4 (four) pieces of transparencies (Tr.02.1/1 - Tr.02.1/3)
   
   1. Tr.02.2/1 : Definition of Forest and Land Fire
   2. Tr.02.2/2 : Forest and Land Fire Category
   3. Tr.021/3 : The Cause of Forest and Land Fire
   4. Tr.02/2/4 : Forest and Land Fire Impacts

2. References

   * Introduction to forest and land fire

3. Equipment and Material

   a. OHP;
   b. Plano papers;
c. Coloured marker;
d. Self-adhesive tape;
e. Flipchart;
f. Posters.

E. Participants

- 20 - 30 (twenty - thirty) participants

F. Time

- 45' (forty five) minutes

G. Facilitation Process

<table>
<thead>
<tr>
<th>No.</th>
<th>Stages</th>
<th>Method</th>
<th>Equipment, Material and Worksheet</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Greeted participants (either Good Morning or Good Afternoon).</td>
<td>Oral description</td>
<td></td>
<td>5 (five) minutes</td>
</tr>
<tr>
<td>2.</td>
<td>Brief description of today's class topic.</td>
<td>Oral description</td>
<td></td>
<td></td>
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<tr>
<td>3.</td>
<td>Facilitator ask participants to give their conception: &quot;Does anyone know what is the meaning of forest and land fire?&quot;.</td>
<td>Oral question and answer</td>
<td></td>
<td></td>
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<tr>
<td>4.</td>
<td>Class brainstorming, and, if possible, facilitator write-down all opinion on flip-chart.</td>
<td>Brainstorming</td>
<td>b, c, d, e.</td>
<td>5 (five) minutes</td>
</tr>
<tr>
<td>5.</td>
<td>Facilitator compiled all participant expressions, and further describes definition of the forest fire.</td>
<td>Short presentation</td>
<td>Tr. 02. 2/1 a.</td>
<td>5 (five) minutes</td>
</tr>
<tr>
<td>6.</td>
<td>Facilitator then explained types of forest fire briefly and systematically.</td>
<td>Oral description</td>
<td>Tr. 02.2/2 a.</td>
<td>10 (ten) minutes</td>
</tr>
<tr>
<td>7.</td>
<td>Facilitator again raise a question to participants: &quot;Is the description clear enough, or maybe there are other experiences from participants?&quot;</td>
<td>Oral question and answer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>Stages</td>
<td>Method</td>
<td>Equipment, Material and Worksheet</td>
<td>Time</td>
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<td>8.</td>
<td>Upon satisfactory result of facilitator's description, the session then go forward, which was on topic of forest and land fire cause.</td>
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<tr>
<td>9.</td>
<td>Start with small question to participants: &quot;To the best of your knowledge, what is the cause of forest and land fire?&quot;</td>
<td>Oral question and answer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Facilitator encouraged participants to express their ideas, and asked them to write those down in the flipchart.</td>
<td>Brainstorming</td>
<td>b, c, d, e</td>
<td>5 (five) minutes</td>
</tr>
<tr>
<td>11.</td>
<td>Facilitator compiled and read all expressions and afterwards, compared them with facilitator's description in work sheet Tr. 02. 2/3 with brief explanation.</td>
<td>Oral presentation</td>
<td>Tr. 02. 2/3 a.</td>
<td>5 (five) minutes</td>
</tr>
<tr>
<td>12.</td>
<td>Facilitator raised a question to participants: &quot;By your experience, what are the impacts of forest and land fire?&quot;.</td>
<td>Oral question</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>Participants were encouraged to express their opinion (brainstorming) and if possible, facilitator can write them down in piano paper.</td>
<td>Brainstorming</td>
<td>b, c, d, e</td>
<td>5 (five) minutes</td>
</tr>
<tr>
<td>14.</td>
<td>Facilitator compiled all ideas expressed by the participants, and to be more clearer, can compare them with facilitator's answer by using the OHP.</td>
<td>Brainstorming</td>
<td>Tr. 02.2/4 a.</td>
<td>5 (five) minutes</td>
</tr>
<tr>
<td>15.</td>
<td>Facilitator asked participants: &quot;Is there any question regarding material in this session?&quot;. If no question raised, facilitator can make conclusion of the session and close it.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
1. In case the following equipment are not available, facilitator can use different equipment as below:
   a). OHP not available: facilitator can read material on transparent sheet orally, or write down significant points at the piano paper.
   b). Unavailability of flipchart: can be substituted by attaching piano paper on one of the class walls.
2. Facilitator may introduce light games for participants as described in the attachment.
A. THE USE OF FIRE FOR DAILY ACTIVITY BY LOCAL COMMUNITY IN EAST KALIMANTAN

Fire is a component that cannot be separated from human activity. The same applies for local community in East Kalimantan. Fire use and the occasion of using it, together with the impacts are described clearly below:

1. Cooking.
   Food is one of human basic needs and fire is needed to process the food. The activity of cooking is performed everyday to maintain human live. However, when the use of kitchen fire becomes uncontrollable, it may cause the house burned by fire.

2. Light (lamplight)
   For villagers that do not have electricity connection, fire becomes vital need for to make light during the night. Negative impact of this use is when carelessly used, it may burn the house.

3. Smoking
   Smokers require fire to light the cigarette. The habit may result in throwing cigarette butt while in light, and this can be the cause of fire.

4. Mosquito shutter
   Dayak people in East Kalimantan have a custom of setting fire under their dwelling place to scare mosquitoes every night. When this custom is conducted carelessly it can bring fire to their dwelling place.

5. Field Burning
   This activity commonly performed in the month of August or September each year and participated by every house. The field is cleared from bushes, grass or even woods. This custom has been performed for
generations and it is the most efficient method of land-clearing, both in terms of energy and cost. When the custom is performed without any cautiousness the fire can spread and burn other field-gardens or even become forest fire.

6. Hunting

For inland community, particularly Dayak tribe, hunting is a vital activity in their daily live. Hunting can be performed anytime, day or night. And when hunting conducted at night, fire will be needed as light and for cooking. The impact of this activity is, when the fire becomes uncontrollable it can be the origin of forest fire, although the incidence is rarely occurred. Dayak hunters have the custom of making fire next to river for a simpler control of fire.

7. To scare away bees

Collecting of honey usually done by scaring the bees away from their nest using firewood that is lighted under the nest. Collecting of honey is usually take place once a year, during November and December. If the remaining fire still have fire and ignored, it is possible to cause forest fire.

8. Iron moulding

Fire is vital elements during iron moulding for agricultural tools.

9. Garbage burning

Fire caused by the burning of garbage from domestic waste as well as gardens. Careless garbage burning can cause fire.

B. DEFINITION OF THE FOREST AND LAND FIRE

<table>
<thead>
<tr>
<th>FOREST AND LAND FIRE</th>
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</thead>
<tbody>
<tr>
<td>A condition where forest is burned by fire and causing forest and or forest product degradation that in turn deliver economical and or environmental loss.</td>
</tr>
</tbody>
</table>
C. TYPES OF FOREST FIRE

1. By Location of Fire

Based on relative position to soil, forest and land fire can be categorized into 3 (three) types, they are: underground fire, surface/ground fire and crown fire (Anonym, 2000)

1.a Underground fire. Inflamed by fire-sensitive organic matter exists under the ground surface and on ground surface with thickness up to 15 centimeters. In this type of fire, organic matters like humus, peat, sawn dust, tree roots or decomposed wood, are burnt. The fire comes in the form of fire glow fire and not in a blaze.

1.b Surface fire (ground fire). The fire is incited by fire-sensitive matter lies on the ground, with thickness up to 2 (two) meters from ground surface. Fire burned organic matter and vegetation on the forest floor, including the lower growth, various trees and many others. The form of fire is like bonfire and in this case, wind plays significant role in spreading the fire.

1.c Crown fire. The fire is commonly occurred by the cause of slow surface fire suppression or thunder struck. Type, volume and vertical formation of fire-sensitive material bring fire and hot fumes from surface to fire-sensitive stratum of tree crown. Potential combustable material is tree-crown with branches and limbs that if they all burnt-up can cause death to the tree. Wind also plays important part in spreading the fire. This type of fire can also started by torch that fell into tree-crown.

2. Type of Fire by Rate of Spreading

a. Small fire; fire that has not been spreading vastly, with fire area less than 10 ha. This type of fire usually occurred in the form of surface fire.
b. Medium fire; can be considered as more serious by considerable intensity of fire, reaching out to 100 ha area, in the form of surface and crown fire.

c. Big fire; the most serious incidence of fire by high intensity of fire and serious damage it caused. This type of fire commonly spread-up to hundredths or thousandths hecateres area and takes many days to handle.

3. Type of Fire Combustion

Based on the nature and visible flaming of fire, there are two categories of fire (Anonim, 1999):

3.1 Flaming Combustion. Fire that has flames and occurred on the surface of fire-sensitive matter.

3.2 Smoldering Combustion. Fire with no flame but makes a lot of smoke.

D. CAUSES OF LAND AND FOREST FIRE

Anonim (1998), stated factors that cause the incidence of land and forest fire in Indonesia as follows:

1. Natural Factors

Natural factor with high potentiality to cause forest and land fire in East Kalmantan is coal layer. Sometimes the coal layer can be found right on topmost soil, with thickness up to 50 centimeters, or even less than that. This condition is very sensitive to fire, whether it coming from field land-clearing or by sun glare. The burning coal is difficult to handle and will spread into where the coal layer is available. During the hot or dry season, the hot coal becomes the source of uncontrollable fire, since fire-sensitive materials that lay on the ground, like, grass, broken grass and fallen branch will be burned and fire will spread to larger area. The situation will eventually lead to forest and land fire.
2. **Man-made Fire**

99% of forest fire incidence in Indonesia caused by human. There are many human activities that trigger forest fire in direct or indirect way, particularly careless use of fire inside or nearby forest that has potentiality of leading to uncontrolled forest fire. In addition, socio-economic condition of community nearby forest place a serious matter on forest fire incidence.

Below is several example of human activities that can lead to forest and land fire:

1. Garbage burning
2. Camp fires
3. Children play with fires
4. Hunting
5. Cigarette butts
6. Motor vehicles
7. Skidding vehicles
8. Illegal logging
9. Land clearing

**E. IMPACT OF FOREST AND LAND FIRE**

Impacts of forest and land fire can be categorized as below:

1. **Impact that cause various losses:**

   a. **Economical**

   The impact of forest fire can be observed in economic aspect and usually has some degree of relation with social and cultural aspects. The real loss in general is degraded or lost of forest stand value, specifically wood as well as non-forest products. In the case of forest fire in East Kalimantan, 1997/1998, the impact
includes critical food stock, since most of productive land is burnt. Other loss in economical aspect are delayed transportation, whether airplane, land vehicles and sea/river freights. Lots of activities will be disturbed by those delays.

b. Ecological impact

The loss after forest fire in ecological term or environmental interest is rarely taking into consideration. The loss will be in the form of flora and fauna laceration, loss of soil elements and physical nature, ecological stability and finally, global heat and pollution.

c. Political impact

The frequency and scale of forest fire (small, medium, and big), bring certain political impact. When in forest fire incidence in a region or country is high, there is general postulation that the respected region/country is not handling their forest fire seriously or not having sufficient capacity to properly handle forest fire incidence. In the international world, this issue can be used to give pressure to concerned country. Thus, large scaled fire will have more serious consequence, since air pollution caused by this fire will disturb neighboring countries and creates strong protest to Indonesia.

d. Impact on health

Forest fire impact on human health is proved by occurrence of respiratory sickness, specifically upper respiratory infection (ISPA) and eye-irritation. These health-problem commonly occurred in locations with thick fog/smoke.

e. Sociological impact

Sociological impact relates closely with economical impacts of forest fires in the form of property and income loss. There will be increasing number of poor people, unemployment, lost of education and other conditions that are sensitive to social problem.
2. Impact on biogeophysical

1. ENVIRONMENTAL IMPACT

a. Air pollution;

b. Degradation in forest function, hydrological cycle and biodiversity.

1). Natural cycle disorder

Vegetation pattern after the fire will change by existence of mosaic pattern, consisted of several succession phases. Forest becomes open and arouses growth of wild grass as well as other exotic species and causing change in ecological balance.

2). Disturbance on organic production and decomposition process

- Forest fire brings a decline in forest vegetation photosynthesis, by reduced energy taking and primary production capacities along with lost of leaves.
- Forest fire disturb decomposition process of organic matter by death of micro-organism that support the process.

3). Effect on soil

The impact will be based on soil, vegetation, biotic and abiotic environment interaction, which has cumulative nature in a long time.

4). Soil nutrients cycle

Forest fire caused nutrients regimes disappeared by smoke, nutrient recycle becomes slow, capacity to store nutrients in organic matter is reduced and decomposition process becomes slower.

5). Hydrological cycle

Fire has major effects in reducing rainwater interception, multiply raindrops to forest floor, decreasing vegetation transpiration,
reducing humidity of topmost soil by high evaporation and increasing amount of water waste.

6). **Disturbance on forest function in balancing microclimate and reducing carbon**

Tree canopy protects other vegetation by giving of cooling effect during the hot season, give protection during the storm, capturing water and also protecting quick loss of energy during the cold season. Non-existence of vegetation will reduce carbon absorption and oxygen (O2) production.

7). **Impact on biodiversity**

Fire caused degradation to indigenous ecosystem and reduced, or even eliminated its biodiversity.

2. **IMPACTS ON SOCIAL ASPECT**

a. **Food security**
   Besides burnt-up field, locust attack can reduce harvesting

b. **Loss of income**
   Source of income in forest/field has been burned up.

c. **House lost**

d. **Strategy to survive**

e. **Social welfare disorder**

3. **Impact on health**

Fire is positively disturb public health, specifically, poor people, aged people, pregnant women and children. It can cause sickness, like, ISPA, bronchial asthma, bronchitis, pneumonia, eye and skin irritation (as result of smoke).

4. **Economic loss analysis**

Inclined to national economic loss, e.g. loss of state's income by burnt-up forest/plantation and other losses from tourism and transportation aspects.
5. **Forest fire impact on trees and forest:**
   a. Laceration on trees that will become a sport of infection from virus will cause death to the tree, reducing regeneration and damaging young trees.
   b. Change of micro climate is causing forest capacity to maintain air stability.
   c. Loss of forest function in conserving as soil and hydrology.
   d. Destruction to soil, both physically, chemically and biologically.
   e. Extinction or migration of wild animals to other place.
The Concept of Forest and Land Fire

A condition where forest and or land is under fire and destructed forest, land plot and forest product and therefore, brought loss to economic and or environmental condition.
TYPE OF FOREST AND LAND FIRE

1. Type of fire by fire origin
   a) Ground fire
   b) Surface fire
   c) Crown fire

Type of fire by Size
   a) Small fire
   b) Medium fire
   c) Big fire

Type of fire by combustion
   a) Flaming combustion
   b) Smoldering combustion
## FOREST AND LAND FIRE CAUSE

### Human Factor (99%)

a. Intentional burning

(a) By cause of revenge, anger or to gain rights on land without paying the compensation

(b) Burning by plantation owner (to reduce the cost of land-clearing), forest farmers (to collect gaharu wood, illegal logging, etc.)

b. Unintentional burning

a) Careless burning in field clearing

b) Throwing cigarette butts carelessly

c) Garbage burning

d) Remnants of man-made fire

### 2. Natural factor (1%)

a. Coal

b. Thunderstorm

c. Long dry season

d. Wood rubbing

e. Etc.
IMPACT OF FOREST AND LAND FIRE

Various loss after forest fire:
1. Economical
2. Ecological
3. Political
4. Health
5. Social
   a). Food security
   b). Loss of income
   c). Homeless
   e). Social welfare
MATERIAL No. 02. BASIC CONCEPT OF FOREST AND LAND FIRE

Session 02.3. Regulation On Forest And Land Fire

A. Aim
To improve participants' awareness on local custom and other regulations relating to the management of forest and land fire.

B. Topic of Discussion
1. Local custom/agreement regarding forest and land fire;
2. Government regulation/law relating to forest and land fire.

C. Methods
1. Lecturing;
2. Brainstorming;
3. Group discussion and presentation.

D. Equipment, Material and Media
1. Worksheet.
   * 3 (three) pieces of transparencies (Tr.02.3/1 - Tr.02.3/3)
      1. Tr.02.3/1 : Local custom/agreement on forest and land fire.
      2. Tr.02.3/2 : Government regulation/law relating to forest and land fire.
      3. Tr.02.3/3 : Adjacent regulations for implementation
   * 1(one) example sheet for group presentation
2. References
   * Regulations on Forest and Land Fire in Indonesia.

3. Equipment and Material
   a. OHP;
   b. Piano papers;
   c. Flipchart;
   d. Color marker;
   e. Self-adhesive tape;
   f. Metaplan.

E. Participants
   * 20 - 30 (twenty - thirty) participants

F. Time
   * 90 (ninety) minutes

G. Facilitation Process

<table>
<thead>
<tr>
<th>No.</th>
<th>Stages</th>
<th>Method</th>
<th>Equipment, Material and Worksheet</th>
<th>Time</th>
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<tbody>
<tr>
<td>1</td>
<td>Facilitator opened the class by greeting (either Good Morning or Good Afternoon).</td>
<td>Oral description</td>
<td></td>
<td>5 (five) minutes</td>
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<tr>
<td>2</td>
<td>Brief description on class topic</td>
<td>Oral description</td>
<td></td>
<td></td>
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<tr>
<td>3</td>
<td>Divided participants to several groups by based on their tribe/place of origin/social category. Requested each group to select a secretary and a speaker.</td>
<td>Oral description or game</td>
<td></td>
<td>5 (five) minute</td>
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<tr>
<td>4</td>
<td>Facilitator distributed piano paper, colored marker and the task to each group.</td>
<td>Oral description</td>
<td></td>
<td></td>
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<tr>
<td>5</td>
<td>Facilitator re-described each task on piano paper/OHP &quot; To the best of your knowledge, write down all local customs/agreements practiced in your village/tribe/region.”</td>
<td>Oral description</td>
<td>Task example</td>
<td>5 (five) minutes</td>
</tr>
<tr>
<td>6</td>
<td>Facilitator then gave time to participants to discuss the task.</td>
<td>Group discussion</td>
<td></td>
<td>30 (thirty minutes)</td>
</tr>
<tr>
<td>7</td>
<td>Facilitator reminded participants that they still have five minutes to complete their assignments. Those that have completed their assignments can attach their work on one of the class walls.</td>
<td>Oral explanation</td>
<td></td>
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<tr>
<td>8</td>
<td>Facilitator asked each group’s speaker to present their discussion result and other groups is allowed to ask their question or give their response.</td>
<td>Group presentation</td>
<td>Group assignments, etc.</td>
<td>30 (thirty) minutes</td>
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<tr>
<td>No.</td>
<td>Stages</td>
<td>Method</td>
<td>Equipment, Material and Worksheet</td>
<td>Time</td>
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<tr>
<td>9.</td>
<td>Facilitator compiled all presentation and described the significance role of local custom/agreement on forest and land fire management. If possible, some examples including the fine can be brought forward.</td>
<td>Oral description</td>
<td>Tr. 02.3/1, a.</td>
<td>5 (five) minutes</td>
</tr>
<tr>
<td>10.</td>
<td>Facilitator gave description of government regulations on forest and land fire.</td>
<td>Oral description</td>
<td>Tr. 02.3/2, a.</td>
<td>5 (five) minutes</td>
</tr>
<tr>
<td>11.</td>
<td>Before closing the session, participants were given opportunity to give their response: &quot;Is there anything unclear or any question?&quot; If there is any, limit the number of questions and answer them with brief and clear description.</td>
<td>Oral explanation</td>
<td></td>
<td>5 (five) minutes</td>
</tr>
<tr>
<td>12.</td>
<td>Facilitator made conclusion of the whole session, close the session by greetings and request participants to give applause.</td>
<td>Oral explanation</td>
<td></td>
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</table>

**Notes:**

1. Formation of groups can be done by playing refreshing game.
2. Ask participants to give applause after each group finish the presentation
3. If any of the facility below is not available:
   a). OHP. Facilitator can read class materials out loud, or write down substantial points at the piano charts.
   b). FLIPCHART BOARD. Might be replaced with "white board", or just attaching piano papers on one of the classroom walls.
A. **ADAT LAW** (Local Custom)

Adat law is rules laid down by local community that contains or defines social relationship among concerned community. Local custom made by based on elder generation's faith or belief on a certain catastrophe when people do harm or disturb the nature.

Irene et al. in Ubang et al. (1977) described local custom as definitions serve as the guideline of local community's life. Some of the definitions may have sanctions and some may not, but on the whole, when a person violate them, he/she will become a subject of ridicule, since "adat" is a reflection of personality and manifestation of soul that exist in generations and sanction is regarded as the "law" that hold norm and belief.

Until presently, adat law exist in community is in oral form and practiced by adat institution. Adat law among others defines the conduct of land clearing in opening a cultivation field by using fire. Sanction or fine for those causing forest and land fire is a reflection of social relation aspect. When this use of fire causing somebody's field to burn, the settlement will be in the form of compensation and arranging of "tepung tawar" ritual that has a specific meaning of clearing up any hard feelings and encourage brotherhood sense between both sides.

1. **Adat Law in Unirrigated Agricultural Field Burning**

In the act of unirrigated agricultural field burning, local community follows rules as below:

a. **Burning of unirrigated agricultural field must pay attention to the following:**
   - Whether the field location is close by other garden or field
   - Whether the surrounding forest is fire-sensitive
• Whether the forest's soil contains coal or other fire-sensitive matter.
• When is appropriate time to do the burning.

b. Adat laws in preventing forest and land fire are as follow:
• To report and inform the time of field clearing by burning traditional leader, village head, RT, and other villages.
• To inform the owner of nearby fields/gardens the date and hour of burning activity for any support they can give.
• To inform relatives and neighbors for any assistance they can give.
• To prepare fire-break partition surrounding the field with minimal width of 2 (two) meters.
• To prepare traditional fire-suppression tools such as: fire beater, reservoir, machete, sprayer, burning tool, etc.
• Burning activities must be continually watched until the fire is out.
• To start burning after the entire preparation is ready (tools, manpower, land condition).

2. Examples of Adat Law Practiced by Local Community in Unirrigated Field Burning.

a. Adat law of Sei Barang Village:
Adat law in Sei Barang Village has been existing for a long time and still practiced until now. For instance the rules on the conduct of burning in the road side, taboo forest (graveyard) and field that is not ready to be burned due to fruit-bearing trees planted around the village or along the roadside to field direction. If a fruit-bearing tree is removed or burned, the sanction is 1 (one) machete of everyday use. The same applies for taboo forest and old/new graveyard, that can be punished by fulfilling a compensation of 1 (one) cow for a ritual. Custom and tradition exist for a long time is when somebody disturb a graveyard, something bad will happen to the village. They believe that graveyard is another world and dead people inhibit this world.
Field that having burned not in proper time will cause material loss, burning result will be insufficient, mostly ended with quarrels. However, the quarrel can be settled in kindred spirit and if can not be settled by both parties they can go to their traditional leader. The custom essentially requires goods compensated by machete (machete for machete) and compensation for any loss in field, including the hut will depend on the field owner.

a. Adat law in Kutai community
Proper timing by calculating several factors must be conducted before start the land clearing by burning (for example when there is not too much wind or wind blows hard). In addition, there are also preceding steps like preparing tools to be used at the burning, let neighbors and relative know and request for their help in the process of burning and to watch the fire. The RT/village head also have to be informed and request for their assistance. Before setting the fire, vegetation surrounding field edge is slashed at 2 meters width or more as fire partition. When fire lit up, all family members will stand nearby partition by carrying their fire extinguishing tools (to watch the fire from the spot considered to be more fire-sensitive). Fire will be watched until the burning is finished and the fire is out, this is to ensure that the fire will not spread to other field/garden.

3. Violation and Sanction
Sanction for those causing forest fire is normally given in the form of fine, which amount is defined by adat institution
Table 01. Violation and Sanction on Cause of Forest and Land Fire

<table>
<thead>
<tr>
<th>No.</th>
<th>Violation</th>
<th>Sanction</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Intentional cause that burn other field/garden</td>
<td>Paying of compensation at the amount equivalent to the worth of burned field/garden</td>
<td>Considered intentional cause when:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Intentionally burn other field/garden</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Conducting field clearing by burning without informing other village member.</td>
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<tr>
<td>2.</td>
<td>Unintentional cause that burn other field/garden</td>
<td>Paying of compensation at negotiated amount</td>
<td>Considered unintentional cause when already informed other village members and nearby field owners but the fire still spread anyway.</td>
</tr>
<tr>
<td>3.</td>
<td>Conducting field burning beside agreed time</td>
<td>Sanction will be decided by adat institution</td>
<td>When burning is carried out beside agreed time, only few people involved in controlling fire.</td>
</tr>
<tr>
<td>4.</td>
<td>Unintentional burning of other field's hut</td>
<td>Compensation will be decided upon negotiation</td>
<td>During field burning, the fire uncontrollably spread to nearby field and burn the hut.</td>
</tr>
</tbody>
</table>

Examples of sanction for fire user burning other field/hut according to traditional law:

1) - Durian trees of A died as the cause of burning activity of B, B must be replaced by durian tree equivalent to number of dead durian trees.
   - Rattan of A died as caused by the fire of B, B must replace it with the same species of rattan by counting the number of cluster.
   - If the fire user does not have any durian tree or rattan to replace the damage, he can pay in the form of money by amount as being considered by the local RT/Kades in consideration of violating other law.
   - If the fire user do not have capacity to the decided amount, a negotiation will be carried out to determine the more suitable fine, for example: the fire user can give a hand in helping B in his unirrigated agricultural field.
2) When all requirements have been fulfilled by fire user but there is still fire accident in other forest/field/garden that causing physical loss, the fire user will be given minimum sanction/fine because he has fulfill adat requirement as stated above and being considered as unintentional aspect.

3) Sanction for fire user that conduct burning outside the agreed time schedule and causing fire to other field/garden, he will be given punishment as defined by adat institution.

4) When the burning causing other field's hut to burn, fire user will compensate the loss after negotiation and consideration based on unintentional conduct.

4. Traditional law inheritance system

Local knowledge in managing the nature as reflected in various adat law is passed on to next generation orally, through stories told by elder people and the process of imitating custom practiced by their ancestor, since adat law has not been written and arranged in systematic way.

Since there is no written law, it is difficult for outsider to study the adat of local community. Besides, minimum socialization of adat law to the outsider frequently causing awareness upon adat law itself as relatively vague.

5. The Scope of Adat Law.

Currently exist adat law up that is still obeyed by local community can be categorized into three aspects:

(1) First : adat law that arranges relationship between human and the Creator.

(2) Second: adat law that regulates the relationship between human beings.

(3) Third : adat law that defines the relationship between human being and the nature.

Adat law generally ignored by outsiders, since they are not systematically recorded in writing and receives insubstantial recognition from the government.
B. GOVERNMENT REGULATIONS

Law enforcement can give significant contribution to fire prevention effort. Regulation can give lesson to any civilian on preventive steps and punishment to those violate it. All segments of society must be acquainted with any regulation issued regarding forest fire. There are various means to socialize the regulation, whether through radio, television, newspaper, announcement posters, etc. Every law enforcer must be given appropriate training to make them have proper knowledge on the work they carried-out. Anonim (2000) mentioned that there are several regulations relating to forest and land fire in Indonesia, which are:

1. Book of Criminal Law
2. Regulation No. 5, 1990 on Conservation of Natural Biological Resource and The Ecosystem.
5. Regulation No. 22, 1999 regarding Decentralization

Implementing regulations on forest and land fire are:

1. Local Government Regulation of East Kalimantan Province No. 07, 1992 regarding Prevention and Suppression of Forest Fire
2. Decree of Director General of Forest Protection and Nature Conservation (PHPA) No. 81/Kpts/DJ-VI/1995 as continuation of Decree of the Minister of Forestry Number 188/Kpts-II/1995 and Decree of Minister of Environment No. 188/Kpts-II/1995 concerning Regional Center of Forest and Land Fire Control (PUSDALKARHUTLADA)
3. East Kalimantan Governor Decree No. 19/1995 concerning Establishment of Center of Forest and Land Fire Control for East Kalimantan Region.
5. Decree of Director General of PHPA No. 48/Kpts/Dj-VI/97 concerning Forest Fire Suppression Command System.

6. Decree of East Kalimantan Governor No. 660/SK.266/1998 regarding Formation of Coordination Team for Forest and Land Fire Control.


Adat Law on Forest and Land Fire

A. Definition of Adat Law

Rules made by traditional community that contain or regulate social relationship within the concerned community

Example of adat law in field clearing by burning

1. When conduct burning must give attention to:
   a. Position to other field
   b. Condition relating to fire-sensitivity
   c. Time

2. Prevention acts for forest and land fire
   a. Informing traditional leader, village head, RT and adjoining field owners
   b. Request help from family members or close neighbor
   c. Prepare fire partition
   d. Prepare fire suppressing tools
   e. Always anticipate uncontrollable fire
   f. Start fire only after preparation is completed

B. Sanction

Sanction for those causing forest and land fire usually in the form of paying fine, which amount is decided by adat institution by considering:

- Background of fire cause
- Extent of financial loss
LAW CONCERNING FOREST AND LAND FIRE

1. Book of Criminal Law

2. Regulation No. 5/1990 concerning Conservation of Natural Biological Resource and The Ecosystem

3. Regulation No. 5/1994 on Ratification of United Nation's Convention on Biodiversity

4. Regulation No. 22/1999 on Environmental Management

5. Regulation No. 22/1999 on Autonomous Region

6. Forestry Law No. 41/1999
IMPLEMENTING REGULATIONS ON FOREST FIRE

- Local Government Regulation of East Kalimantan Province No. 07/1992 regarding Forest Fire Prevention and Suppression


- East Kalimantan Governor Decree No. 19/1995 on Establishment of East Kalimantan Center for Forest and Land Fire Control (PUSDALKARHUTILADA).


- Director General of PHPA Decree No. 48/Kpts/Dj-VI/97 regarding Forest Fire Suppression Command System.

- East Kalimantan Governor Decree No. 660/SK.266/1998 concerning Establishment of Coordination Team for Forest and Land Fire Management.

The next stage was presenting material on forest and land fire prevention. As a start, facilitator described definition of prevention and the objective. The description is essential to make participants understood why this stage is necessary. The first stage of learning is description on scope and essential steps in prevention. Next, a systematic presentation on organizational and institutional issues, map of fire-sensitive area, fire suppressing tools and controlled burning.

**General Purpose**

1. To increase participants the awareness and knowledge on steps required in the effort of preventing forest and land fire.
2. To verify the need to set-up organization or institution specified for forest and land fire management.
3. To strengthen the objective of local Early Warning System together with other standard procedures in preventing forest and land fire.
4. To verify the need of fire-sensitive map, fire suppression tools and other infrastructure to prevent forest and land fire.
5. To increase participants knowledge and capability on secure and controlled burning in land clearing.

**Session Division**

Session 3.1. Forest and land fire prevention.
Session 3.2. Organizational and Institutional Aspects
Session 3.3. Early Warning System (SPD) and Standard Procedure (Protap).
Session 3.4. Map of fire-sensitive area
Session 3.5. Fire suppression tools
Session 3.6 Controlled burning
Session 03.1  The Scope of Forest and Land Fire Prevention

A. Aim

1. To make participants understand definition and objective of forest and land fire prevention;
2. To make participants capable of identifying necessary actions to be conducted in order of preventing forest and land fire.

B. Topic of Discussion

1. Definition, meaning and objective of forest and land fire prevention.
2. Efforts and activities in forest and land fire prevention.

C. Methods

1. Lecturing;
2. Brainstorming;

D. Equipment, Material and Media

1. Worksheet.
   * 2 (two) pieces of transparencies (Tr.03.1/1 - Tr.03.1/2)
     1. Tr.03.1/1: Definition of forest and land fire prevention.
     2. Tr.03.1/2: Prevention efforts.
2. References
   * Scope of forest and land fire prevention.
3. Equipment and Material
   a. OHP;
   b. Plano papers;
   c. Flipchart;
   c. Colored marker;
   d. Self-adhesive tape;
   f. Metaplan.
E. Participants

- 20 - 30 (twenty - thirty) participants

F. Time

- 45 (forty five) minutes

G. Facilitation Process

<table>
<thead>
<tr>
<th>No.</th>
<th>Stages</th>
<th>Method</th>
<th>Equipment, Material and Worksheet</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Facilitator started class by saying greeting to participants (either Good Morning or Good Afternoon).</td>
<td>Oral description</td>
<td></td>
<td>5 (five) minutes</td>
</tr>
<tr>
<td>2.</td>
<td>Brief description of class topic.</td>
<td>Oral description</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Asked participants: “To the best of your knowledge, what is the meaning of prevention?” Participants wrote the answer on metaplan.</td>
<td>D, f</td>
<td></td>
<td>5 (five) minutes</td>
</tr>
<tr>
<td>4.</td>
<td>Facilitator collected all answers and make conclusion. Next, facilitator described definition, meaning and objective of prevention</td>
<td>Oral description</td>
<td>Participant's worksheet Tr.03.1/1, Tr.03.1/2,a</td>
<td>15 (fifteen minutes)</td>
</tr>
<tr>
<td>5.</td>
<td>Facilitator again asked a question: “According to your experience, what are action required to prevent forest and land fire?”</td>
<td>Short presentation</td>
<td>Tr. 02. 2/1 a.</td>
<td>5 (five) minutes</td>
</tr>
<tr>
<td>6.</td>
<td>Brainstorming among participants on forest and land fire prevention. Facilitator wrote down their answers in the piano charts.</td>
<td>Brainstorming</td>
<td>b, c, d, e.</td>
<td>5 (five) minutes</td>
</tr>
<tr>
<td>7.</td>
<td>Facilitator compiled all answers and explained essential points on forest and land fire prevention.</td>
<td>Oral questions</td>
<td>Tr.03.1/3, a.</td>
<td>10 (ten) minutes</td>
</tr>
<tr>
<td>8.</td>
<td>Facilitator gave opportunity to participants by asking question: “Are there more opinions?”</td>
<td></td>
<td></td>
<td>5 (five) minutes</td>
</tr>
<tr>
<td>No.</td>
<td>Stages</td>
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<td>Time</td>
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</tr>
<tr>
<td>9.</td>
<td>If participants have more opinions or ideas, facilitator will write those down on the piano chart.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Facilitator concluded the whole session process and closed the class by greetings. Facilitator requested participants to give their applause.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOTES:

* If the session is conducted at daytime, facilitator can give the class light game, e.g. movement and song singing (please refer to attachment).
READING MATERIAL

THE SCOPE OF FOREST AND LAND FIRE PREVENTION

Awareness on prevention act can be created after the impact of forest and land fire on community’s live is experienced by them.

The best method of lowering forest and land fire incidence is by taking the prevention act, since big fire is difficult to control and takes a lot of financial effort.

According to Boer (1996) there are several steps can be conducted to prevent forest and land fire, which are:

1). Conducting of public edification and public information gatherings for forest community and forest workers.
2). Minimizing of fire use at home gardens or preventing possibilities of creating fire sources, particularly during long dry season.
3). Creating of civil law for prevention and criminal laws that applies the right punishment to those violating the law.
4). Forest fire waste can be minimized by increasing use of tropical wood.
5). Include the parts of forest fire risks and forest fire management in every forestry planning, both for primary and plantation forests.
6). To set-up integrated fire management involving the stakeholders that works consistently.
7). Use of advanced communication equipment to control fire.
8). Establishment of forest fire suppression team in every forest area by involving concessionaires and providing of related training.
9). Availability of fire suppression tool and material in proper quantity.
10). Designing of research projects with purpose of identifying fire danger rating.

Anonim (1998), in his report stated that following activities must be carried out in preventing of forest and land fires. Those activities are:
1). Land use systems in following the defined allocation.
2). Promotion of cultivated plants for plantation and wood producing system that are not sensitive to fire.
3). Clear definition of land ownership, particularly those relating with tenurial forest and local community.
4). Prevention of massive ecological change by making restriction or prohibition of forest conversion;
5). Promotion of community enrichment program that provides information on climate and forest fire impacts.
6). Development of Land Clearing Without Burning (PLTB) technique together with prohibition during the long dry season.
7). Law enforcement system for those violating regulations on prevention and management of forest and land fire (PPKHL).
8) Development of information system on forest fire cause and method of minimizing the risk.
9). Promoting of commercial incentive system for forest preservation efforts and disincentive for those causing fire and disturbing the environment.
PREVENTION ACT/EFFORT:

1. Clear definition of land allocation and boundary
2. Proper land use
3. Restriction on big-scale land conversion
4. Systematic technique and planting pattern
5. Strengthening and improvement of human resource and local institution
6. Campaign and edification program
7. National and local law enforcement on fire
8. Promotion of information system and early warning system
9. Providing of incentive and appreciation
10. Establishment of organization and the supporting tools.

In the effort of forest and land fire prevention at village level, several activities can be performed by community based on their local knowledge, such as:

1. **Activate adat law**

   Existing adat law relating to forest management, specifically forest fire can be activated with adjustment to current condition and situation, and this law can be socialized to outsider, including forest concessionaire.

2. **Setting up of organization on fire management**

   Organization on fire management among the community is very important since they live nearby the forest. This step can be done through strengthening of any institution already exist or establishing of a new organization.

3. **Availability of fire suppressing tools**

   Fire suppressing tool in prevention and suppressing effort is a vital element. Availability of tools as well as the good condition of the tools are necessary in setting-up fire management organization.
4. Coordination planning

It will be possible for local community to design coordination planning with neighboring village, concessionaire or local government office to anticipate fire incidence.

5. Traditional practice of adat law

Traditional knowledge and technology in community-based forest management will be best to pass-on to the next generation. If passed-on, the precious local knowledge that has been practiced for hundredth of years will not disappear and instead, can be revived by younger generations, or even, by outsider.
Definition of Prevention

An effort/act conducted to control any unwanted incident
Forest and Land Fire Prevention Efforts

- Clear definition of land allocation and boundary
- Proper land use
- Restriction on big scale land conversion
- Systematic technique and planting pattern
- Strengthening and improvement of human resource and local institution
- Campaign and edification program
- National and local law enforcement relating to forest fire
- Development of information system and early warning system
- Providing of incentives and appreciation
- Establishment of fire management organization together with the supporting tools
Session 03.2 Institutional Framework and Capacity Development

A. Aim
1. To make participants capable of identifying methods of organizing in forest fire respective to given condition and situation;
2. To provide information to participants regarding organizational/institutional structure of fire management at local and provincial levels together with the function and the task.

B. Topic of Discussion
1. Definition of organization and institution
2. Organization/institution on forest and land fire management
3. Job and function of organization/institution on forest and land fire management

C. Methods
1. Lecturing;
2. Group discussion and presentation;
3. Brainstorming;

D. Equipment, Material and Media
1. Worksheet.
   * 3 (three) transparent sheets (Tr.03.2/1 - Tr.03.1/3)
   1. Tr.03.2/1: Definition of Organization
   2. Tr.03.2/2: PKHL Organization Structure Chart
   3. Tr.03.2/3: Job and Function of PHKL Organization
2. References
   * Organization and institution in forest and land fire prevention and management.
3. Equipment and Material
   a. OHP;
   b. Plano papers;
c. Flipchart;
d. Colored marker;
e. Self-adhesive tape;
f. Metaplan.

E. Participants
- 20 - 30 (twenty-thirty) participants

F. Time
- 45 (forty five) minutes

G. Facilitation Process

<table>
<thead>
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<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Facilitator opened the class by greetings (either Good Morning or Good Afternoon)</td>
<td>Oral description</td>
<td></td>
<td>5 (five) minutes</td>
</tr>
<tr>
<td>2.</td>
<td>Brief description of class topic</td>
<td>Oral description</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Started the brainstorming by asking participants: &quot;What is your definition on organization and institution?&quot;</td>
<td>Oral Questions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Participants then given time to answer the question and write it down on plano paper. After all answers were written, facilitator read it one by one.</td>
<td>Brainstorming b, c, d, &amp; e</td>
<td></td>
<td>10 (ten) minutes</td>
</tr>
<tr>
<td>5.</td>
<td>Facilitator compared the answers with class material's definition.</td>
<td>Oral description</td>
<td>Tr. 03.2/1, a</td>
<td>10 (ten) minutes</td>
</tr>
<tr>
<td>6.</td>
<td>Facilitator separated participants into several groups to discuss existing institution in their village. Example on how the task to be completed was distributed to each group.</td>
<td>Appropriate games for the groups</td>
<td>Group assignments</td>
<td>30 (thirty) minutes</td>
</tr>
<tr>
<td>No.</td>
<td>Stages</td>
<td>Method</td>
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<tr>
<td>7.</td>
<td>Each group conduct discussion for an answer. Facilitator provided his/her assistance to each group as required.</td>
<td>Group discussion</td>
<td>b, c, d, e.</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Facilitator checked participant by asking: &quot;Is there any group that have been complete the task?&quot; Facilitator also reminded participants that they had five minutes more to complete the task.</td>
<td>Oral question</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Facilitator requested each group to appoint their spoke person and afterwards, present their work result. Participant is allowed to take their turn in giving response/opinion regarding other group's presentation.</td>
<td>Group presentation</td>
<td></td>
<td>20 (twenty) minutes</td>
</tr>
<tr>
<td>10.</td>
<td>Facilitator compiled and concluded presentation discussion, and gave brief and systematic description regarding the function of specific institution to manage forest and land fire at local level.</td>
<td>Short explanation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Facilitator described a sample of PHKL organization structure chart together with job and function of PHKL organization</td>
<td>Oral description</td>
<td>Tr. 03.02/2 Tr.03.02/3, a.</td>
<td>10 (ten) minutes</td>
</tr>
<tr>
<td>12.</td>
<td>Participants were given time to place their question when facilitator said: &quot;Please forward your question if there is any!&quot;</td>
<td>Oral question</td>
<td></td>
<td>5 (five) minutes</td>
</tr>
<tr>
<td>13.</td>
<td>Facilitator concluded the whole session and closed it by saying greetings. Participants were requested to give their applause.</td>
<td>Oral description</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
- Forming of groups can be done through playing of a game (please refer to attachment). Other method, participants count up to 5, and the next person starts counting the number from 1 and continued the other participants until number 5, and so on. Participants with same number will be join together and form a group.
1. ORGANISATION

A. DEFINITION OF ORGANISATION

The word "Organisation" originates from the Greek expression organon and the Latin expression organum which means tool, part, member, or body (Manullang, M. 1996).

James D., Mooney concluded that organisation is a form of human association to reach a common goal, while Chester K. Barnard interpreted organisation as a system of collaborative activity conducted by two or more people.

Without defining what an organisation is, several authors forwarded three characteristics of an organisation, i.e.

a. Existence of a group of people
b. Interrelation occurred in harmonious collaboration, and
c. Collaboration is based on right, duties, and responsibility of each person to reach his/her goal

From the above explanations, it could be concluded that an organisation can be defined as follows:

a. Organisation in the sense of a body, is a group of people who work together to attain one or several objectives.
b. Organisation in the sense of a structure, is a schematic description of relations, collaborative work of people in order of reaching a defined objective.

B. FORMAL ORGANISATION AND INFORMAL ORGANISATION

Static organisation, or commonly called organisation chart or ranji organisation or organisation scheme, is a schematic representation of collaborative relation and people within a body in order of obtaining a
certain goal. In this connection, we know a dynamic organisation, where each activity is relating to the effort to design organisation scheme, make department and assign authority, duty and responsibility of each person within the body. In other words, dynamic organisation is no other than activities to organise or to apply organisational structure of a body.

Formal organisation actually a static organisation, a collaborative system performed by two or more persons, coordinated by awareness to reach a certain goal.

Informal organisation is a collection of relations between individuals with no conscience of certain goal, although eventually these unconscious relations lead to common goal.

In formal organisation, each element has clear/distinct position of duties and functions, while in informal organisation the position and functions seem to be indistinct.

C. MODEL OF ORGANISATION

According to work relation pattern and inter-authority-responsibility, organisations can be categorised into:

a. Line organisation
b. Functional organisation
c. Line and staff organisation
d. Functional and staff organisation

1. Line Organisation Model

Line organisation is the oldest and simplest model of organisation. The characteristics of line organisation: small number of employee, close relationship and work division is not complicate. 

_Strengths:_

1) Command unit is secured with only one person to practice it.
2) Decision making process requires little time by limited number of person to be consulted.
3) In general, solidarity sense is high because employees know each other.

Weaknesses:
1) The whole elements of organisation rely on one person so that if he/she is not capable, organisation will face a risk of destruction
2) There is a tendency of autocratic leadership
3) Employees' opportunity to develop themselves is limited.

2. Functional Organisation Model

The model of functional organisation created by F.W. Taylor is where several leaders have no clear subordinates because every leader can give their assignment relating to their function to every subordinate.

Strengths:
1) Division of job is clear.
2) Employee's specialised skill can be utilise and developed at maximum level.
3) Rather large number of expert employment in various fields according to the functions.

Weaknesses:
1) By specialised work, tour of duty will be difficult to conduct.
2) Employees are more concerned with their own fields, thus, difficult to consolidate.

3. Line and Staff Organisation Model

This model of organisation was created by Harrington Emerson, generally adopted by big organisation with vast working area and more complex work division along with high number of employees. In a line and staff organisation, there are one or more staff recruited. A staff is a person with specific skill who provides his/her superior advice and suggestion according to his skill.
Strengths:
1) This model can be adopted by any big organisation, whatever vast is the work and whatever complex is the organisation structure.
2) Wise decision more possible to make by availability of skilled staff.
3) The term "the right man in the right place" could be more easily realised.

Weaknesses:
1) Since employees are not familiar to each other, solidarity can be difficult to expect.
2) By its complicated and complex structure of organisation, Due to the complexity of organizational structure, consolidation sometimes difficult to obtain.

4. Staff and Functional Organisation Model

The model of staff and functional organisation is a combination of functional organisation and line and staff organisation. The strengths and weaknesses of this model is the combination of those two other models.

D. ORGANISATION PRINCIPLES

Below are the principles of an organisation:

1. Clear Definition of Objectives

If we conduct an activity, the objective of the activity should first be clear. Objective is matters, both material and non-material, to be reached or maintained by doing one or more activities.

For an institution, objective will takes role as:
1) A guideline, which directs the organisation's towards its goals.
2) The foundation of its organisation
3) A device that determines type of activities to be conducted
4) A device that determines program, procedure, KISS ME (Coordination, Integration, Simplification, Synchronisation, and Mechanisation)

2. Distribution of Tasks

In an organisation, distribution of tasks is a must, without clear distribution there might be considerable number of overlapping work.

In distributing the tasks there are several basic principles to be used as the guideline:

1) Distribution of work based on region or territory.
2) Distribution of work based on the type of goods will be produced.
3) Distribution of work based on customers to be serviced.
4) Distribution of work based on functions (chain of work).
5) Distribution of work based on time, i.e. morning, afternoon and night (shift).

3. Delegation of Authority

One of the main principles in each organisation is delegation of authority. Power or authority is the privilege of a person to take necessary steps to ensure the tasks and functions could be implemented at maximum level. Authority contains a number of aspects, among others, authority to make decision, to utilise resources, to instruct and set a time limit.

Delegation of authority has a multiple benefits, among others are as follow:

1) The leader can concentrate on main tasks alone
2) Decision made in faster manner by the proper unit.
3) Subordinates initiative and responsibility can be motivated to make them capable of taking necessary action without waiting for instruction.
4) A method to educate or develop subordinates and eventually they will be capable of given greater task and responsibility.

4. **Extent of Authority**

Authority extent is a condition where several persons selected to become a leader's subordinates are guided, supervised and monitored by the leader to make accomplishment in efficient and effective manner.

In selecting a number of suitable subordinates, the leader must give attention to some factors below:

1) A clear description of task, authority, and responsibility of each person in the organisation.
2) Work relationship between subordinates. The more complex the work relationship, the less the number of subordinates and vice-versa.
3) Capability of organisation persons. More capable or more skilled the subordinates, more numbers of subordinates can be controlled by the leader and vice-versa.
4) Pattern of work. When the work pattern of subordinates is not too varied, leader can instruct and monitor more subordinates.
5) Organisation and labour-force stableness. Extensive extent of authority can be gained when the organisation and the labour-force are stable. A small size of authority must be applied when organisation is in unstable situation or in a growing condition where changes often made.
6) Distance and time. If subordinates are far one from another, extent of authority must be more narrow.

5. **Levels of Supervision**

There are various levels of supervision in an organisation as follow:

1) Two or three levels of supervision, usually called flat top organisation,
2) Four levels of supervision, or level structured organisation, and
3) Five levels of supervision, called steep structured organisation
6. Unity of command and responsibility

According to this principle, a subordinate only has one superior from where he/she gets an instruction and to whom he/she reports on the carried task.

7. Coordination

Coordination is an effort to direct the activities of all units within an organisation to give their maximal contribution in reaching the whole goals. With coordination, equality among all units activity in meeting organisation objective can be created.

Coordination may be done with various methods. There are four major procedures to maintain coordination, which are:

1) To hold official meetings participated by organisation elements or units for coordination.

2) To appoint someone, a team or coordinator committee with specific work of coordination activities, e.g. provide information or guidance to its coordinated units.

3) To prepare a manual on description of each unit's duties. The manual is distributed to each unit to be used by them when carrying a task.

4) The manager or superior hold informal meetings with his/her subordinates in the frame to give guidance, consultation and direction.

2. INSTITUTIONAL

A. FIRE SUPPRESSION INSTITUTION

Boer (1996) reported that the fire suppressing organisation is the same with the structure of the army which is based on two principles, i.e. unity of command and span of control.

There are 3 important things which are needed and carried out according to the general function of Fire Suppression Organisation, i.e.:

- Supervision
• Detection
• Fire suppression

While the aim of the establishment of an institution for forest and land fire management according to Anonim (1998a), is among others:
• To increase the capacity of national as well as regional institution.
• To motivate community participation.
• To create a healthier forest and land ecosystem.
• To develop proper prevention and control technology of forest and land fire.
• To conserve the environment and forest and land ecosystem.

The institution has the following tasks and functions:
• To carry out prevention and control activities through awareness, monitoring of areas prone to fire and to operate early warning system.
• To carry out suppressing effort.
• To carry out control of fire impact.
• To carry out fire control in the village and urban areas.
• To carry out SAR in emergency condition during the time of fire.
• To conduct research, reforestation and to develop the science and technology of fire.
• To develop the technology and information.
• To carry out education and training program for the community, Non Government Organizations and other stakeholders.
• To carry out guidance and development of business partnership cooperation in a network with stakeholders.
• To raise funds to cover the operational cost of the institution.

Some duties of the fire boss are as follows:
• To master in overall the knowledge on behaviour of forest fire and influencing factor.
• Accustomed to practical activities in the use of all fire suppressing tools including their application.
• To master the basic knowledge on the techniques and strategy of forest control and able to arrange the time in suppressing activities.
• To be able to organize and determine the aims in difficult condition and create self-confidence to his staff (subordinates).
• To be able to plan security and welfare of the group under his leadership in each time.
• To receive and treat or allow an authority considered needed (Boer, 1996).

Every employee/staff member should have one superior. The staff member should know to whom he/she has to report and also the superior should know who should report to him/her.

A superior should have many subordinates, equipment and work unit under his control/supervision. One effective leader/superior has 5 – 10 subordinates under his supervision.

B. INSTITUTIONAL BODIES OF A VILLAGE

In the traditional local community in East Kalimantan generally two institutional bodies are known, i.e. formal and non formal institution with each having different authority. Formal institution which covers the institutional structure of village administration consisting of village head and his staff as well as the structure of the institution under his supervision such as sub village head, head of neighborhood association (RT) and other organisations.

Non formal institution is an "adat" (custom) institution of a village which generally consists of two, i.e. Small Adat Institution which has an authority in small scope such as one village or a certain ethnical group and Large Adat Institution which has an authority on some villages or ethnical groups.

1) Institutional Body of Fire Suppression Department At Village Level

To further stabilize and optimize the implementation in the field, it is necessary to establish an organisation or task force in every village
mainly in villages prone to forest and land fire. Both the newly established organisation and the already existing ones should motivate the implementation. Community organisation and group such as active farmers group of a village is a sufficient potential source to develop the participation of the community to tackle forest and land fire. There is also a need to develop and upgrade the knowledge and basic skills of the community.

2) Membership
Prior to the direct election of membership of an organisation by the community at village level, simple requirement and criteria should be determined such as voluntary member and a member should be physically in good health.

The leadership of the organisation appointed and agreed upon by the members structurally as well as functionally such as: chairman, secretary, treasurer, and coordinators in the field. Hence, there is a need to formulate the job descriptions in detail. All the requirements to become a member and board member of the organisation could be formulated simply.

3) Organisation management
Management is meant to maximize the determined objectives which have been decided previously by other people. Management is often termed as how to manipulate a certain situation to reach a certain aim which has been determined previously.

4) Facilities and equipment
Support in kind of equipment or facilities is also needed, in order to optimize the implementation of the task.

5) Finance
Finance to support the finance and administration is constantly needed in an organisation. The source of funding could be
discussed by the board and members of the organisation, whether it is possible that the contribution of the board and members, or trying to get support from other parties who are interested in the objectives and performance of the organisation.

6) Administration and reporting

In an organisation, it is suggested not to ignore administrative order to keep implementation process of administration is carried out by a secretary assisted by other officers.

Set of administrative stationary that should be possessed by fire suppressing organisation such as membership book, note book on meetings/activities, book on inventory of equipment, note book on agreed regulations, note book on finance, etc.

At certain periods meetings are held to report the activities and financial matters of the organisation to the members and community. This is meant as a form of open management and at the same time to evaluate on what has been done and what will be done.

7) Coordination System

To carry out its activities mainly at conditions prone to fire, the organisation for the prevention of forest and land fire at village level coordinates with related parties at village and inter-village level, and the local government of the surrounding village as well as with the sub district. This coordination could involve the condition at each environment and formulation of strategy supposed to be implemented.

8) Development of Institutional Body

In the frame to support the performance of the institution or organisation, human resource development need to be done, mainly knowledge and skill of the community in relation to the prevention of forest and land fire. Human Resource development could be done through trainings supported by outside parties such as non-government organisations, etc.
Organisation Interpretation

A form of every united group of human beings
to achieve together the same goal.
(James D., Mooney)  

A system of working together activities to be
carried out by two or more persons.
(Chester I. Barnard)
Organisation Structure Chart of FLFP

1

Supervisor

Advisor

Chairman

Member

Secretary

Field Operation Sector

Facility & Equipment Sector

Communication & Mass Mobilization Sector

Logistic Sector

2

Supervisor & Guardian

Advisor

Commander of the Forest and Land Fire Duty Group

Operational Section

Planning Section

Logistic Section

Administration Section
Organisational Duty and Function of FLFP

- Carrying out the activities of fire prevention and coping with the problems through awareness activities on monitoring the crucial area and try to implement fire suppressing.

- Carrying out fire suppressing.

- Conducting the effort of fire impact management.

- Conducting the effort of fire management at villages/cities

- Carrying out the duty of SAR (Search and Rescue) in emergency condition during the fire accident

- Conducting research, implementing reforestation, developing science and technology in the field of forest fire.

- Developing technology and information.

- Conducting education and training program for the community, NGO and stake holders.

- Fund raising for the operational cost of the institution
SUBJECT MATTER 03. FOREST AND LAND FIRE PREVENTION

Session 03.3. Early Warning System and Established Procedure

A. Purposes.

1. Participant should be able to identify the nature phenomena of forest fire in accordance to the condition and situation of the participant's environment.
2. Participant should be able to identify the necessary component and resource in developing Early Warning System (SPD=Sistem Peringatan Dini).
3. Participant should be able to identify the kind, way and established procedure in preventing and controlling forest and land fire.

B. Discussions.

1. Understanding the purpose of Early Warning System (SPD).
2. Supporting component and local resource in Early Warning System (SPD), system and information resource in Early Warning System (SPD).
3. Established procedure (Protap = prosedur tetap) in preventing and controlling forest and land fire.

C. Methods.

1. Lecture
2. Brainstorming
3. Group discussion

D. Equipment, Material and Media.

1. Work sheets.
   - 5(five) transparency sheets (Tr.03.3/1 – Tr.03.3/5)
     1. Tr.03.3/1: Understanding and Purpose SPD.
     2. Tr.03.3/2: Supporting Component SPD.
     3. Tr.03.3/3: Local Component in SPD.
     4. Tr.03.3/4: Information System in SPD.
     5. Tr.03.3/5: Established Procedure in PKHL(Forest and Land Fire Prevention).
2. References.
   • Communication and report in preventing and controlling forest and land fire.

3. Equipment and Material.
   a. OHP
   b. Plano paper
   c. Felt tip marker
   d. Flipchart
   e. Adhesive tape

E. Participant.
   • 20 -30 (twenty – thirty) participants

F. Time duration.
   • 90'(ninety minutes).

G. Facilitation Process

<table>
<thead>
<tr>
<th>No.</th>
<th>Stages</th>
<th>Method</th>
<th>Equipment, Subject Material and Worksheet</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Facilitator will start to welcome all participants with greetings or good morning/afternoon.</td>
<td>Oral description</td>
<td></td>
<td>5'</td>
</tr>
<tr>
<td>2.</td>
<td>Explain in short and clear about the discussion topic at this session.</td>
<td>Oral description</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Facilitator will ask the participants: &quot;According to you, what does Early Warning System= Sistem Peringatan Dini(SPD) mean?&quot;</td>
<td>Oral question</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Participants will give their opinions orally, and facilitator will directly summarize their answers on a piece of plano paper and conclude the understanding of SPD, aim and purpose.</td>
<td>Opinion from the floor and lecture</td>
<td>a, b, c, d, e</td>
<td>Tr. 03. 3/1</td>
</tr>
<tr>
<td>5.</td>
<td>Facilitator will separate participants into groups based on their origins (village, remote village, RT, RW etc.). Next, facilitator will explain their duty and what must be done: &quot;Write down as much as possible the signs, phenomena of the nature or any hunch that are familiar or known by the participants as the approaching of long dry monsoon?&quot;</td>
<td>Oral description</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Facilitator will distribute plano papers and stationary to each group and let them start their discussion at any site they chose and like.</td>
<td>Group discussion</td>
<td>b, c, d, e</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Facilitator will remind the time duration needed to finalize their task only last 5 minutes more (during the process the facilitator may observe the discussion process and if possible to guide them).</td>
<td>Oral discussion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>Stages</td>
<td>Method</td>
<td>Equipment, Subject Material and Worksheet</td>
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<td>8.</td>
<td>Facilitator will request each group to select their own speaker as group representative and let each group to present the result of their discussion, while the other groups will response and ask question which is not clear to them.</td>
<td>Group presentation</td>
<td>Discussion results of group d, e</td>
<td>14'</td>
</tr>
<tr>
<td>9.</td>
<td>Facilitator will review the process of this session and conclude the discussion results and presentation of each group.</td>
<td>Oral discussion</td>
<td></td>
<td>5'</td>
</tr>
<tr>
<td>10.</td>
<td>Facilitator will carry on with the presentation on the supporting component and local resources in the Early Warning System=Sistem Peringatan Dini(SPD) and the system and information resource in Sistem Peringatan Dini(SPD).</td>
<td>Oral discussion (lecture)</td>
<td>Tr. 03.3/2 Tr. 03.3/3, a</td>
<td>10'</td>
</tr>
<tr>
<td>11.</td>
<td>Facilitator will ask the participant with a key question &quot;According to your experiences, from where do you obtain the information resource on early warning?&quot;</td>
<td>Oral question</td>
<td></td>
<td></td>
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<tr>
<td>12.</td>
<td>Once again the participants will give their opinions, and the facilitator will write their answers on plain paper.</td>
<td>Opinion from the floor</td>
<td>b, c, d, e</td>
<td>5'</td>
</tr>
<tr>
<td>13.</td>
<td>Facilitator will summarize and conclude the participants' answers and complement accordingly to the experiences and knowledge of the facilitator.</td>
<td>Oral discussion</td>
<td>Tr. 03.3/4, a</td>
<td>5'</td>
</tr>
<tr>
<td>14.</td>
<td>Facilitator will let the participants to ask or to give their opinion when there is something not clear and need clarification.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>Facilitator will carry on with the lecture on the topic established procedure with short explanation on the understanding, aim and target.</td>
<td>Oral discussion (lecture)</td>
<td>Tr. 03.3/5, a</td>
<td>10'</td>
</tr>
<tr>
<td>16.</td>
<td>Facilitator will give again a key question to the participant &quot;According to your experiences and opinions, what actions should be taken when you hear or get information about forest fire&quot; Facilitator will distribute &quot;metaplan&quot; and felt tip marker to each participant.</td>
<td>Oral question</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17.</td>
<td>Participants will give their opinion (brainstorming) written on the &quot;metaplan&quot;</td>
<td>Opinion from the floor</td>
<td>c, f</td>
<td></td>
</tr>
</tbody>
</table>
Facilitator will read the answers from the participants one by one and classify the same/almost the same answers. Later the facilitator will explain theoretically the related things to the established procedure.

Facilitator will again let the participants to ask and clarify. If they don’t have enough time, the facilitator will directly conclude the whole process and close the session with greetings and ask applause from the floor.

Notes:
1. When the session is conducted in the afternoon or evening, the facilitator may insert/make a light game to lighten up the boredom and sleepiness of the participants (as attached on the attachment).
2. If during the conduct there are no facilities such as:
   - OHP, facilitator can read and write the main points on transparency to the piano paper.
   - Flipchart, in this case, the piano paper can be sticked on the whiteboard or on the available walls of the room.
A. UNDERSTANDING AND PURPOSES

Early Warning System (SPD), in the context with forest and land fire disaster is a structure of information management which stresses on the effort to prevent forest and land fire, to lessen the level of loss caused by fire and to inform the negative impact of the disaster and the effort of rehabilitation.

Purposes of Early Warning System (SPD) in the management of forest and land fire are:
1) Establishing information system that can be applicable as an early warning of a fire disaster.
2) Increasing the technical management skill and monitoring early warning of a fire disaster.

B. SUPPORTING COMPONENTS OF SPD

1) Information System
   The system is in connection with the effort of early warning of a fire disaster. Information should be in the form of:
   - Campaign, appeal, suggestion to prevent fire disaster to happen.
   - Information on the negative impact (loss) as a result of fire disaster or
   - Availability of data on the crucial areas to forest fire (a map of crucial areas).

2) Institution
   - The status of the institution in charge should be clear in executing and performing their tasks to manage the information of forest fire disaster. Corporation with other institutions in managing the same information is needed and very important.
   - Institution in the form of a very simple structure up to a modern one has a very important role in achieving successes.
3) Supporting Facility and Infrastructure

In this case the necessary communication tools are used for conveying information to the whole community. According to Anonim (1998 b), various information tools can be used depending on the level of areas and needs such as:

a. **National level**: Facsimile, Internet, Television, Newspaper

b. **Regional/Provincial level**: Facsimile, Telephone, Internet, Local Radio Station, Local Newspaper, etc.

c. **Local level (Region, District and Village)**:
   - Communication Radio
   - Flag can be seen easily at a wide reachable distance
   - Posting warning signs for not burning at remote site far from the human settlement
   - Repeatable warning systems conducted in the religion groups (mosque, church), using vehicles with loudspeaker, etc.

4) Availability of Local Resource in SPD.

The local resources are:

a. **Local level (Region, District and Village)**:
   - Availability of the village location map which illustrating the whole area with details covering: settlement area, agriculture land, river, farm land, forest, etc.
   - Line of conveying fire information for example, should be from a resident to the prominent leader of the community, then to the village leader, to the head of the traditional tribe or to the administrative staff of the village.
   - Tools to be used to convey information, for example kentongan, gong or the use of certain symbols.

b. **Institutional**
   - Village institution was appointed and entrusted by the community in the information management and follow up actions.
• Strengthen the role and capability of the institution in disseminating related information with the early warning to prevent fire disaster.
• Institutional relationships among the local and other institutions are having the same role and function in Early Warning System.

C. LOCAL COMPONENTS INVOLED IN SPD

1. Government Institution and Village Staff.
   • Have the role to move the community in the effort of information management of early warning system.
   • Have the broad vision on the problem of disaster prevention and management.
   • Need a reinforcement of capability in the techniques of disaster prevention and management.
   • Institutionally at the local level, LKMD (= Village social defence group) and LMD (= Village social activities group) are able to act as an umbrella to develop village cadre.

2. Traditional Institution.
   • Have the role to give the information on disaster prevention and management by utilizing the resources of traditional knowledge to the government and other sides.
   • Written documentation of the traditional knowledge on forest fire prevention and management should be done.
   • Have the ability to disseminate the important information on early warning, either through a traditional tribal meeting or on a printed media.
   • Need a solid acknowledgement from the government on the existing of the traditional institution.

3. Prominent Figures of the Community and Religion
   • Act as a resource person to convey information to the community.
• Bridge the community, private sector and government in developing Early Warning System (SPD).
• Have a broad knowledge on fire prevention and management and dare to convey important matters related to early warning information.

4. Community and Youth Organisations
• Act as information distributor to community.
• Disseminate information and prepare the supporting facility in developing early warning system.
• Have a broad knowledge on fire prevention and management and dare to convey important matters related to early warning information to the members.

E. INFORMATION SYSTEM IN EARLY WARNING SYSTEM.

Each problem on the early information needed in the prevention and management of disaster is ideally can be coped through effective and applicable information techniques. Community members have basic information knowledge on early warning of the disaster. This information originated from the prominent figure of the community, village staff or institution at the village level. The information covers:

1. Condition of the village area covers the settlement area, farm land, agriculture area, river etc.
2. Simple ways to detect or to observe potential signs that appear for prevention actions. Signs can be in the form of a long period of drought, changes of plants condition or changes of animal behaviour before the fire disaster.
3. Line of information on the prevention and management of fire disaster in general covers: Member of the community as the source of the first information carrier who knows the best of the situational condition of the area.

Early Waning System (SPD) by IFFM/GTZ has been developed in the form of a Fire Danger Rating System (Drought Index) which is based on climate data.
such as maximum temperature and daily rain fall to estimate fire danger. Fire Danger Rating System / FDRS showed the possibility of fuel burning for various climate conditions. This system is meant to evaluate fire danger easily without requiring much funds and technical skill, and could easily be adapted to the environmental condition of Kalimantan.

The data needed to implement FDRS are data on rain fall and temperature from as many possible locations which are very important for the latest Fire Danger Rating System and accessible to the last data. For instance for the dry season, data on drought index is calculated at least twice a week to prepare an accurate estimation to know the possibility of fire occurrence and counted starting the early period of the dry season.

In traditional local community, actually the Early Warning System has been known through the symptoms and signs of the nature. Moreover, in some local communities such as Dayak ethnic group for instance the early warning system could be a myth, feeling and also a dream (see box). Symptoms and signs of nature which occurred in their environment is used as a parameter to forecast the possible natural phenomenon in the future mainly in connection with forest and land fire.

An example of symptoms and natural signs of the coming of the long dry season/drought at some ethnic groups in East Kalimantan:

1. Symptoms and Natural Signs
   - Banggris tree (Madu tree) bloom and bear fruits (Dayak Tunjung, Basap, Kenyah, Kayan, Bahau, Punan ethnic groups)
   - Occurrence of flying dragon flies (siluk) (Dayak Tunjung)
   - Wild boars cross the river (Dayak Tunjung, Basap, Kenyah ethnic groups)
   - No earthworms come out (Kutai ethnic group)
   - Ulur-ulur roots creep to the river (Paser ethnic group)
   - Movement of misty clouds and wind from east to west and it is cold at night (Dayak Kenyah, Kayan, Bahau, Punan ethnic groups)
   - Morning mist is very thick (Java, Pedut, Sesak, Aun-aun, Kutai, Rudut ethnic groups)
• Moving of the sun rather to the north and occurrence of a certain star at 90° (Java, Lukubidu, Kutai/Benuaq/Tunjung, belantik ethnic groups) which is very clear at night (Bugis, Java, Kutai ethnic groups)

• Moon is surrounded by a circle like bracelets (Java, Kutai ethnic groups)

2. Myth, dream and feeling

• Peacocks sing at night (Dayak Kenyah, Kayan, Bahau, Punan ethnic groups)

• Eagles fly highly and beat around the bush (Dayak Basap ethnic groups)

• Movement of animals (bats) in a great number from the forest to the lake area (Kutai ethnic group)

• Starting the first day of the month of the Muslim Year (1 Muharam) up to the end of the month these is no rain/flood (Bugis ethnic group)

• Fishes (Salap, Palau) assemble and jump in ebb tide (Berau ethnic group)

• Tater birds in a lively group at sunset while singing (tet...ter.....) (Berau ethnic group)

• Kangkapou birds do not sing for 1 month and go from the village to look for another place (Bugis ethnic group)

• Ulur-ulur roots creep to the river (Paser ethnic group)

• Dreaming

• Carry on dried fish to the village (if using a small boat, the dry season is moderate, while using a big boat means the dry season is severe) (Berau ethnic group)

• Many dragonflies fly at daytime and night (Dayak Kenyah, Kayan, Bahauy, Punan ethnic groups)

• Many fishes go up and down at the coral stone/at the river edge and throw away eggs (Dayak Kenyah, Kayan, Bahau, Punan ethnic groups)

• Crocodiles appear at the water surface and lay their eggs on the land (Dayak Kenyah, Kayan, Bahau, Punan ethnic groups)

• Mushroom/fungus grow abundantly at the coral stones of the river (Dayak Kenyah, Kayan, Bahau, Punan ethnic groups)
Understanding of Early Warning System (SPD)
The structure of information management which stresses on the effort to prevent forest and land fire, to minimize the degree of losses due to fire and also to give information on the negative impact of the already occurring disaster as well as its rehabilitation.

Aim of Early Warning System (SPD)
1. Compiled information system which could be implemented as an early warning of a disaster.
2. Improving the technical skill of management and monitoring in early warning of a disaster.
Supporting Components of Early Warning System

- **Information System**
  ✓ Campaign and suggestion
  ✓ Information on negative impact
  ✓ Map on fire danger

- **Institutional Organisation**
  ✓ Existence of institutional organisation
  ✓ Clarity of the institution which is assigned to manage the information and to take follow up actions

- **Supporting infrastructure and facilities**
  ✓ National
  ✓ Regional (Province)
  ✓ Local (Regency, District and Village)

- **Availability of Local Resources**
  ✓ Information
    ★ Availability of map on the village location
    ★ Availability of flow on information delivery
    ★ Availability of facilities for information delivery
  ✓ Institutional organisation
    ★ Appointed and reliable institution
    ★ Strengthening the role and ability of an institution
    ★ Good relationship among institutions
Local Components In Early Warning System

1. Government Institution and Village Staff
   - Have a role in motivating the community
   - Have a broad knowledge
   - Need to strengthen the ability
   - Village institution: Village Social Defense Group, Village Social Activity Group, etc.

2. Traditional Institution
   - Have a role in giving information
   - Documentation of traditional knowledge
   - Able to disseminate important information
   - Recognized by the government

3. Prominent Figures of the Community and the Religion
   - As a source and information disseminator
   - Act as a bridge for the community, private and government sector
   - Have a broad understanding

4. Community and Youth Organisations
   - Information disseminator for the community
   - Disseminate information and prepare supporting facilities
   - Have a broad understanding
Information System In Early Warning System

1. Condition of village area: settlement, unirrigated agricultural field, river, etc.

2. To observe the signs which might occur and have a potential to do prevention: drought which has been going on for a long time, plant condition, change in animal behavior.

3. Flow of information delivery on prevention and disaster control.

4. Members of the community as a source who convey first-hand information with a good knowledge of the local condition.
Fixed Procedure In PKHL

1. Information Input
   - Forest Fire

2. Preparation of Extinguishing Team

3. Preparation for Departure

4. Size - UP

5. Determination of Extinguishing Strategy

6. Fire Extinguishing

7. Evaluation of Extinguishing Strategy

8. Mop - UP

9. Reporting
Session 03.4. Map on Forest Danger

A. Objective

1. The participants know and understand the aim, goal and function of the preparation of map on forest danger.
2. The participants could identify important matters which should be accommodated in the map on forest danger and able to implement directly in a map sketch.
3. The participants know and practice the need steps in preparing the map on fire danger.

B. Topic of Discussion

1. Map Interpretation
2. Function and the Use of Map
3. Steps In Making Maps

C. Method

1. Lecture/Discussion
2. Brain storming

D. Tool, Material and Media

1. Work sheet
   - 3 (three) pieces of transparency
     1. Tr.03.4/1: Interpretation of Map on Forest Danger
     2. Tr.03.4/2: Function and the Use of Map on Forest Danger
     3. Tr.03.4/3: Steps in Making Map on Forest Fire
2. References
   - Map on Fire Danger
3. Tool and material
   a. OHP
   b. Plano paper
   c. Flipchart
   d. Velt tip marker
e. Self-adhesive tape  
f. Metaplan  

E. Participants  
- 20 - 30 (twenty - thirty) people  

F. Time  
120' (one hundred and twenty minutes)  

G. Facilitation Process  

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<tr>
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<td>1.</td>
<td>Facilitator will start to welcome all participants with greetings or good morning/afternoon.</td>
<td>Oral description</td>
<td></td>
<td>5'</td>
</tr>
<tr>
<td>2.</td>
<td>Explain in short and clear about the discussion topic at this session.</td>
<td>Oral description</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Facilitator will show an example of a map to the participants and ask them: &quot;According to you, what kind of picture I'm holding?&quot; (Facilitator is showing a map).</td>
<td>Demonstration</td>
<td>An example of a map</td>
<td>5'</td>
</tr>
<tr>
<td>4.</td>
<td>Facilitator will ask again to the participants: &quot;If it is a map, what do you know about map?&quot;</td>
<td>Oral question</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Facilitator will distribute metaplan paper and felt tip marker to each participant and let them answer the questions written on the metaplan paper.</td>
<td>Written opinion from the floor</td>
<td>d, f</td>
<td>5'</td>
</tr>
<tr>
<td>6.</td>
<td>Facilitator will directly collect the metaplan answers from the participants and read them one by one, then the almost the same answers were grouped and being stuck on the flipchart.</td>
<td>Oral discussion</td>
<td>c, e</td>
<td>10'</td>
</tr>
<tr>
<td>7.</td>
<td>Facilitator will summarize all the answers from the participants and explain shortly and clear the understanding, aim and the use of map especially the map of fire danger area.</td>
<td>Oral discussion</td>
<td>Tr.03.4/1/ Tr.03.4/2</td>
<td>10'</td>
</tr>
<tr>
<td>No.</td>
<td>Stages</td>
<td>Method</td>
<td>Equipment, Subject Material and Worksheet</td>
<td>Time</td>
</tr>
<tr>
<td>-----</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>8.</td>
<td>Facilitator will show an example of forest fire danger map to the participants, and explaining to them that they are going to make a fire danger map in this session.</td>
<td>Demonstration and oral discussion</td>
<td>An example of a fire danger map</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Facilitator will separate participants into groups based on their origins (village, remote village, RT, RW etc.). Next, facilitator will distribute plano paper and stationary to participants and let them choose the location they like and start to draw the map in group.</td>
<td>Grouping the participants and making a map together participatively</td>
<td>b, d</td>
<td>30'</td>
</tr>
<tr>
<td>10.</td>
<td>Facilitator will remind the time duration needed to finalize their task is only last 5 minutes more (during the process the facilitator may observe the making of the map by the group and if possible to note down important matters).</td>
<td>Oral discussion and observation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Facilitator will request each group to select their own speaker as group representative and let each group to present the result of their map sketches, each group in turn.</td>
<td>Group presentation</td>
<td>Map of the participative group, c, e</td>
<td>30'</td>
</tr>
<tr>
<td>12.</td>
<td>Facilitator will give a short review on the process of this session and ask the participants: “According to your experience just now, what is the main obstacle you are facing in drawing a fire danger map?”</td>
<td>Oral discussion and oral question</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>Each group will give their opinion, and facilitator will write down their points on plano paper</td>
<td>Opinion from the floor</td>
<td>b, c, d</td>
<td>15'</td>
</tr>
<tr>
<td>14.</td>
<td>Facilitator will summarize and conclude the participants’ answers and note down some additional points based on the observation of the facilitator during the process.</td>
<td>Oral discussion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>Facilitator will carry on with the explanation of steps to be taken before and after the making of fire danger map theoretically.</td>
<td>Oral discussion (lecture)</td>
<td>Tr.03.4/3</td>
<td>5'</td>
</tr>
</tbody>
</table>
Facilitator will ask whether there is any question or other matters to be asked about. If there is none and time allocation is limited, the facilitator will directly conclude the whole process and close the session with greetings and ask applause from the floor.

Notes:

1. In separating the groups, participants originated from one area (village, remote village, Rukun Warga=a group of several RTand Rukun Tetargga=Neighborhood association) or very heterogeneous, grouping can be done based on gender (male, female), group of age (old, young) original area of the people (local people, new comer) etc. Each group should be guided by a facilitator or co-facilitator for guidance and help in understanding the lecture.

2. When the session is conducted in the afternoon or evening, the facilitator may insert/make a light game to lighten up the boredom and sleepiness of the participants (as attached on the attachment).
A. INTERPRETATION AND OBJECTIVE

Fire susceptibility map is a picture showing the condition or situation of a region which is susceptible to fire, so that it facilitates in anticipating the occurrence of forest and land fire.

Establishing of fire susceptibility map can be a tool to prevent forest and land fire. Identification of an area susceptible to fire is aimed to know the areas susceptible to fire in a region by direct observation at the field. From observation, it can be seen the fuel availability and human activities at the area.

Map establishing should involve community and village fire brigade to keep the accuracy of the map. This map should be evaluated frequently by considering the changes occurred and being adhered at a place where people together (balai desa, pos ronda, etc.).

B. FUNCTION AND BENEFIT

According to Anonim (1998b), the function and benefit of fire susceptibility map as follows:

1. To show area or region and distribution of the area susceptible to fire, so that the community can be careful.
2. As a tool or reference for community in arranging the prevention and controlling plan of forest and land fire.
3. As a media showing the natural resources potency and it relationship with the fire danger level, fire risk, and fire history.

The kinds of map including to fire susceptibility map:

Fire danger map is based on weather data, vegetation stress level analysed using Geographical Information System (GIS). This map is used together with fire risk map to produce susceptibility map.
Fire risk map is map of human socio-culture interaction on their environment. Fire history map is used to evaluate the effectivity of fire suppression, establishing risk map, and further fire danger map, and test of system model which will be developed as well as for history records.

C. STEPS IN MAKING MAP

According to Anonim (2000 a), to make a fire danger forest and land map, several steps are needed such as:

1. Explain the aim and process of mapping.

2. Discuss the kind of resources available in the village, for example the garden, agricultural land, river etc. Afterward, important things and symbols that should be agreed upon to be described and drawn on the map.

3. Make a map.
   - Important places should be in details.

4. Make a legend.

5. Discussing:
   - Areas that are oftenly suffered from fire in the past.
   - Fire danger area at this moment from the view points of fuel stock and is the area being passed by many inhabitants.
   - Water resource location, guard post and other resources that can be utilized for fire suppressing.
   - Necessary effort to prevent fire or being done at the location.

6. Take complete note of the arising information.

7. Note the attendance of facilitator, participant and date.

Medium to be used for making the map can be drafted on the ground using stone, pebble, grass etc. as symbols that will be later drawn on paper, or the making of map can be directly drawn on a piece of paper.
Interpretation
of Fire Danger Map

Conditional and situational description of the fire danger or easily burn area to anticipate forest and land fire occurrence
Function and Usage
of Fire Danger Map

1. Pointing out the area or district and the fire danger area distribution so that the community can be warned and alert.
2. As tools or references for the community in planning forest and land fire control and prevention.
3. As media in showing the fire danger, fire risks and fire history.
Steps in Preparing
a Fire Danger Map

1. Explain the aim and process of mapping.
2. Discuss the kind of village resources, for example garden, agricultural land, rivers etc.
3. Make the map
   - Details of important places
4. Make the legend
5. Discuss
   - Areas were frequently on fire in the past
   - Areas are at the moment in the status of fire danger, from the points of view of fuel stock and is the area being passed by many community inhabitants
   - Water resource location, guard post and other resources that can be utilized for fire extinguishing
   - Necessary effort to prevent the fire or being done at the location
6. Take complete note of the arising information
7. Note down the attendance of facilitator, participant and date
Session 03.5. Fire Equipment

A. Aim
1. Participants must know the kind of common tools being used to prevent and manage forest and land fire.
2. Participants will recognize, make and practice the use of traditional tools to prevent forest and land fire.
3. Participants can identify the supply need and tools maintenance.

B. Topic of Discussion
1. Kind of Tools;
2. Supplies and Tools Maintenance;
4. Semi Mechanical Tools;
5. Mechanical Tools;
6. Traditional Tools.

C. Method
1. Brainstorming
2. Demonstration

D. Tools, Material and Media
1. Worksheet.
   - 6(six) pieces of transparancy (Tr.03.5/1 – Tr.03.5/6)
     1. Tr.03.5/1 : Supplies and tools maintenance.
     2. Tr.03.5/2 : Kinds of manual tools
     3. Tr.03.5/3 : Kinds of semi mechanical and mechanical tools
     4. Tr.03.5/4 : Safety tools
     5. Tr.03.5/5 : Traditional suppression tools to put out forest and land fire
     6. Tr.03.5/6 : Adequacy or inadequacy of the traditional tools

2. References
   - Tools in forest and land fire prevention and management
3. Tools and material  
   a. OHP  
   b. Metaplan  
   c. Velt tip marker  
   d. Self adhesive tape  

E. Participant  
   • 20 – 30 (twenty – thirty) participants.  

F. Time.  
   • 90' (ninety minutes)  

G. Facilitation Process

<table>
<thead>
<tr>
<th>No.</th>
<th>Stages</th>
<th>Method</th>
<th>Equipment, Subject Material and Worksheet</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Facilitator will start to welcome all participants with greetings or good morning/afternoon.</td>
<td>Oral description</td>
<td></td>
<td>5'</td>
</tr>
<tr>
<td>2.</td>
<td>Explain in short and clear about the discussion topic at this session.(Aim and objective)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Facilitator will ask the participants: &quot;What kind of fire tools do you know to be used in preventing forest and land fire?&quot; Facilitator will distribute metaplan.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Participants will give their opinion writtenly on metaplan</td>
<td>Written opinion</td>
<td>b, c, d</td>
<td>10'</td>
</tr>
<tr>
<td>5.</td>
<td>Facilitator will collect the participants' answers, read and classify each answer.</td>
<td></td>
<td></td>
<td>5'</td>
</tr>
<tr>
<td>6.</td>
<td>Facilitator will compare the answers of the participants to the explanation of the facilitator on the kind of tools, needed supply and maintenance.(to know the example of tools at each group unit, help can be asked from the participants, tools example of each group unit : &quot; what do you know about the tools example for your group?&quot;)</td>
<td>Oral discussion</td>
<td>Tr.02.5/1 Tr.02.5/2 a</td>
<td>15'</td>
</tr>
<tr>
<td>No.</td>
<td>Stages</td>
<td>Method</td>
<td>Equipment &amp; Subject Material and Worksheet</td>
<td>Time</td>
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<tr>
<td>7.</td>
<td>Facilitator will stress to the participants that at this session, the topic to be discussed will be specifically on the traditional fire suppression known by the participants.</td>
<td>Oral discussion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Facilitator will demonstrate or present to the participants the manual, semi mechanical and mechanical traditional fire suppression. (if possible to show them the way how to use these tools.)</td>
<td>Demonstration and oral discussion (lecture)</td>
<td>Tr.03.5/3, Tr.03.5/4, Tr.03.5/5, Tr.03.5/6, a</td>
<td>40'</td>
</tr>
<tr>
<td>9.</td>
<td>Facilitator will give the participants the chance to ask: &quot;Is there any question or unclear matter to be asked? Please do.&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>If there is a question, facilitator will let the participant to convey the question as short as possible, facilitator will then go on with the presentation on the adequacy/inadequacy of the traditional tools.</td>
<td></td>
<td>Tr.03.5/7, a</td>
<td>10'</td>
</tr>
<tr>
<td>11.</td>
<td>Facilitator will again request the participants to ask the unclear matters.</td>
<td></td>
<td></td>
<td>5'</td>
</tr>
<tr>
<td>12.</td>
<td>Facilitator will summarize on the whole process of this session and and close the session with greetings and ask the audience to applause</td>
<td>Oral discussion</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
- If possible or available, all traditional fire suppression tools (semi mechanical tools) should be ready to be used for demonstration and explanation during the lecture by the facilitator.
- If there is time, participants are requested to try and demonstrate the use of these tools.
A. Equipment and Its Use

Equipment supply could be made available through self-supporting by the community and or supported by the government, private organisation or other institutions concerned with forest fire.

After the equipments are available, hence maintenance is needed. Some matters that should be conducted in maintaining the equipment are as follows:

- Preparing a special place for equipments, so that it will not mix with other equipments;
- To check the condition of the equipment periodically;
- Not using the equipment for other activities;
- Making note to inventorize the equipment.

According to Ismunandar (1999) hand equipment could be used for the following activities:

1. Making of tongue of flame
2. Cleaning and pioneering
3. Digging, clearing and preparing aditch
4. Reburning
5. Cleaning left-over flame (MOP - UP)

Some considerations in the supply of manual equipments could be used for the following activities:

1. Effectiveness
2. Efficiency and productivity
3. Various use
4. Easy to carry
5. Durability
6. Maintenance and replacement
7. Standardization
The use of manual equipment is as follows:

1. To cut trees, round stems and shrubs
2. To clear grass and other vegetations
3. To dig half-buried fuel or buried in the earth
4. To remove easily burnt shrubs
5. To suppress fire directly, by beating, water spraying or piling with earth, etc.

Manual equipment could be grouped into 2 (two):

1. Cutter
   a. Machete, to pioneer and cut small trees
   b. Axe, to cut, to knock down tree stump, logs and break down heavy fuel and to cut roots.
   c. Shrub hooker, cleaning the dense shrubs
   d. Two-functionase (*pulasky*), to dig soil and to cut deep root, to prepare fire divider/fire tongue

2. Cleaning tool
   a. Shovel, to dig, to beat, to throw away, to scratch in preparing fire tongue, to cut and for face cover.
   b. MC leod to prepare fire tongue and mop-up by cutting small shrubs, to clear and to scratch.
   c. Fire rake to prepare ember and mop-up to scratch leaves.

Other supporting tools

1. Swatter, to suppress fire by covering the fire.
2. Back pack pump, to suppress jumping fire.
3. Fusee, to reburn.
4. Drip torch, to reburn.
5. File, for maintenance of manual tools

Kind of mechanical/semi-mechanical equipments among others:
1. **Semi-mechanic**
   1. Chain saw, to fall down or cut tree stem.
   2. Portable pump, to suck or spray water.
   3. Grass mower, to cut grass or shrubs.

2. **Mechanic**
   1. Bulldozer, to prepare fire break
   2. Watertank car for water supply at spraying.
   3. Helicopter, to carry staff and to bomb fire.
   4. Bomber plane, to suppress fire by bombing with water and chemicals.

Safety equipment for staff are as follows:

1. Shoes to be used during work time, preferably with shinbone and toe protectors.
2. Gloves to protect the hand so it will not become chafed.
3. Fire proof custom, to protect heat or fire transfer.
4. Helm, to protect the head from soft collision/falling of wigs.
5. Mask, to protect mouth from smoke and dust.
6. Spectacles, to protect the eyes from smoke and dust.
7. Head flashlight, to lighten during work at night.
8. Fire tent, to protect from trapping by fire cycle or smoke in emergency condition.
9. Handbag or small backpack, to carry foodstuff/drinks.
10. Radio, to maintain communication.
11. Head cover made from cotton, will save from fire wound in the ear and neck.
12. Equipments and medicines for rescuing (P3K).

Individual equipment for fire suppression crew at international level (ASEAN) with the following standard:

- Individual protection equipment (helm, uniform, boots, gloves).
- Manual durable tools, simple and effective (intended for preparing fire tongue).
• Backpack pump.
• Machine pump, fire hose including appropriate equipment.
• Unit slip on and adaptable vehicle with tank (small track).

B. Traditional Equipment

In general for the supply of traditional forest and land fire suppression equipment is not always a constraint, because as already explained before, a great part of the equipment is available and used daily. However, it would be better if there is special preparation to anticipate emergency situation.

Some traditional equipment which could be used in prevention and control activities of forest and land fire are as follows:

1. Chopping knife
2. Ax/pickax
3. Crowbar
4. Scraper
5. Hook
6. Fire beater
7. Watertank reserve
8. Container for water reserve
9. Fire stone/matches
10. Torch
11. Toy gun
12. Water container

The use of traditional equipment in prevention and control activities of forest and land fire has some benefits and shortenings.

The benefit of using traditional equipment is as follows:

1. Easy to get/available, because a great part of the equipment is used in unirrigated agricultural field activities.
2. Easy to carry.
3. Materials for making the equipment are available in almost all places.

While the shortenings are:
1. The equipment could be easily damaged.
2. The result is not optimal to prevent fire in a great scale.

Based on its function the traditional equipment could be used for the following activities:
1. Clearing in making fire divider
2. To mow the grass/pioneering shrubs
3. Cleaning of fire break
4. Pry up/to dig roots
5. To make fire/reburning
6. To suppress fire directly
7. Clearing of fire left-over
8. Reburning
SUPPLY AND MAINTENANCE OF EQUIPMENT

SUPPLY
Supply of equipment could be done self-supportingly by the community and or supported by the government, self-support or other institution concerned with forest fire.

MAINTENANCE
Matters that should be carried out in maintaining the equipment:
   a. Provision of a special place for equipment.
   b. To check the condition of the equipment periodically/differently.
   c. Not using the equipment for other activities.
   d. Noting the inventory for equipment.
KIND OF MANUAL EQUIPMENT

1. Cutting tool
   • Chopping knife
   • Ax
   • Shrub hook
   • Two-sided ax (*pulasky*)

2. Clearing tool
   • Shovel
   • MC leod
   • Fire rake

3. Other supporting tools
   • Swatter
   • Backpack pump
   • Fusee
   • Drip torch
   • File
KIND OF SEMI-MECHANIC AND MECHANIC EQUIPMENT

SEMI-MECHANIC EQUIPMENT

- Chainsaw ⇒ to fall down and or to cut wood stem
- Portable pump ⇒ to suck or spray water
- Grass mower ⇒ to cut grass and shrubs

MECHANIC EQUIPMENT

- Bulldozer ⇒ to make fire divider
- Tank car ⇒ to supply water for spraying
- Helicopter ⇒ to carry on staff and to bomb fire
- Bomber ⇒ to suppress fire by bombing with water and chemicals
SAFETY OUTFIT

- Shoes
- Gloves
- Fire proof uniform
- Helm
- Mask
- Spectacles
- Head lamp
- Fire tent
- Bag or small backpack
- Radio
TRADITIONAL EQUIPMENT FOR FOREST AND LAND FIRE

- Chopping knife
- Ax/Pickax
- Crowbar
- Scraper
- Hook
- Fire beater
- Reserve water tank
- Bamboo rifle
- Drink water container
BENEFITS AND SHORT COMMINGS OF TRADITIONAL EQUIPMENT

BENEFITS

• Easy to get materials
• Easy to carry
• Generally, already available, because a great part of the equipments are used in cultivation

SHORT COMMINGS

• Equipments are easily damaged
• The result is less optimal to control fire in a large scale
SUBJECT MATTER 03. FOREST AND LAND FIRE PREVENTION

Session 03.6. Prescribed Burning

A. Aim.
1. Participants will recognize, make and practice the technique of controlled/prescribed burning.
2. Participants will able to identify the steps of safe land clearing and prescribed land burning.
3. Participants will know various kinds of fire divider.

B. Topic of Discussion
1. Interpretation of Prescribed Burning.
2. Steps of Land Clearing by the Traditional Community.

C. Method
1. Lecture.
2. Brainstorming.
3. Group discussion.

D. Tools, Material and Media
1. Worksheet
   - 3(three) pieces of transparancy (Tr. 03.6/1 – Tr.03.6/30)
     1. Tr.03.6/1: Interpretation of Prescribed Burning
     2. Tr.03.6/2: Steps of Land Burning
     3. Tr.03.6/3: Various Kinds of Fire Divider

2. References
   - Prescribed Burning

3. Tools and material
   a. OHP
   b. Plano paper
d. Velt tip marker

e. Self adhesive tape

f. Metaplan

E. Participants

- 20 - 30 (twenty - thirty) participants.

F. Time

- 120’ (one hundred and twenty minutes)

G. Facilitation Process

<table>
<thead>
<tr>
<th>No.</th>
<th>Stages</th>
<th>Method</th>
<th>Equipment, Subject Material, and Worksheet</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Facilitator will start to welcome all participants with greetings or good morning/afternoon.</td>
<td>Oral description</td>
<td></td>
<td>5’</td>
</tr>
<tr>
<td>2.</td>
<td>Explain in short and clear about the discussion topic at this session (Aim and objective).</td>
<td>Oral description</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Facilitator will ask the participants: &quot;According to your interpretation, what is the meaning of prescribed burning?&quot;</td>
<td>Oral question</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Participants will give their opinion (brainstorming), and the facilitator will write the answers on piano paper.</td>
<td>Brainstorming</td>
<td>b, c, d, e</td>
<td>10’</td>
</tr>
<tr>
<td>5.</td>
<td>Facilitator will summarize the participants’ answers and explain the meaning of prescribed burning.</td>
<td>Oral description</td>
<td>Tr. 03.6/1, a</td>
<td>10’</td>
</tr>
<tr>
<td>6.</td>
<td>Facilitator will separate participants into groups based on their origins (village, remote village, RT, RW etc.). Facilitator will give them assignments such as: • &quot;What kind of important matters to be taken care with when the clearing and burning of land take place (safety and control) • &quot;What kind of steps are taken in your place, tribe, village in the land clearing and burning activities?&quot;(illustrating with examples).</td>
<td>Oral description, grouping of participants</td>
<td>Written questions</td>
<td>10’</td>
</tr>
<tr>
<td>No.</td>
<td>Stages</td>
<td>Method</td>
<td>Equipment, Subject Material and Worksheet</td>
<td>Time</td>
</tr>
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<tr>
<td>7.</td>
<td>Facilitator will distribute piano paper and velt tip marker to each group and let each group to start discussion at any place they chose</td>
<td>Group discussion</td>
<td>b, c, d, e,</td>
<td>35'</td>
</tr>
<tr>
<td>8.</td>
<td>Facilitator will remind the participants that the time to finish their tasks is left about 5 minutes. (during the process, facilitator will observe their discussion and if possible to guide them)</td>
<td>Oral description, observation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Facilitator will ask each group to pick up their own representative and presenting their discussion results. Other groups will comment and ask questions they don't understand.</td>
<td>Group presentation and group discussion</td>
<td></td>
<td>30'</td>
</tr>
<tr>
<td>10.</td>
<td>Facilitator will give a short review of the process of this session and explain the related matters to the theoretical steps of land cultivation.</td>
<td>Oral discussion</td>
<td></td>
<td>10'</td>
</tr>
<tr>
<td>11.</td>
<td>Facilitator will go on with the presentation of Fire Divider and ask the participants using key question such as: &quot;What do you know about Fire Divider?&quot;</td>
<td>Oral discussion and question</td>
<td></td>
<td>5'</td>
</tr>
<tr>
<td>12.</td>
<td>Participants will give their opinions and the facilitator will write down the points on piano paper</td>
<td>Brain storming</td>
<td>b, c, d, e</td>
<td>5'</td>
</tr>
<tr>
<td>13.</td>
<td>Facilitator will summarize and conclude the participants' answers and complement with notes based on the observation of the facilitator.</td>
<td>Oral description</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>Facilitator will go on explaining theoretically the kinds of fire divider.</td>
<td>Oral discussion (lecture)</td>
<td>Tr.03.6/3, a</td>
<td>5'</td>
</tr>
<tr>
<td>15.</td>
<td>Facilitator will ask whether there is any question or other matters to be asked about. If there is non and time allocation is limited, the facilitator will directly conclude the whole process and close the session with greetings and ask applauses from the floor.</td>
<td>Oral discussion and question</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
1. When the session is conducted in the afternoon or evening, the facilitator may insert/make a light game to lighten up the boredom and sleepiness of the participants (as attached on the attachment).
2. Grouping can be done by doing games.
3. If during the conduct of training there are no facilities such as:
   - OHP, facilitator can read and write down the main points of the subject matter on transparency to the piano paper.
   - Flipchart, in this case, the piano paper can be sticked on the whiteboard or on the available walls of the room.
A. Interpretation and Aim

Prescribed Burning is the use of controlled fire on forest fuel resource at a certain modified environment condition so that the fire can be controlled at a certain determined area while at the same time can produce the necessary heat for certain aim.

The use of fire on the unirrigated agricultural field cultivation, specifically the burning steps/ways of the traditional community in East Kalimantan is very common and they have been practising this method since the time of their ancestor. In the burning system, the traditional burning practice is carried out according to their traditional way that they believed in, to anticipate the spread of uncontrolled forest fire that will endanger the environment.

At the traditional communities, there are various terms being used to express the activity according to the local ethnic group/language. Maram Apui (Dayak Kayan), Merepm Apui (Dayak Kenyah), etc. Basically the meaning is the effort to control and prevent the spread of uncontrolled fire at the burning of agricultural field in preparation of land cultivation.

The aim of prescribed burning is to recuce fuel; thus the burning intensity and fire spread can be controlled/stressed down.

The aims of agricultural land burning at the traditional community are: 1) to convert the cut/slash down plants become ashes which will function as fertilizer for the new planting, 2) to clear the obstacles that will disturb the planting work, 3) to kill the remaining of big trees/plants which are not able to be cut down during the land clearing since they are too big.

To obtain good prescribed burning, some important elements should be noticed (Hadriyanto, 1999):

1. Wind, including wind velocity and good direction at the average of 4 – 15 km/hour.
2. Relative Humidity (RH), at the average of 20 - 50%.
3. Temperature, best at 5 - 15° C.
4. Rainfall.
5. Airmass stability, the atmospheric retention against the vertical movement caused by fire will press the air upward by the existing fire heat.

B. Burning Techniques

a. The burning techniques are:

1. **Head Fire.**
   This burning is supported by the wind velocity that will effectively obtain the fast and minimum burning (usually to be used for burning alang-alang and shrub).

2. **Back Fire.**
   This burning usually produces the slow movement of burning since it is done against the wind direction or to the direction of downward and cycling a slope.

3. **Strip - head.**
   This burning is the most effective way to prepare a kind of fire line at the end point of burning to avoid the spread of fire to other areas, the burning should be started at the other opposite point.

4. **Spot - head fire.**
   This burning is almost the same as strip – head burning except the starting of fire line is individual but still on the straight line. Each individual fire line may meet but it will not accumulate and cause high temperature.

5. **Flank fire.**
   This burning is the combination of head fire and backfire at the different intensity. Supported by the wind blow from the backside and the total burning against the wind, the burning will be forming a letter V depending on the relative fastness of the people working on the burning.
6. *Center (ring) fire.*

This burning will obtain a high intensity of fire, fast and also very fast vertical exhausting smoke.

**b. Burning process**

Three steps of burning process are:

1. **Heating Step.**
   To start with the heat absorption by using fuel up to the evaporation condition, heighten the heat/temperature up to the burning point.

2. **Air Burning Step.**
   In this step, fuel is divided into two substances: gas - charcoal. At the time of gas distillation process is on, the burning reaction and oxidation is also started.

3. **Charcoal Burning Step.**
   At this step, the existing of carbon(charcoal) burning came out as the result of step 2.

**c. Fire Ignition (Heat movement)**

1. **Convection**
   The movement of heat as the result of the heated substance (molecule). In forest fire, convection is a process of heated air and smokes and particles that flow vertically from the burning area upward to the air.

2. **Radiation**
   The movement of heat from the heated substance in the form of electromagnetic wave through a space(without medium) to other substance.

3. **Conduction**
   Heat movement through molecule of a substance to another near by molecule.
   The spread influence of conduction heat on forest fire is very small, because wood (forest) is a good heat conductor.
d. Factors influence the Character of Fire

Apart from human activity factors, natural factors are also influencing the fire character (forest and land fire). There are three main factors:

1. Weather, including wind, temperature, rain and relative moisture
2. Topography, including slope, aspect and description of field
3. Flammable resource, including water content, density, type, volume and potential

e. Fire Extreme Character influenced by three factors:

1. Availability of abundant dry burning material
2. Sudden change of wind direction in high velocity (unstable atmosphere)
3. Steppe topography, fire will move according to the field condition and will spread very fast upward to the top.

f. Fire Resource

1. Land clearing
   Agrobusinessman and small-scale farmer use to clear the land using a cheap and fast system, by burning the biomass or left over burning of the land to be utilized as fertilizer.

2. Unintentional burning
   Caused by the thrown away still lighting cigarette bud and the burning of trash, or the left over of the uncontrolled burning of land clearing that spread in a wide range

3. Intentional burning
   Intentionally burning others' land because of revenge, anger or to obtain land right without paying the debt.

C. Unirrigated Agricultural Land Burning

To obtain reasonable good results of land burning, activities to be carried out such as:

1. Community gathering
Gathering of the land owners to discuss:

- Burning should be carried out together
- Determine the date of burning
- Prepare and make fire divider
- Supply tools for watching the fire
- Man power

2. Clearing/Cutting

To cut down the grass, shrub and root of big trees which are considered to disturb the agricultural farming. Tools to be used are machetes, hookers, axes. This activity is usually started at the early farming season by the month of June. With good result of clearing/cutting, no more wet and fresh grass left on the field, thus the burning will go on in good condition.

3. Felling

At the time of felling, there are matters should be considered such as:

- Make sure that the felled down trees are spread evenly, so that these trees can be chopped rapidly
- Arrange the felled down trees will occupy the space with less wood thus the burning will scattered evenly
- Observe the direction of the felled down tree, when it is slanted to the outside of the land, the tree should stay outside
- On steepy land, trees should be felled down from the bottom of the slope with the tree direction downward
- On plain area, the felling can be stared from the place with lots of woods so that these woods can dry up faster

4. Chopping

The chopping activities are being done at the same time of the felling, after the trees are being felled down in the morning, they will be chopped directly in the afternoon. This will not let the branches and twigs to be dried out and can be easily chopped. After the chopping, branches will dried out rapidly and the process of burning will go on smoothly.
5. Prepare/make Fire Divider
For single farm land, fire divider will be made to surround the farm. While for a group of farms fire divider is made at the edge of the most outer side of the farm which is at the border of the forest or garden or farm that is not prepared for burning. Fire divider is made with the width of 3 – 5 meter. At the time of burning, fire divider is taken care of by 5 – 10 peoples.

6. Cleaning Fire Divider
The ready made fire divider is still to be cleaned up from left over litter and trees' root to avoid fire spread. Besides that, approximately 2 meter outside the fire divider should also to be cleaned up from litter and understorey plants to avoid fire spark, which will cause burning.

7. Burning
Attention should be made to the following matters at the first burning:
- Inform the owners of the neighbouring farms to be alert and watch out their farms
- Prepare the watching tools at the farm location
- Observe the wind direction, when the condition is safe the burning should be done according to the same direction of the wind. In contrary when the condition is not good, the burning should be done against the wind direction
- The best time for burning is at noon (12.00 hour), to accelerate the burning process

8. Reburning
Left over woods will be collected and piled up in some small piles, then burn again. At the second burning, wind direction is not too important. The aim of this second burning is to clean up the excess of the first burning.

9. Cleaning the Left Over Burning
Cleaning is carried out after the burning is finished by collecting the left over of burning which has the potency of burning. Before leaving the site, make sure there is no more fire or amber is still burning.
Prescribed Burning

Utilization of prescribed burning on a modified forest fuel resource condition at a certain environmental condition will limit the burning at the localized area and at the same time will obtain necessary heat for certain aim.
STEPS OF BURNING UNIRRIGATED AGRICULTURAL FIELDS

1. Meeting
2. Pioneering/Clearing
3. Cutting
4. Chopping
5. Making of Fire Divider
6. Clearing of Fire Divider
7. Burning
8. Reburning
9. Cleaning of left-over burning
KINDS OF FIRE DIVIDER

Making of Forest Fire Based On Aims
- Fire breaks
- Fire line

Fire Divider Based On Its Making Process
- Natural Fire Divider
- Artificial Fire Divider

Kind of Fire Divider
- Mechanical Fire Divider
- Chemical Fire Divider
- Fire Divider, Reburning (Burning)
- Vegetative Fire Divider
SUBJECT 4. FOREST AND LAND FIRE CONTROL

After the participants have mastered the subject on prevention and related matters (technically as well as method) in effort of prevention, the facilitator continued the following subject on forest and land fire control. This subject which is directly related with fire suppressing activity is more specific. In the sense of forest fire it really occurred so that the technique, method and the delivered subject could be directly applied to prevent forest and land fire.

General Objective
To clarify the hope and aim of the training in line with the subject to be taught to the participants during the tenure of the training.

Session Grouping
Session 04.1. Fire Triangle
Session 04.2. Work Safety and First Aid in Accident
Session 04.3. Suppressing Technique
Session 04.4. Communication and Reporting
Session 04.1. Fire Triangle

A. Aims
1. The participants could mention three important elements including their components of forest and land fire.
2. The participants could identify factors which influence the size of forest and land fire.

B. Topic of Discussion
1. Interpretation of Fire Triangle
2. Component of Fire Triangle
3. Factors which Influence Fire Size

C. Methods
1. Discussion
2. Demonstration
3. Brainstorming

D. Tools, Material and Media
1. Worksheet
   - 3(three) pieces of transparancy (Tr. 04.1/1 – Tr.04.1/3)
     1. Tr. 04.1/1 : Interpretation of Fire Triangle
     2. Tr. 04.1/2 : Components of Fire Triangle
     3. Tr. 04.1/3 : Steps of Burning

2. References
   - Fire Triangle

3. Tools and material
   a. OHP
   b. Plano paper
   c. Flipchart
   d. Velt tip marker
   e. Self adhesive tape
   f. Metaplan
   g. Candle
E. Participants

- 20 – 30 (twenty – thirty) participants.

F. Time

- 90' (ninety minutes)

G. Facilitation Process

<table>
<thead>
<tr>
<th>No.</th>
<th>Stages</th>
<th>Method</th>
<th>Equipment, Subject Material and Worksheet</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Facilitator will start to welcome all participants with greetings or good morning/afternoon.</td>
<td>Oral description</td>
<td></td>
<td>5'</td>
</tr>
<tr>
<td>2.</td>
<td>Explain in short and clear about the discussion topic at this session (Aim and objective).</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>3.</td>
<td>Facilitator will take a candle and light it on and ask the participants while covering the candle with a transparent glass &quot;If the candle is covered with the glass, what is going to happen and why?&quot;</td>
<td>Oral question and demonstration</td>
<td>h, i, j</td>
<td>10'</td>
</tr>
<tr>
<td>4.</td>
<td>Participants will give their opinion (brainstorming) to answer the question and the facilitator will write the answers on plano paper.</td>
<td>Brainstorming</td>
<td>b, c, d, e</td>
<td>10'</td>
</tr>
<tr>
<td>5.</td>
<td>Facilitator will explain the participants' answers and correlating the meaning of fire triangle with the subject matter of this session on fire control.</td>
<td>Oral description (lecture)</td>
<td>Tr. 04.1/1, a</td>
<td>10'</td>
</tr>
<tr>
<td>6.</td>
<td>Facilitator will distribute metaplan and vell tip marker to the participants and ask them to answer this question : &quot;One of the fire triangle components is fire/heat resource, according to you where is this fire/heat resource originated or come from?&quot; (Answer can be more than one)</td>
<td>Oral description</td>
<td>d, f</td>
<td>5'</td>
</tr>
<tr>
<td>7.</td>
<td>Participants will write down the answers and facilitator will go around to ask whether they are finished.</td>
<td>Brainstorming</td>
<td></td>
<td>5'</td>
</tr>
<tr>
<td>No.</td>
<td>Stages</td>
<td>Method</td>
<td>Equipment, Subject Material and Worksheet</td>
<td>Time</td>
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<tr>
<td>8.</td>
<td>Facilitator will read the answer one by one, and stick the answers on the flipchart by grouping them accordingly to the same or almost the same answer.</td>
<td></td>
<td></td>
<td>15'</td>
</tr>
<tr>
<td>9.</td>
<td>Facilitator will read again the important points of the grouped answers and ask the participants to clarify and compliment the answers.</td>
<td>Oral description</td>
<td>Results/Answers from the participants</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Facilitator will go on to lecture with the subject matter on fire triangle and every details. At the end of lecture facilitator will give the participant the chance to ask: &quot;Is there any question, please ask?&quot;</td>
<td>Oral discussion (lecture)</td>
<td>Tr.04.1/2, a</td>
<td>15'</td>
</tr>
<tr>
<td>11.</td>
<td>If there is additional opinion from the participants, facilitator may ask the participants to compliment by asking: &quot;To your opinion, what factors will influence the fire size or speed and character?&quot;</td>
<td>Oral brain storming</td>
<td></td>
<td>5'</td>
</tr>
<tr>
<td>12.</td>
<td>Participants will give their opinions and the facilitator will write down the important points on the flipchart.</td>
<td>Oral brain storming</td>
<td>b, c, d, e</td>
<td>5'</td>
</tr>
<tr>
<td>13.</td>
<td>Facilitator will summarize and read again the important points of the participants' answers and conclude the main results of the discussion of the session.</td>
<td>Oral description (lecture)</td>
<td>Tr.04.1/3, a</td>
<td>10'</td>
</tr>
<tr>
<td>14.</td>
<td>Facilitator will conclude the whole process of this session and close the program with greetings and ask the audience to applause.</td>
<td>Oral discussion</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
- Facilitation steps using metaplan media (example step 6), when it is not possible (limit of time allocation and the incapability of the participants in writing) oral rainstorming can be carried out and the facilitator will note down on plano paper or another way around (example step 9) from brainstorming can be replaced by metaplan.
READING MATERIAL

FIRE TRIANGLE

There are three things to ignite fire, i.e. fuel, heat, and oxygen or air. The three components are frequently called as the fire triangle (Davis, 1959 in Boer, 1996).

There are 3 (three) main elements in the fire triangle as follows:

- **Heat**
  Heat is source of fire. To burn quite dry rubbish from the forest vegetation, heat around 260 – 400°C is needed for ignition. The heat level to burn something is not the same. It is dependent upon various factors such as the fuel dryness. The ignition process is also dependent upon the duration of time where a material is exposed to the heat. Whether it is easy or not for fuel in ignition process will highly influence the fire behaviour.

- **Oxygen**
  The atmospheric air contains about 21% oxygen which can be used for fire process. If the oxygen content reduces up to 15%, it would be difficult or impossible to burn most of the fuel. If there is a fire while the wind blows hard, the wind will play a role as oxygen supplier in a great amount so to increase combustion. The wind also play a role in directing the flame to a certain direction which can speed up fire distribution.

- **Fuel**
  Fuel is very difficult to be evaluated in the suppressing process. The fuel type will influence the fire intensity, fire speed, and suppressing strategy. On the contrary, the ignition from the forest will be dependant upon the fuel type, fuel continuity, water content of fuel, and fuel temperature.
  The fuel in the forest can consist of humus, leaf fall, root, stem, branch, twig, etc. The heat comes from the climate condition which is extremely changed with long duration sun light radiation and very minimum of rainy days at each month and year. The more forest opening due to logging road establishment will cause more air flow in the forest, so that creating susceptible condition for fire.

Based on its characteristics and distribution, the fuel can be differentiated into some groups as follows:
• **Light fuel**
  Light fuel could be easily burnt such as grass, leaf or rubbish, and young plant. The light fuel usually will be easily burnt and will suppress fastly.

• **Heavy fuel**
  Heavy fuel consists of fallen wood, stump, plant residue which will be difficult to burn and difficult to be suppressed if burning.

• **Smooth fuel**
  It covers the fuel which is distributed continuously at an area. Included in this category is areas having fuel net and related to each other so that there is a path for fire movement.

• **Non smooth fuel**
  It covers the fuel which is distributed non smoothly at an area due to hindrances such as stony mountain, pond/lake, road, river or plant which is difficult to burn.

• **Very dense fuel**
  It covers the vegetation at an area where their distribution is dense so that it is possible for the fire to creep upward through the branch and twig of the plant.

Boer (1996) stated that theoretically the burning process could be explained through some phases as follows:

• **Convection (Flow)**
  It is a heat flow process in a substance followed by mass movement. The air temperature at the forest floor will increase during bottom fire causing reduction in air mass. The air mass difference between the bottom and the top causes mass changes. This causes the occurrence of mass flow which brings heat.

• **Radiation**
  It is a heat movement without medium. The heat in this process is radiated in the form of electromagnetic wave carrying heat (infra red light). The occurrence of heat radiated from the sun into earth surface is a radiation process.
• **Conduction**
  It is a heat flow in a substance without mass movement. The heating at the base of burnt tree stem will increase the heat/temperature of other part of the tree.

The flame in a fire can flare up, come out, and spread fast through the three physical processes. The hard blowing wind will play a big role in spreading heat through convection process, so that the susceptible condition of burning will become more feasible.

The weather factors in a burning which is closely related with the availability of heat and oxygen are as follows:

- **Air temperature**
  The air temperature is dependent upon the intensity of heat/radiation from the sun. The areas with high temperature will cause the fuel drying fast and facilitate the occurrence of fire.

- **Rain fall**
  The areas with high rain fall influence humidity and water content of the fuel. If humidity and water content are high, it would be difficult to burn the fuel.

- **Relative humidity**
  The relative humidity or air humidity in the forest has a great influence on the smoothness of the fuel to dry, it also means to promote the occurrence of fire.

- **Wind**
  The wind is an accelerating factor of fire behaviour. The wind accelerates the drying up of the fuel, increasing oxygen so that the fire flames and spreads fast. In addition, the wind can fly ember which can cause jumping fire and create new fire.

If the three elements of fire triangle are fulfilled, the burning process will run smoothly. According to Hernawan (1999), there are 3 (three) processes of fire as follows:
• Heating phase
  It is started with heat interception by fuel so that the water will evaporate and increase temperature until reaching the burning point.

• Air-burning phase
  At this phase, the fuel is divided into 2 (two) portions, i.e. gas and charcoal. In this process, the burning and oxygen reactions are started during gas distillation process.

• Charcoal-burning phase
  This phase is shown by the occurrence of carbon burning produced from phase two.

According to Nicolas et al. (1999), the fire triangle also showed the method to suppress fire by keeping away from fuel, heat or air. The fuel is kept away by establishing fuel border, the heat is kept away by watering, and the air is kept away by covering with soil.
INTERPRETATION OF FIRE TRIANGLE

Three elements or needs which should be present and completely united prior to the existence of continuous
FIRE TRIANGLE COMPONENTS

THREE IMPORTANT ELEMENTS IN FIRE TRIANGLE

- Heat, which is a source of fire
- Oxygen (O\textsubscript{2})
  
  About 21% O\textsubscript{2} in the atmosphere is a part of fire process.
  
  If the O\textsubscript{2} content decreases to 15%, so a part of the fuel will be difficult to burn.
- Fuel
  
  Could be in the form of humus, litter fall on the forest floor, stem, branch, twig of a tree, etc.
FIRE STEPS

THREE STEPS OF FIRE (Hermawan, 1999)

1. Heating
   It started with the absorption of heat by fuel so that the water evaporate, hence increases temperature up to burning point has been reached.

2. Air burning
   Fuel is divided into 2:
   - Gases
   - Charcoal
   At time of gases distillation the burning and oxidation processes started.

3. Charcoal burning
   It is shown by carbon burning derived from step two.
SUBJECT MATERIAL 04. FOREST AND LAND FIRE CONTROL

Session 04.2. Work Safety and First Aid in Accident (P3K)

A. Aim

1. The participants understand the concept of work safety and steps to ensure work safety.
2. The participants could identify the tools/equipment of work safety.
3. The participants could identify the kind of common accident which generally happen at the time fire suppressing and efforts/take action in first aid in accident.

B. Topic of Discussion

1. Interpretation and aim of work safety.
2. Equipment of work safety and first aid in accident (P3K).
3. Something should need attention to create safety.
4. Interpretation of first aid in accident (P3K).
5. Kinds of accident and actions to be done for first aid in accident (P3K).

C. Methods

1. Discussion (oral description)
2. Demonstration
3. Brainstorming

D. Equipment, Material and Media

1. Worksheet.
   - 6 (six) pieces of transparencies (Tr.04.2/1 – Tr.04.2/6).
     1. Tr.04.2/1: Interpretation, Purpose, and Aim of Work Safety
     2. Tr.04.2/2: Equipment of Work Safety
     3. Tr.04.2/3: Personnel Needed in Activities of Forest and Land Fire
     4. Tr.04.2/4: Something Should Need Attention in Work Safety
     5. Tr.04.2/5: Interpretation of First Aid in Accident (P3K)

2. References
   - Work safety and first aid in accident (P3K).
3. Equipment and Material
   1. OHP
   2. Piano paper
   3. Flipchart
   4. Velt tip marker
   5. Self-adhesive tape
   6. Metaplan
   7. Sample of equipment and material of safety

E. Participants
- 20 – 30 (twenty – thirty) participants

F. Time
   120’ (one hundred and twenty minutes)

G. Facilitation Process.

<table>
<thead>
<tr>
<th>No.</th>
<th>Stages</th>
<th>Method</th>
<th>Equipment, Subject Material and Worksheet</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>The facilitator started with greetings, good morning/afternoon to all the participants.</td>
<td>Oral description</td>
<td></td>
<td>5'</td>
</tr>
<tr>
<td>2.</td>
<td>Explain briefly and clearly on the topic of discussion in this session.</td>
<td>Oral description</td>
<td></td>
<td></td>
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<tr>
<td>3.</td>
<td>The facilitator gives presentation about interpretation and aim of work safety.</td>
<td>Oral description (discussion)</td>
<td>Tr.04.2/1, a</td>
<td>5'</td>
</tr>
<tr>
<td>4.</td>
<td>Then facilitator asks to the participants: “According to your experiences, what tools are needed to prevent your safety in suppressing forest and land fire ?” (start with tools for head, body, and legs).</td>
<td>Oral question</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>The participants do brainstorming to answer the question, and facilitator writes the important points of their answers on the plano paper.</td>
<td>Brainstorming</td>
<td>b, c, d, e</td>
<td>10'</td>
</tr>
<tr>
<td>6.</td>
<td>The facilitator summarises the participant's answer and explains about subject material of safety tools.</td>
<td>Lecture</td>
<td>Tr.04.2/2, a</td>
<td>15'</td>
</tr>
<tr>
<td>7.</td>
<td>Then facilitator distributes metaplan papers and velt tip marker to each participant and asks them to answers this question: “According your opinions, what matters should need attention in frame of creating work safety ?”.</td>
<td>Oral description, brainstorming</td>
<td>d, f</td>
<td>10'</td>
</tr>
<tr>
<td>No.</td>
<td>Stages</td>
<td>Method</td>
<td>Equipment, Subject Material and Worksheet</td>
<td>Time</td>
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<tr>
<td>8.</td>
<td>The participant's answers are adhered on flipchart and facilitator reads one by one of their answers, and then groups the same or almost same answers.</td>
<td>Participant's results, c, e</td>
<td>5’</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>The facilitator reads again the participant's answers and then facilitator explains about the things should need attention in creating work safety.</td>
<td>Oral description</td>
<td>Tr.04.2/3, a</td>
<td>15’</td>
</tr>
<tr>
<td>10.</td>
<td>The facilitator continues the explanation about the interpretation of P3K by asking to the participants: “What do you know about First Air in Accident (P3K)? (as introduction, it can be told to them that although the proper safety tools are already available and we have paid attention on the steps to create safety, an accident can be occurred, therefore the first aid should be done before taking the victim to the doctor, community health center, or hospital).”</td>
<td>Oral description, oral question</td>
<td>5’</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>The participants explore their opinion and facilitator write it on flipchart board.</td>
<td>Brain storming</td>
<td>b, c, d, e</td>
<td>10’</td>
</tr>
<tr>
<td>12.</td>
<td>The facilitator explains the definition of P3K based on the theory.</td>
<td>Oral description (lecture)</td>
<td>Tr.04.2/4, a</td>
<td>10’</td>
</tr>
<tr>
<td>13.</td>
<td>The facilitator asks again to the participants: “According to your experiences, what kinds of accident are generally occurred during fire suppression and how you first action or the effort to overcome this accident ?&quot;.</td>
<td>Oral question</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>The participants write their opinions on metaplan (which will be distributed by facilitator). If already finished, then participants should adhere their result on the available place.</td>
<td>Brain storming</td>
<td>b, c, d, e</td>
<td>10’</td>
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<tr>
<td>15.</td>
<td>The facilitator reads and classifies the same or almost same answers or groups them based on the kinds of accident.</td>
<td></td>
<td></td>
<td>10’</td>
</tr>
</tbody>
</table>
1. When the session is conducted in the day or afternoon, the facilitator may insert/make a light game to lighten up the boredom and sleepiness of the participants (as attached on the attachment).

2. If during the conduct of training there are no facilities such as:
   - OHP, facilitator can read and write down the main points of the subject matter on transparency to the piano paper.
   - Flipchart, in this case, the piano paper can be stucked on the whiteboard or on the available walls of the room.

<table>
<thead>
<tr>
<th>No.</th>
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<th>Method</th>
<th>Equipment, Subject Material and Worksheet</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>16.</td>
<td>The facilitator concludes the whole processes of this session and closes this session with greetings and asks to the participants to give applause.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**

1. When the session is conducted in the day or afternoon, the facilitator may insert/make a light game to lighten up the boredom and sleepiness of the participants (as attached on the attachment).

2. If during the conduct of training there are no facilities such as:
   - OHP, facilitator can read and write down the main points of the subject matter on transparency to the piano paper.
   - Flipchart, in this case, the piano paper can be stucked on the whiteboard or on the available walls of the room.
A. WORK SAFETY

1. Interpretation and Aim

In daily activities when fire is used, the risk of uncontrolled fire up to the risk of fire accident always may happen. Attention on work safety aspect in this activity become important because in fire accident, the risk and high level of financial loss is unpredictable.

Work safety:
"Create the condition and situation to decrease the level of loss or risk that might occurred during the conduct of the activities."

2. Matters to be Noted.

Some important matters to be noted in the frame work of work safety in the forest fire control are:

(1). Make sure the availability of modest safety tools, such as head cover, feet and body cover, nose and mouth masker (when they are needed) at the beginning of the activity.

(2). Prepare all the tools to give signals such as kentongan, gong or bell, they are needed at the unpredictable fire accident caused by uncontrolled fire.

(3). Supply oneself with enough food and drink during the suppressing of fire

(4). Discipline in following the rules and commitments that are agreed upon and determined together based on the aspect of easy application, environmental conservation, safety application and cost effective.
(5). Always works in-group and keeps the communication open among the community in conducting the activity so that the people can control each other.

(6). Stay calm and not to panic at the uncontrolled fire accident, reporting at once to the community or other institution and to the appointed prominent people of the village during the process of accident reporting.

(7). Be alert at the change of wind direction which may cause the workers surrounded by fire at the fire accident, rotten and dry branches may injure the team and heavy smoke may cause difficult in breathing and other unpredictable accidents.


In general at the conduct of the fire suppressing, safety tools must include for the personal, team or group safety. Supply of safety tools must be prioritised based on the level of danger and accident risk which may happen.

3.1. Personal Safety Tools.

Basically, include in the personal safety tools are items to be used for protecting oneself from fire danger and working accident. These tools are head, body, hands and feet covers.

(1) Head cover.

Head cover relatively easy to get, is usually in the form of hat. At some traditional areas hat is made out of plaited rattan/leave. Modern head cover is in the form of safety helmet. The use of head cover is to lessen the risk of accident that may happen at the time of burning, such as the debris of branches, twigs and the blaze of embers.

(2) Body cover.

In some dominant ethnics at East Kalimantan, usually the burning ritual forbid the workers in the field during burning to wear clothing or body cover. This philosophy is to let the fire
burn everything above the ground freely without any obstacle. Nowadays, all activities related to burning must wear body cover made of relatively fire-endurable material or clothing with isolator. This clothing must not be made out of rubber or its kind because will risk to remove it from the body at fire accident.

(3) Feet cover.

At some ethnic groups, there is usually no special rules for using feet cover at the burning site. This condition is depending on the comfort of the workers in carrying their tasks.

Theoretically in fire prevention, wearing feet cover made of fire/heat proof material to protect feet is recommended at the burning site. Wearing flexible shoes for the comfort and mobility at work is recommended.

In field condition the personal safety tools are not only limited to the three tools mentioned above, there are still other important tools which will support the safety of the field workers.

According to Ismunandar (1999) the tools for field workers in the forest and land fire suppression are:

(1) shoes, (2) gloves, (3) fire proof clothing, (4) helmet, (5) masker,
(6) glasses, (7) flashlight/head light, (8) fire tent, (9) bag/small knapsack,
(10) radio/handy talky

B. FIRST AID AT ACCIDENT (P3K)

First aid at accident is the immediate action taken by the victim to minimize the possible impact or to take care of the damage or wound before being taken for further medication.

To anticipate accident during the process of fire suppression in the field, the supply of first aid at accident tools are necessary, such as book on first aid
at accident, bandage and adhesive plaster, headache medicines, burn injury medicine, antiseptic liquid, scissors, safety pin etc. Some points must be noted in helping victims at an instant condition. At each of the fire suppression group, there must be one person to be trained specially to carry out the first aid at accident such as (Nicolas, al 1999):

<table>
<thead>
<tr>
<th>No.</th>
<th>Kind of Accident</th>
<th>First Aid at Accident Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Severe bleeding</td>
<td>Press the injured part of the body until the bleeding is stopped and dress the wound</td>
</tr>
<tr>
<td>2.</td>
<td>Stop breathing</td>
<td>Perform artificial respiratory and let the victim lay down in the rescuing position</td>
</tr>
<tr>
<td>3.</td>
<td>Burned injury</td>
<td>Cool the injured part by pouring cold water for 10 minutes, this is to lessen the damage of muscle tissue and speed up the recovery. Do not smear oily cream on burn injury because it will cover the wound and will retain the heat release that causes infection</td>
</tr>
<tr>
<td>4.</td>
<td>Bone fracture</td>
<td>Press the bone by wrapping bandage at the fractured bone</td>
</tr>
<tr>
<td>5.</td>
<td>Shock</td>
<td>Lay down the victim in the rescuing position</td>
</tr>
<tr>
<td>6.</td>
<td>Faint caused by heat</td>
<td>Cool down the victim’s body by pouring water, then lay the victim down in rescuing position</td>
</tr>
</tbody>
</table>

Rescuing position is to straighten the head and neck so that the breathing system is kept open and the tongue will not choke, when vomiting or discharge other liquid substance. Lay down the victim at the position with one foot being bent and one hand being straightened. If there is wound at the head or ear, the wounded part must be straightened downward.

Besides the actions above, there are ways being usually done by the community (based on the community experience), especially community from certain ethnics at East Kalimantan, such as the Kayan (Miau Baru), Uma’ Jalan (Long Segar), Kutai (Marah Haloq) and Jawa (Sri Pantun), the traditional actions are:
## Kind of Accidents and Traditional First Aid at Accident Actions

<table>
<thead>
<tr>
<th>No.</th>
<th>Kind of Accident</th>
<th>First Aid at Accident Action</th>
</tr>
</thead>
</table>
| 1.  | Burn injury                            | • spread with lime used for chewing betel leave  
• spread with extract liquid from sweet potato leaves  
• spread with oil from camphor tree                     |
| 2.  | Faint                                  | • put cold water at forehead  
• pour water  
• bring/move victim to open air  
• fan the victim                                         |
| 3.  | Sprain                                 | • massage  
• massage using red ginger  
• massage using the oil of phyton                      |
| 4.  | Bone fracture                          | • put wood support on the fracture and wrap it with the bark of java kapok tree  
• wrap with the tree bark                                 |
| 5.  | Bleeding                               | • put the sap of the young banana shoot  
• wrap with the grounded alang-alang shoot  
• clean the wound and put the medicine made of tembora leaves |
| 6.  | Eye injury (eye was pricked by wood)   | • put the water of betel leave  
• drip with urine drops  
• drip with the water of java kapok tree                  |
| 7.  | Respiratory problem                    | • bring the victim to an open or fresh air                                                   |
Interpretation and Objective of

Work Safety

Create the aimed situation and condition to decrease the level of loss or risk which may appear through the conduct of the activities.
Work Safety Tools

Personal Work Safety Tools
1. Head Cover
2. Body Cover
3. Feet Cover

Helmet

Long sleeves shirt

Gloves

Boots

Rattan sandals
1. Shoes
2. Gloves
3. Fire proof uniform
4. Helm
5. Mask
6. Spectacles
7. Head lamp
8. Fire tent
9. Bag or small backpack
10. Radio/Handy Talky
Matters to be noted in
Work Safety

1. To be sure that all the necessary tools for work safety are available

2. Prepare all the tools for giving the alarm/sign

3. Prepare oneself with enough food and drink

4. Discipline in following the agreed upon rules and commitments

5. Always work in group

6. Be calm and not panic

7. Be alert
Interpretation of the First Aid at Accident(P3K)

An immediate action is taken to help the victim with the aim to minimize the possible impact or to overcome and take care of the damage or wound temporarily before being taken for further medication.
Kinds of Accident and
First Aid at Accident(P3K) Actions

1. *Stop breathing* (perform artificial respiratory, then lay the victim down in the rescuing position).

2. *Severe bleeding* (press the bleeding part until it stops and dress with bandage)

3. *Burn injury* (cool down the wound by pouring cold water for 10 minutes, this is to lessen the damage of muscle tissue and speed up the recovery. Do not smear oily cream on burned injury because it will cover the wound and will retain the heat release that causes infection).

4. *Bone fracture* (press the bone and wrapping the fracture by using bandage).


6. *Faint because of the heat* (cool the body by pouring water and let the victim lay down in rescuing position).

*(Nicolas, et al, 1999)*
Session 04.3 Fire Suppression Technique

A. Aim
1. Participants will mention the important factors to be noted in forest and land fire suppression.
2. Participants will identify the method and way to suppress forest and land fire.
3. Participants will mention some fire break tools and the aim of the making the tools.

B. Main Discussion
1. Factors to be noted at the fire suppression activities
2. Fire suppression method and way
3. Kinds of fire break

C. Methods
1. Lecture/Oral description
2. Demonstration
3. Brainstorming

D. Tools, Material and Media
1. Worksheet.
   - 4 (four) sheets of transparancies (Tr.04.3/1 – Tr. 04. 3/4).
     1. Tr. 04. 3/1 : Factors to be noted at the action of Fire Suppression
     2. Tr. 04.3/2 : Methods and Techniques of Fire Suppression
     3. Tr. 04.3/3 : Kinds and Aims of Fire Break
     4. Tr. 04.3/4 : Techniques of Reburning
2. References
   - Forest and Land Fire Suppression Techniques
3. Tool and Material
   a. OHP
   b. Plano paper
   c. Flipchart
d. Velt tip marker  
e. Adhesive tape  
f. Poster/Picture  

E. Participants  
- 20 - 30 (twenty – thirty) participants  

F. Time  
90' (ninety minutes)  

G. Facilitation Process.  

<table>
<thead>
<tr>
<th>No.</th>
<th>Stages</th>
<th>Method</th>
<th>Equipment, Subject Material and Worksheet</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Facilitator will start to welcome all participants with greetings or good morning/afternoon.</td>
<td>Oral description</td>
<td></td>
<td>5'</td>
</tr>
<tr>
<td>2.</td>
<td>Explain briefly concerning the topic of discussion at this session (aim and objective).</td>
<td>Oral description</td>
<td>Tr.04.3/1,a</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Facilitator will ask the participants: “According to your experiences, what are the matters should be prepared and noted at the action of forest and land fire suppression?”</td>
<td>Oral question</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Participants will exercise brainstorming to answer and facilitator will write down the important points of the answer on plano paper.</td>
<td>Oral brainstorming</td>
<td>b, c, d, e</td>
<td>10'</td>
</tr>
<tr>
<td>5.</td>
<td>Facilitator will read again the important points of the participants’ answers and ask again whether there is still additional points to be added. Facilitator will compare or combine the participants’ answers with the answers from the facilitator and explain some important points briefly and clear.</td>
<td>Oral description</td>
<td></td>
<td>15'</td>
</tr>
<tr>
<td>6.</td>
<td>Facilitator will go on with the presentation on method and technique of fire suppression.</td>
<td>Oral description (lecture)</td>
<td>Tr.04.3/2,a</td>
<td>10'</td>
</tr>
<tr>
<td>7.</td>
<td>Facilitator will let the participants to ask question or to give their opinions (brainstorming).</td>
<td>Brainstorming</td>
<td></td>
<td>5'</td>
</tr>
<tr>
<td>No.</td>
<td>Stages</td>
<td>Method</td>
<td>Equipment, Subject Material and Worksheet</td>
<td>Time</td>
</tr>
<tr>
<td>-----</td>
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</tr>
<tr>
<td>8.</td>
<td>Facilitator will proceed with the presentation on fire break (as an introduction of one of the techniques or methods of fire suppression is to make a fire break, at this session the main topic is to discuss the theme of fire break by showing posters or pictures of fire break).</td>
<td>Oral description (lecture), demonstration</td>
<td>Tr.04.3/3, a, f</td>
<td>20'</td>
</tr>
<tr>
<td>9.</td>
<td>While explaining about kinds of fire break, facilitator may ask the participants: &quot;Can each of you show the examples and kinds of fire break?&quot;</td>
<td>Oral discussion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Participants will give their opinions and the facilitator will write down their answers on piano paper at each kind of fire break column.</td>
<td>Brainstorming</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Facilitator will complete the participants’ answers by adding the answer at each kind of fire break column.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>Facilitator will let the participants to ask or give their opinion on the topic related to the presentation of fire break.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>Facilitator will immediately present the topic on reburning technique, that is basically to make a fire break by burning.</td>
<td>Oral description (lecture)</td>
<td>Tr.04.3/4,a</td>
<td>10'</td>
</tr>
<tr>
<td>14.</td>
<td>Facilitator will let the participants to ask again on all the related subject material given at this session.</td>
<td></td>
<td></td>
<td>5'</td>
</tr>
<tr>
<td>15.</td>
<td>Facilitator will conclude the whole process of this session and close the session by saying thanks and greeting, and ask the audience to applause.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
At the presentation of subject material there is no facility such as:

a. OHP, facilitator can read the subject material from the transparency and write down the important points on piano paper.

b. Poster or picture, facilitator can sketch the mentioned picture on piano paper.
The best technique of fire suppressing according to Boer (1996) is the fastest, lowest and safest, therefore some considerations should be taken prior to fire suppressing activities are conducted.

Factors which need to be considered in suppressing effort of a forest fire in the book "Forest Fire Suppression" are as follows:

- **Fuel**: volume, size, type, structure, condition and its design (at the surface), composition, the condition of its depth (under the surface).
- **Slope**: steepness and aspect.
- **Wind**: its direction, speed, effect.
- **Asset to be saved**: human life, property, recreation value, wood stand value.
- **Soil**.
- **Water resource**.
- **Available equipment**.

According to Hadriyanto (1999) in fire suppression, three methods oftently conducted are:

- **Direct attack**.
  Conducted directly facing the fire line by suppressing with water sprayer, chemicals, mud, and fire beating so that the fire suppressed. This method is oftenly conducted at relatively small size fire suppressing with controlled fire speed and tolerable smoke by the people in charge.

- **Parallel attack**
  This method is considerated if the fire flame tended to increase intensively and with zigzag fire line. This method is done by making a fire breaks close to the edge of fire line.

- **Indirect attack**.
  Oftently used in big scale fire up to very big fire. Using this method all fire brigade farly retreat from the fire flame line towards the mountain side, road, river or fuel breaks and hence burning all fuels along the line to cut fire flame.
Suppressing could be directly conducted using some technical methods depending on the area of fire. Conditions which should be noted are:

- Burnt topography
- Available plant species
- The extent of the burnt field
- The extent of the fire

The condition of the flat area on fire is different than on the sloped area. The available plant species and kind of fuel will determine the technique of fire suppression and equipment used.

According to Boer (1996), poring with water or with soil minerals will cause a decrease in temperature/heat (cooling). While to decrease oxygen supply to the fire aside from using soil mineral, water and chemicals, beating fire activities will be of great help, this process is oftenly called Smothering.

Another alternative in fire suppression is by preparing fire lines i.e. fire breaks made during the activities of fire suppression. Many kinds of fire breaks for fire lines are as follows:

- Mechanical fire break in the form of open row prepared by using modern equipment (bulldozer, tractor).
- Chemical fire break.
- Fire break prepared by way of burning.
- Vegetative fire break, fire-proof plants or not easily burnt plants are used.
FACTORs THAT SHOULD BE NOTED
DURING FIRE SUPPRESSION
(BOOK: FORST FIRE SUPPRESSION)

1. Fuel
2. Slope
3. Wind
4. Value that should be saved
5. Soil
6. Water resource
7. Available equipment
METHODS AND TECHNIQUES
SUPPRESSING FIRE

- Direct attack
  Conducted by facing directly the fire line by suppressing with water spray, chemicals, mud and fire beating till the fire suppressed.

- Parallel attack
  This method is done if the blaze tended to increase intensively and with a zigzag fire line.

- Indirect attack
  Oftenly used on big scale fire up to very big
KINDS OF FIRE BREAKS

- Mechanical fire break which is an open row made by modern equipment (bulldozer, tractor).
- Chemical fire break.
- Fire break prepared by way of burning.
- Vegetative fire break, fire-proof plants are used or not-easily burnt plants.
TECHNIQUES OF REBURNING
SUBJECT MATERIAL 4. FOREST AND LAND FIRE CONTROL

Session 04.4. Communication and Reporting

A. Aim
1. The participant could identify verbally the condition and situation of forest fire at the participant’s environment.
2. The participant could identify the kind, method and definite procedure of reporting in preventing and controlling forest and land fire.

B. Topic of Discussion
1. Interpretation of communication.
2. Barriers and support in communication.
3. Communication equipment.
4. Technique and procedure of sending and receiving news.
5. System and procedure of reporting.

C. Methods
1. Discussion
2. Brainstorming

D. Equipment, Material and Media
1. Worksheet.
   - 4 (four) sheets of transparencies (Tr.04.4/1 – Tr. 04.4/4).
     1. Tr. 04. 4/1 : Interpretation of Communication
     2. Tr. 04.4/2 : Barrier in Communication
     3. Tr. 04.4/3 : Communication Equipment
     4. Tr. 04.4/4 : Technique and Procedure of Sending and Receiving News
2. References
   - Communication and reporting in preventing and controlling forest and land fire.
3. Equipment and Material
   1. OHP

E. Participants
   • 20 - 30 (twenty - thirty) participants

F. Time
   90' (ninety minutes)

G. Facilitation Process

<table>
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<tr>
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<th>Equipment, Subject Material and Worksheet</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>The facilitator started with greetings, good morning/afternoon to all the participants.</td>
<td>Oral description</td>
<td></td>
<td>5'</td>
</tr>
<tr>
<td>2.</td>
<td>Explain briefly and clearly on the topic of discussion in this session (purpose and aim).</td>
<td>Oral description</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>The facilitator asked to the participants: “According to your opinion what is meant by communication?”</td>
<td>Oral description</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>The participants conducted brainstorming to respond to the questions, then the facilitator concluded about the interpretation and definition of communication.</td>
<td>Oral description, brainstorming</td>
<td>Tr.04.4/1, a</td>
<td>10’</td>
</tr>
<tr>
<td>5.</td>
<td>The facilitator divided the participants into some groups (2-3 groups) and distributed the assignments to be carried out by the participants.</td>
<td>Dividing into groups</td>
<td></td>
<td>10’</td>
</tr>
<tr>
<td>6.</td>
<td>The facilitator explained the message and task to each group on what has to be done and rules of the game.</td>
<td>Oral description</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>The facilitator invited each group to start the game.</td>
<td>Game</td>
<td></td>
<td>15’</td>
</tr>
<tr>
<td>8.</td>
<td>The facilitator requested the opinion and impression of each member of the group on the games which has been conducted recently.</td>
<td>Brainstorming</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>The facilitator concluded the purpose and aim of the game and related it to the subject material in this session specially on the barrier and support in communication.</td>
<td>Oral description</td>
<td>Tr.04.4/2, a</td>
<td>10’</td>
</tr>
<tr>
<td>No.</td>
<td>Stages</td>
<td>Method</td>
<td>Equipment, Subject Material and Worksheet</td>
<td>Time</td>
</tr>
<tr>
<td>-----</td>
<td>------------------------------------------------------------------------</td>
<td>-----------------</td>
<td>-------------------------------------------</td>
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</tr>
<tr>
<td>10.</td>
<td>Hence the facilitator continued his presentation on the topic of discussion on equipment, technique and procedure of sending news and communication equipment.</td>
<td>Oral description</td>
<td>Tr.04.4/3, Tr.04.4/4, a</td>
<td>10'</td>
</tr>
<tr>
<td>11.</td>
<td>The facilitator invited the participants to ask or to prepare his opinion if there are questions or clarifications.</td>
<td></td>
<td></td>
<td>5'</td>
</tr>
<tr>
<td>12.</td>
<td>Hence the facilitator requested the representatives of each group (3-4 people) to come forward and presented the subject material/task of the kind of game to be conducted.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>The facilitator divided the assignment sheet to each representative of the group and reminded them on the rule of the game prior to instructing to start.</td>
<td>Oral description</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>The representative of each group could start the game, while the other participants observed and noted the process of the game till finished.</td>
<td>Game/simulation</td>
<td></td>
<td>10'</td>
</tr>
<tr>
<td>15.</td>
<td>The facilitator requested the opinion and impression of each representative of the groups and other participants who observed the game.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td>The facilitator concluded the purpose and aim of the game and related it with the subject material of this session especially the importance of the communication and permanent procedure in carrying out something.</td>
<td></td>
<td>Tr.04.2/5,a</td>
<td>10'</td>
</tr>
<tr>
<td>17.</td>
<td>The facilitator invited the participants to ask and proposed their opinions related to the whole subject materials of the session.</td>
<td></td>
<td></td>
<td>5'</td>
</tr>
<tr>
<td>18.</td>
<td>The facilitator concluded in overall of the processes of this session and closed the session by saying thank you and greetings and requested the applause of the participants.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes:
- Dividing in groups could be done through games.
Communication is delivering of information, explanation, message and others from the source to the receiver through the use of word symbols, picture, graph, movement and others. Communication effect on the consequence of communication could influence knowledge, behaviour, attitude, belief, etc. to other people.

To support the smoothness of communication, the following should be noted:

- Use the agreed signal language.
- Speak clearly and loudly.
- Don't use local language which is not understood.
- Try to supply with a complete communication facilities.

Communication equipments are vital in the case of forest and land fire according to Anonim (1998), the communication equipments which could be used are as follows:

- Communication radio (SSB & FM): of limited nature one to one/some.
- Telephone: of limited nature one to one/some
- Facsimile: of limited nature one to one/some
- Internet: of limited nature one to one/some
- Drum: of limited nature one to one/some
- Flag: of limited nature one to one/some
- Loud speaker: of limited nature one to one/some

At the time of communication and reporting, the technique and procedure of receiving and sending news should be noted, considering its nature to support. According Boer (1996), the technique and procedure of sending news is as follows:

- Talk simply, clearly and briefly.
- Do not interrupt the discussion.
- Do not monopolize the discussion.
- Use standard words.
- Keep the archives and the sent news.

Technique and procedure of receiving news:
1. Commander of forest fire suppression team
   - The commander communicates with the head of the executing unit, leader of the group and other responsible parties.
   - Equipments used by each group.
   - Width and direction of fire flow.
   - Tactics of attack.
   - Changes which occur every moment (direction, wind, fire size, termination of fire break preparation, etc.).
   - Danger which might occur.

2. Group Leader
   - The group leader only communicates with commander of the group and its members.
   - To convey a message sequently.
   - Information on danger which might occur.
   - Distance management between members of the group.

3. Group Members
   - The group members only communicates with the same group members.
   - To convey a message sequently.
   - Information on danger which might occur.
   - Distance management between members of the group.

Aside from the effort to observe the communication process in relation to reporting constraints to be faced in the field are as follows:
   - Far distance between fireman.
   - Atmosphere (the loud sound of chainsaw, tractors, etc.)
   - Message too long.
   - Language used not uniform (use of local language).
   - Physical factors (old age and others).
   - Each of communication facilities (Handy Talky/HT, and others.)
INTERPRETATION OF COMMUNICATION

Information dissemination, explanation, message and others from the source to the receiver through the use of word symbols, picture, group, movement and others.
COMMUNICATION GAP

- Far distance between fireman
- Atmosphere (loud sound of chainsaw, tractor, etc.)
- Message too long
- Language used not uniform (use of local language)
- Physical factors (old age and others)
- Lack of communication facilities (Handy Talky/HT, etc.)
COMMUNICATION EQUIPMENT

- Communication radio (SSB & FM)
- Telephone
- Satellite telephone
- Facsimile
- Internet
- Flag
- Drum
- Loudspeaker
TECHNIQUES AND PROCEDURES
OF SENDING AND RECEIVING NEWS

Techniques and Procedure of Sending News
• Speak clearly, simply and briefly.
• Do not interrupt discussion.
• Do not monopolize discussion.
• Use standard words.
• Keep the archives and sent news.

Techniques and Procedure of Receiving News
• The commander of the group on forest fire suppression.
• Group leader.
• Member of the group.
SUBJECT MATERIAL 05. POST FOREST AND LAND FIRE

The next step is to convey the subject material on post forest and land fire. Firstly, in this session the interpretation on post forest and land fire has been put forward. Hence, the participants discuss matters to be done at post-fire (considering perception and opinion of the participants could differ one to another). The result of discussion should be systematically adjusted with the related subject material, i.e. on the recovery of the existing condition at the post forest and land fire, rehabilitation as well as development and research which will support the effort on the recovery and rehabilitation.

General objectives.
1. To clarify the hope and aim of the training in line with the subject material which will be given during the process of the training to the participants.
2. To explore information and sharing of information on steps to be taken at post forest and land fire among the participants and facilitators.
3. To transfer knowledge to the participants on steps to be taken at post forest and land fire.
4. The participant could adopt and implement the knowledge according to the ability, capacity and characteristic of each region.

Division of Session
Session 05.1. Recovery
Session 05.2. Rehabilitation
Subject Material 05. Post Forest and Land Fire

Session 05.1. Recovery

A. Aim
1. The participants understand the purpose and aims of recovery steps at post forest and land fire.
2. The participants could mention the necessary steps in the frame of land recovery of post forest and land fire.

B. Topic of Discussion
6. Interpretation, purpose and aim of land recovery at post forest and land fire.
7. Steps to be taken in the land recovery effort of post forest and land fire.

C. Methods
1. Discussion
2. Brainstorming

D. Equipment, Material and Media
1. Worksheet.
   - 2 (two) pieces of transparancies (Tr.05.1/1 – Tr.05.1/2).
   6. Tr. 05.1/1: Interpretation, Purpose, and Aim of Land Recovery of Post Forest and Land Fire
5. Tr. 05.1/2: Recovery Steps

2. References
   - Land recovery effort of post forest and land fire.

3. Equipment and Material
1. OHP
2. Piano paper
3. Flipchart
4. Velt tip marker
5. Self-adhesive tape
6. Metaplan
E. Participants
- 20 - 30 (twenty - thirty) participants

F. Time
45' (forty five minutes)

G. Facilitation Process.

<table>
<thead>
<tr>
<th>No.</th>
<th>Stages</th>
<th>Method</th>
<th>Equipment, Subject Material and Worksheet</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>The facilitator started with greetings, good morning/afternoon to all the participants.</td>
<td>Oral description</td>
<td></td>
<td>5'</td>
</tr>
<tr>
<td>2.</td>
<td>Explain briefly and clearly on the topic of discussion in this session.</td>
<td>Oral description</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>The facilitator asked to the participants: &quot;According to your opinion what are the recovery activities important to be done? Give your opinions&quot;.</td>
<td>Brain storming</td>
<td>d, f</td>
<td>10'</td>
</tr>
<tr>
<td>4.</td>
<td>The facilitator reads and sticks metaplan from the participants and collects almost the same answers and explains the interpretations, aims, and goals of post forest land fire recovery.</td>
<td>Oral description</td>
<td>Tr.05.1/1, a</td>
<td>10'</td>
</tr>
<tr>
<td>5.</td>
<td>The facilitator asks again: &quot;What actions to be done in the frame of post forest and land fire recovery?&quot; then facilitator writes the participant's answers on the plano paper.</td>
<td>Oral description, Brain storming</td>
<td>b, c, d, e</td>
<td>10'</td>
</tr>
<tr>
<td>6.</td>
<td>Then facilitator explained the activities to be done for the post forest and land fire.</td>
<td>Oral description</td>
<td>Tr.05.1/2, a</td>
<td>5'</td>
</tr>
<tr>
<td>7.</td>
<td>The facilitator gives chance to the participants to ask something which is not yet clear about subject material which has been discussed recently.</td>
<td></td>
<td></td>
<td>5'</td>
</tr>
<tr>
<td>8.</td>
<td>Furthermore, the facilitator closes this session with greetings and requires applause from the participants.</td>
<td>Brain storming</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Facilitator invited participants to ask when there is something they do not understood.</td>
<td></td>
<td></td>
<td>5'</td>
</tr>
<tr>
<td>10.</td>
<td>Facilitator closed the session with greetings and invited participants to give their applause.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Rehabilitation

As the consequence of forest fire, damaging impact on woody plants needs to be repaired to decrease the susceptibility level of the community and strengthening one of the economic aspects of the community.

Activities possible to be conducted are: replanting of plant species (crop plant) that could support the farmer's livelihood such as fruits or mixed crops. The step could decrease the critical level of the land by re-fertilizing of the barren soil such through planting of species like batai, parkia, nicaraguan cocoa shade, etc.

However, Sutisna (1999) reported that prior to the rehabilitation of burnt forest, the following three aspects should be evaluated:

a. The cause of the fire; whether it is natural (thunder and hot weather) or man-made (purposeful burning or by negligence).

b. Fire intensity; casually burnt (small and big trees still exist), heavily burnt (all small trees are dead and only some parts of the big trees stay).

c. The function of forest itself; whether it is natural production forest, plantation forest, protection forest, recreational forest, conservation forest (forest park, national park, hunting park, nature conservation, and animal conservation).

Rehabilitation activities cover some aspects:

1. Rehabilitation of community’s dwelling place, if any.

2. Rehabilitation of burned plantation.

3. Rehabilitation of vegetation at the burnt location through reforestation.

4. Ecological rehabilitation, for instance, rehabilitation of watershed area, agroecosystem and biodiversity as well as agricultural field.

5. Monitoring of health condition of the population who inhaled smoke and providing of medicinal treatment.
Methods of rehabilitation:

1. Planting in blocs (i.e. 100 ha or 50 ha, etc.).

2. Building of road access to facilitate controlling of harvesting system and fire suppression activities, when the fire occurred in dry season.

3. Building of water reservoirs in each bloc or in planting rows already grown.

4. Fire-breaker (yellow, green, etc.). Including other productive fire breaks which could support the farmer.

Kustiawan (1999) also reported activities can be done during post forest fire as follows:

- Reforestation, participated by forest concession holders.
- Reforestation, participated by forestry institutions.
- Reforestation and re-greening by Indonesian Armed Forces (ABRI), community institution and non-forest concession holders.
- Suppression of fire remnants.

Aside from crossed recovery and rehabilitation activities, other steps to be taken after the occurrence of forest and land fire are as follows:

1. Law Enforcement
   
   Law enforcement one of the efforts to avoid the reoccurrence of fire.

2. Calculation on Forest Fire Impacts
   
   After the forest fire, calculation forest fire impacts such as loss of land area, for example land owned by the community. In addition, some other factors must be included, such as implementation of policy that become the factor of fire incidence, change of ecological situation, as well as monitoring of the burnt location.

3. Evaluation, Research and Development
   
   Prevention activity effectiveness can be achieved by considering the aspect of improvement and completion of the plan and policy on fire prevention in the future. For that reason, research and development activities on fire and its prevention system should be continuously conducted to design a better prevention method in the future.
4. Monitoring

Monitoring on the entire activities of post fire should be conducted to know the progress or the changes. Monitoring is performed on biophysical aspects such as land condition, vegetation, and susceptibility level, as well as social aspect i.e. population dynamic, program implementation, participation, etc. Monitoring can be performed periodically and carried out together with relating institutions or fire management institution.
DEFINITION, PURPOSE AND TARGET
OF FOREST AND LAND REHABILITATION

Definition
Activities conducted to improve and recover the biophysical condition as nearly as possible to the original condition or, more technically, than the condition before the fire.

Purposes and Targets
1. To recover the biophysical condition after the fire.
2. To improve planting plot and design and increment of land productivity.
3. To set-up prevention effort and to minimize level fire-sensitivity of the location.
CRITERIA FOR PLANT SPECIES IN REHABILITATION

1. Species with economic and ecological values
2. Low-priced and easy to get
3. High-environmental adaptation quality
4. Good in characteristics
5. Fast growing and productive
6. Local plant species recommended to use
7. Simple and easy to tend and process
MATERIAL No. 06. FIELD WORK

The next step from this series of training is to conduct field-work as the final step. This session give presentation on purpose and aim of the field-work. Steps of activity that will be conducted by following the time allocation are presented systematically.

General target
1. To specify the purpose and aim of field-work.
2. To provide better understanding to participant on what has been learnt and discussed together.
3. To develop a sense of togetherness among participants in managing forest and land fire problem.

Session Division
Session 06.1. Field Work
Session 06.1. Field Work

A. Aim
   1. To improve participants understanding on given subject.
   2. To enable direct participation of participants on the technique of preparing for fire suppression and the suppression technique of forest and land fire.

B. Topic of Discussion
   1. The technique of preparing for fire suppression
   2. Suppression on forest and land fire technique

C. Methods
   1. Field work
   2. Brainstorming
   3. Discussion

D. Equipment, Material and Media
   1. Worksheet.
      • 1 (one) piece of transparency (Tr.06.1/1).
      1. Tr. 06. 1/1 : Tools and Equipment for a Group
   2. References
      --
   3. Equipment and Material
      a. OHP
      b. Flipchart
      c. Plano paper
      d. Colored marker
      e. Megaphone
      f. Used tires
      g. Fuel (diesel fuel/kerosene/gasoline)
      h. Match
E. Participants

- 20 - 30 (twenty – thirty) people

F. Time

6 - 7 hours (360 - 420 minutes)

G. Facilitation Process

<table>
<thead>
<tr>
<th>No.</th>
<th>Stages</th>
<th>Method</th>
<th>Equipment, Material and Worksheet</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>Preparation:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Facilitator will start to welcome all participants with greetings or by saying good morning/afternoon.</td>
<td>Oral description</td>
<td></td>
<td>5'</td>
</tr>
<tr>
<td>2.</td>
<td>Facilitator will explain in brief the plan of fieldwork and describe tools that are going to be needed by the team group.</td>
<td>Oral description a, b, c, d, e Tr. 06.1/1</td>
<td></td>
<td>15'</td>
</tr>
<tr>
<td>3.</td>
<td>Facilitator will ask participants &quot;Is there anything not clear in this explanation?&quot; Request participants to give their opinions.</td>
<td>Brain Storming</td>
<td></td>
<td>10'</td>
</tr>
<tr>
<td>4.</td>
<td>If explanation is clear, facilitator will go further by separating the class into two groups using the game technique.</td>
<td>Game</td>
<td></td>
<td>15'</td>
</tr>
<tr>
<td>5.</td>
<td>Facilitator will give duties to each group to make inventory on tools needed at the fieldwork and appoint persons responsible for coordinating each group.</td>
<td>Disco</td>
<td></td>
<td>15'</td>
</tr>
<tr>
<td>6.</td>
<td>Facilitator will ask participants to present their result of discussion in the form of field work plan (including work description for each person)</td>
<td>Brain Storming</td>
<td></td>
<td>10'</td>
</tr>
<tr>
<td>7.</td>
<td>Facilitator will inquire participants about requested tools (enough or not)</td>
<td>Oral description Brain Storming</td>
<td></td>
<td>10'</td>
</tr>
<tr>
<td>8.</td>
<td>Facilitator will end this session and remind participants on schedule, location and meeting location before the field work</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B. Field Work

9. Facilitator will start to welcome all participants with greetings or saying good morning/afternoon.  

Oral description  

5'

10. Facilitator will ask participants to gather at their own group and facilitator will explain in brief the plan of fieldwork will be carried out.  

Oral description  

15'
<table>
<thead>
<tr>
<th>No.</th>
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<th>Method</th>
<th>Equipment, Material and Worksheet</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.</td>
<td>Facilitator requests each group to recheck their tools for field work</td>
<td>Oral description</td>
<td></td>
<td>15'</td>
</tr>
<tr>
<td>12.</td>
<td>Facilitator will ask participants to start making a fire-break, and observe the activity of each group</td>
<td>Oral description</td>
<td></td>
<td>60'</td>
</tr>
<tr>
<td>13.</td>
<td>When the fire-breaks ready, facilitator will ask all participants to gather and ask each group to check the result of their work.</td>
<td>Oral description</td>
<td></td>
<td>15'</td>
</tr>
<tr>
<td>14.</td>
<td>Facilitator will ask participants to gather again and requests the groups to present their observation (strength and shortcoming) respectively.</td>
<td>Oral description, brain storming, discussion</td>
<td>b, c, d, e</td>
<td>20'</td>
</tr>
<tr>
<td>15.</td>
<td>Facilitator will lead the discussion and make clarifications on participant responds</td>
<td>Oral description, discussion</td>
<td></td>
<td>10'</td>
</tr>
<tr>
<td>16.</td>
<td>Facilitator will scream: &quot;Fire, fire!!!(before, one or two participants will make fire on the practicing field without other participants knowledge)</td>
<td>Oral Description</td>
<td>f, g, h</td>
<td>45'</td>
</tr>
<tr>
<td>17.</td>
<td>After fire is being suppressed, facilitator will ask participants to gather again and tell their experience in suppressing fire.</td>
<td>Oral description, brain storming, discussion</td>
<td></td>
<td>15'</td>
</tr>
<tr>
<td>18.</td>
<td>Facilitator will again scream: &quot;Fire jump!, fire jump! Suppress the fire!&quot;</td>
<td>Oral description</td>
<td>f, g, h</td>
<td>90'</td>
</tr>
<tr>
<td>19.</td>
<td>After fire is suppressed, facilitator will ask the participants to gather and evaluate the process of fire suppressing performed by them.</td>
<td>Oral description, brain storming, discussion</td>
<td></td>
<td>20'</td>
</tr>
<tr>
<td>20.</td>
<td>Facilitator will answer on questions asked by participants.</td>
<td>Oral description</td>
<td></td>
<td>10'</td>
</tr>
<tr>
<td>21.</td>
<td>Facilitator will conclude evaluation results and close the field work by greetings and request participants to give their applause.</td>
<td>Oral description</td>
<td></td>
<td>5'</td>
</tr>
</tbody>
</table>

**Notes:**
1. Preparation step is carried out during the last session after the final test (one day before the practice).
2. Facilitator may give some games during discussion-break to avoid boredom and tiredness.
3. Facilitator must prepare beforehand, location for practice, the unexpected fire scenario and the making of "fire jump". Facilitator must be helped by at least 2 – 3 persons from the organizing committee.
Tools (Equipment)
Group and Personal

1. Machete
2. Axe/Pickax
3. Hoe
4. Hooker
5. Harrow/Fork
6. Fire beater
7. Water Container
8. Water Gun
9. Boots
10. Helmet
11. Gloves
12. Long Sleeves Clothing
REFERENCES


Anonim, 1999a. Undang-undang Kehutanan dan Perkebunan No.41. Departemen Kehutanan Dan Perkebunan Indonesia, Jakarta


ATTACHMENTS
Some methods need to be applied on the training, whether at the introduction of the participants or at groups, to build-up the team work (Wenzler et al, 1993)

I. Introduction of the Participants

1. My name is Titi, this is Crocodile
   Aim : Learn by heart the name of each participant
   Participant : All ages. Maximum 25 persons
   Time : 10 – 20 minutes
   Material : Crocodile made of wood or other material such as balloon with the picture of crocodile. Any other kind of animals or material can be used.
   Guidance : All participants sit in a circle. One of them will hold the crocodile and give it to the one sits next to he/she by saying :" My name is Titi. I give this crocodile to you!" The second participant will receive the crocodile and say: "I receive this crocodile from Titi. My name is Marjo and I give this to you!" to the one sits next to Marjo, and this will go on until the last person is introduced. Every participant has to repeat the name of participant who is holding the crocodile before him/her. In the group of more than 10 persons, this game can be repeated until everybody knows each name of their group. Change of seat is a good idea before the game is repeated.

2. Bulletin Board
   Aim : To make participants know each other
   Participant : All ages. Size of the group is optional.
   Time : 10 minutes
Material : Bond paper and some crayon or marker
Guidance : Every participant should introduce himself/herself by
drawing a picture of oneself as good as possible
according to the specific characterization by using a
crayon or marker. For example, when somebody is
wearing glasses and has curly hair, the picture should
have these characterizations. Then, write the full name
and nick name and expectation of following this training.
After finishing the picture, stick the picture on the wall,
and read what was written on the paper, if necessary,
give a little explanation of the picture to the other
participants in turn.

3. To Draw Other Participant's Picture
Aim : Introducing the participants and at the same time
learning to see other's mind and feeling in a better way.

Participant : All ages. Maximum 20 persons.
Time : 30 – 40 minutes
Material : Paper and pencil for each participant
Guidance :
1. The group is divided into pairs by a little game (e.g. by pulling
   string) or just let each participant to look for his/her partner.
2. Each participant makes a drawing of his/her partner
3. Afterward, they can interview each other by asking these questions:
   a. What will you bring when you go to a remote island? Why do
      you bring those things?
   b. If you were able to change yourself to a plant, what kind of plant
      do you like? Why do you like that particular plant?
   c. If you had ten million rupiahs, what are you going to do? Why
      are you going to do that?
4. After finished the drawing and the interview, they will gather again
   in a big group. Now, participants introduce each partner to the
   group and tell them about the interview and show the pictures they
   made.
4. Circulating Empty Bottle

Aim: To cheer-up and making introduction among participants. At the very opening of training, participants are usually inactive and shy. With this game they will be cheered up and introduced to each other.

Participant: Up to 10 years of age. Group contains of no more than 20 persons.

Time: 30 – 40 minutes

Material: One empty bottle

Guidance: “We are going to start knowing each other in our group by “playing bottle”. Let us sit on the floor and form a circle. I need a volunteer who will sit in the center of the circle and give the bottle as a start. This volunteer will ask anybody being pointed by the empty bottle at the time the bottle stop circulating to do a task. Whoever being pointed by the bottle must introduced his/her name and sing the song Potong Bebek! (Tasks given can be anything). After the task is performed, participant at the center of the circle moves to the circle side and replaced by the participant pointed by the bottle. Thus, the task to circulate bottle will be changed in turn until all participants get their turn. Now, who will start with the game?”

Note:
Although this is actually a child game, it applies to adults as well and will become interesting if the task is performed very fast. Moreover the awkward situation will be changed to relaxation. The shyness will be broken and participants become more active. Before starting the game, the leader of the group may write down samples of task on small folded pieces of paper. If a participant does not have any idea for a task; he can take one of the folded papers.
II. Process in the Group

1. Movement and Song

Aim : To motivate the participants to be more active, especially during the beginning of group meeting or at the time the participants have to concentrate. This game can be applied when the interest of participant is becoming lessening.

Participant : All ages. Size of the group is optional.

Time : 10 - 15 minutes.

Material : A tape recorder and cassette with songs and melodies suitable for dancing, such as non-stop dancing.

Guidance: "I have with me a cassette with songs. I am going to turn the cassette on and you (participants) are requested to move freely in this room. You may just walk; dance by yourself or by small group. It is up to you. Next, I am going to stop the cassette for a while, and then I am going to give you a task that should be done immediately and fast." After finishing the task, music will go on playing again. You are requested to move freely again in the room. Then I am going to stop the cassette again and give you another task. Do you understand how this game is going on? Let us start."

Examples of the tasks (duties):
1. Touch all four corner of the room.
2. Shake hands with as many as possible person.
3. All participants stand in the center of the room.
4. Act as a statue.
5. Three or four persons gather and draw an animal.
6. Two or three persons should dance together on a chair.
7. Form small groups by following the number said by facilitator, e.g. when facilitator says “four”, participants must form a group of four persons.

2. All must do what Dewi does

Aim: To motivate participants to become more active, especially at the start of group meeting or at the time participants have to concentrate and when the interest of working is becoming lessening. The game is conducted when participants attend a long discussion of plenary session. This game will create a warm and cheerful feeling among participants.

Participant: Teenagers. Size of the is 6 – 20 persons. This game is also suitable for adults.

Time: 10 minutes

Material: A hat or a cap. If a hat is not available, make one from an old newspaper.

Guidance: “Let us move freely in this room. One of the participants is going to wear this hat and performs a way of walking toward one of the participants (e.g. fast walk, slow walk, tired, enthusiastic, jumping, hoping like cat, frog etc.) The person who is given the hat will imitate the movement. He/she then make different movement and the others will imitate and so on. If one of the players has no idea of the movement to be performed, the followers will imitate the state of panic or confusion of the performer. Thus, whatever is being done by the performer, will be imitated by the others. Now, I am giving this hat to Mari and let us start.”
Ill. Team Work

1. Picture Arrangement

Aim: To give opportunity to participants in practicing a good team-work. They will learn to work together by paying attention to the work of their friends. The result of a team-work will depend on the intensity of participation of each member.

Participant: 12 years old up. Group of big size will be divided into a group of 4 – 6 persons plus one observer.

Material: A picture to be cut into 20 pieces

Guidance: "From the following experiment, we will learn a lot on the process of how to work together in a teamwork. Please separate into small groups with 5 – 6 persons a group. One of persons in the small group will be the observer." The duty of the small group is as follow: Each participant of the small group (except the observer) will receive a piece of a cut picture, a piece of the big picture being cut into 20 pieces. The cut pieces of picture should be put on the center of the table and mix with the other pieces of picture from other participants. Your duty is to assemble the pieces of picture to become whole again. Pay attention to the following regulations:

a. If by accident you get a piece of picture that is not needed by you, you should return it to the center of the table, so that the other participant can make use of it for his/her own picture.

b. You are only permitted to take the pieces of picture located on the center of the table, you are not able to take or ask from other participant.

c. You are also not permitted to talk, communicate by using sign language or interfere with other participant’s duty.
The teamwork duty is considered final when the picture is reformed again as a whole picture in front of the group participants.

The duty of observer in the small group is to observe and note down what is going on in the group during the game with the guideline questions as follows:

a. Have any of the group participants broken the regulation? Which regulation was broken? According to you why was the regulation broken?

b. Have any of the participants piled up lot of pieces of picture and do not return them to the center of the table?

c. Which groups pay attention / not pay attention to other participant's work?

Questions for observers and regulations for the participants will be noted on the whiteboard or on a piece of paper given to each observer/small group. If everything is clear and understandable to the participants, game can be started. During the game, leader/facilitator will observe the groups for collecting of discussion material.

2. Sinking Ship

Aim: To make participants learn how to help each other in an emergency situation.

Participants: All ages. Size of group is 5 – 20 persons. In this game, the participants will push each other. Thus, it will be best to separate the class into female and male group.

Time: 10 minutes

Material: Pieces of newspapers are stuck together using adhesive tape.

Guidance: All participants or “ship passengers” stand on the ship deck that is almost sinking (made of newspaper pieces). Slowly, the ship is sinking and the standing space of the
passengers is getting smaller. Meanwhile facilitator is telling the ship sinking process so that the participants feel and imagine that they are really on the sinking ship deck and reducing their standing space by tearing the pieces of newspapers one by one. The standing space is getting smaller. The participants have to hold back and help each other. Game will end if the standing position of the group is not possible anymore, or the ship has sunk already.

3. Nest of Matches

Aim: To make participants learning how to work together and understand their fellow's feeling. The task of this group very simple, and each participant can concentrate on this process.

Participant: All ages. Size of group is optional.

Material: One box of matches for each participant and one empty bottle for each small group.

Time: 15 – 20 minutes

Guidance: Big group is separated into small groups, each consists of 5 persons. Each small group will get one empty bottle and each participant will have a box of matches. In turn, each participant will put a match into the bottle neck to create a bird nest. Participants are not allowed to speak to each other. They must help each other, e.g. to point-out where to put another match. If there is one match falls down, it has to be picked up and put back in the bottle neck until the bird nest is ready.

Variation: Each small group makes a picture using all of match.
IV. Games for Entertainment

1. Chain of News
   - Participants: 10 persons or more
   - Time: 10 – 30 minutes, as long as the game is still entertaining.
   - Location: Anywhere, space is big enough for participants to sit or stand in circle.
   - Guidance: Sit close to each other in a row or in a circle. The first participant in the row or one of the participants in the circle has to think a long and difficult sentence (sentence may be provided by the facilitator). This sentence must be whispered very fast to the next participant, and this participant must whisper again what he heard to the one next to him and so on. The last participant must speak out what he heard the sentence and it must be exactly as the same as the first one being whispered. This game is suitable to be applied in class with subject on communication and reporting.

2. Who am I
   - Participant: Minimum 7 persons
   - Time: 10 – 20 minutes, depending on the number of participant
   - Material: Small pieces of paper as much as number of participant. Each piece of paper will be written with a name of a famous character (one who is still alive or already passed away), adhesive tape.
   - Guidance: Piece of paper with the name of famous character will be stuck at each participant's back, so that everybody can read those names, except the participant who is bearing it. Participants are freely going around the room and try to guess the name of the famous character stuck on her/his back by asking questions such as: "Am I (the character's name stuck to him/her) still alive?"; "Am I a male?"; "Was I born in Indonesia?". Only 3 questions are permitted to be
asked to 1 person, then move to other participant. It can also be agreed upon before that questions to be asked are questions with the "yes" or "no" answer.

3. Silent - Quiz

<table>
<thead>
<tr>
<th>Participant</th>
<th>Several groups, each group consists of 3 - 5 persons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>20 - 60 minutes.</td>
</tr>
<tr>
<td>Material</td>
<td>Small pieces of paper, written with expressions/words that can be visualized by acting.</td>
</tr>
<tr>
<td>Location</td>
<td>Game can be visualized to public/audience at public places.</td>
</tr>
<tr>
<td>Guidance</td>
<td>Participants are separated into small groups. Each group will receive a piece of paper written with expression, the group has to think of how they are going to visualize the expression without saying any word in front of the audience. In the act of visualization, the expressions/words must be described separate act, if possible that has nothing to do with the whole expression. The failure in writing the expression can be ignored, the important part is that public can guess the meaning of the expression. For example, &quot;taman kanak-kanak, keras hati, karang taruna, nasi putih, tanah air etc.&quot;</td>
</tr>
</tbody>
</table>

4. Various Races

a. Candle Race

Candles are lighted up from the start-line, then carry forward to finish-line and then back again (candles have to be always on), and later hand it over to the next participant and so on. If the candle is off, the bearer must go back to the starting point and light it on again.

b. Spoon Race

The participant of the group must carry a spoon with a potato/pingpong ball in it, using one hand, run to the finish line and back again to the start. The fallen potato/pingpong ball must be taken back by the bearer and he/she must proceed the race.