STATE MINISTER FOR ENVIRONMENT

DECREE OF THE STATE MINISTER FOR ENVIRONMENT
NUMBER : KEP-14/MENLH/1994 ; DATED : MARCH 19, 1994

RE

GENERAL GUIDANCE FOR DRAWING UP
THE ANALYSIS OF IMPACT ON THE ENVIRONMENT

THE STATE MINISTER FOR ENVIRONMENT,

Considering : that in order to implement Government Regulation Number 51 of 1993 on the Analysis on Impact on the Environment, it is necessary to stipulate a Decree of the State Minister for Environment on the general guidance for drawing up the analysis of impact on the environment.

Bearing in mind :

1. Law Number 4 of 1982 on the Principles of Environmental Management (State Gazette Number 12 of 1982, Supplement to State Gazette Number 3215);

2. Law Number 24 of 1992 on Spatial Layout (State Gazette Number 115 of 1992, Supplement to State Gazette Number 3501);

3. Government Regulation Number 51 of 1993 on the Analysis of Impact on the Environment (State Gazette Number 84 of 1993, Supplement to State Gazette Number 3538);

4. Presidential Decree Number 23 of 1990 on the Environment Impact Management Board;

5. Presidential Decree Number 44 of 1993 on the Position, Main Task, Function and Working System of State Minister as well as the Organizational Structure of Staff of State Minister;

6. Presidential Decree Number 96/M of 1993 on the Establishment of the Sixth Development Cabinet;

HAS DECIDED :

To stipulate : **THE GENERAL GUIDANCE FOR DRAWING UP THE ANALYSIS OF IMPACT ON THE ENVIRONMENT.**

Firstly : Hereinafter referred to as the Frame of Reference of the Analysis of Impact on the Environment, Analysis of Impact on the Environment, Plan for the Management of the Environment, and Plan for the Monitoring of the Environment shall be as meant in the Government Regulation Number 51 of 1993 on the Analysis of Impact on the Environment.

Secondly : The Frame of Reference of the Analysis of Impact on the Environment shall be drawn up by observing the general guidance for drawing up the analysis of impact on the environment as meant in Attachment I to this Decree.

Thirdly : (1) The general guidance for drawing up the analysis of impact on the environment shall be as meant in Attachment II to this Decree.

(2) The technical guidance for drawing up the analysis of impact on the environment shall be stipulated by the Minister or the Head of the Non Departmental State Institution by using the general guidance as meant in paragraph (1) as a reference;

(3) If the technical guidance as meant in paragraph (2) is not yet stipulated, the Analysis of Impact on the Environment shall be drawn up by observing the general guidance as meant in paragraph (1).

Fourthly : The Plan for the Management of the Environment shall be made by observing the general guidance for the plan for the management of the environment as meant in Attachment III to this Decree.

Fifthly : The plan for the Monitoring of the Environment shall be made by observing the general guidance for the plan for the monitoring of the environment as meant in Attachment IV to this Decree.

Sixthly : This Decree shall come into force as from the date of stipulation and be subject to a review in the case of errors in the future.

Stipulated in : Jakarta
On : March 19, 1994

THE STATE MINISTER FOR ENVIRONMENT

signed

SARWONO KUSUMAATMADJA

Attachment I :

THE GENERAL FOR DRAWING UP THE FRAME OF REFERENCE OF THE ANALYSIS OF IMPACT ON THE ENVIRONMENT (KA-ANDAL)

A. GENERAL ELUCIDATION

1. Definition

The frame of reference is a scope of study of the analysis of impact on the environment constituting the process of determining the scope of activities (Government Regulation Number 51 of 1993 Article 1).

2. The function of general guidance for drawing up KA-ANDAL.

a. The general guidance for drawing up KA-ANDAL serve as a reference for drawing up technical guidance for drawing up KA-ANDAL or as the basis for drawing up KA-ANDAL if the technical guidance for drawing up KA-ANDAL for the relevant business or activity is not yet stipulated.

b. The general guidance for drawing up KA-ANDAL is also valid for drawing up AMDAL for integrated/ multi sectoral activities, AMDAL for areas and AMDAL for regions.

3. The objective and function of KA-ANDAL.

The objective of drawing up KA-ANDAL is to :

a. Formulate the scope and profoundity of a study of ANDAL,

b. Make the study of ANDAL more effective and efficient in accordance with available funds, workers and time.

KA-KANDAL documents function as :

a. an importance reference for initiators, institutions that are responsible for and in charge of planned businesses or activities, and a basis for drawing up the study of ANDAL on the scope profoundity of the study of ANDAL to be conducted;

b. one of references for appraisers of ANDAL documents to evaluate the result of the study of ANDAL

4. Considerations for drawing up KA-ANDAL

a. Diversity

ANDAL aims to predict the possible impact of a planned business or activity on the environment. Planned businesses or activities and environmental nuances generally vary. Planned businesses or activities vary according to their type, size, aim, target etc. Environmental nuances will also be different from one another according to geographical location, various environmental factors, human influence etc. Therefore, the relations between planned businesses or activities and environmental nuances will also be diverse very much.
The possible impacts of a planned business or activity on the environment will also be different from one another. Therefore, KA-ANDAL is needed to determine which components of business or activity must be studied, and which components of the environment must be observed while drawing up ANDAL.

b. Limited Resources
The drawing up of ANDAL is sometimes confronted with limited resources, time, funds, workers, method, etc. KA-ANDAL emphasizes how to adjust the objective and result to be achieved under the condition in which the resources are limited without reducing the quality of ANDAL. KA-ANDAL also indicates which programmes top

the list of priorities to achieve the objective of ANDAL despite the limited resources.

c. Efficiency

The collection of data and information for the purpose of ANDAL should be limited to factors that are directly related to the need, so that ANDAL can be drawn up efficiently.
KA-ANDAL should be drawn up on the basis of the selection of the most relevant data and information.

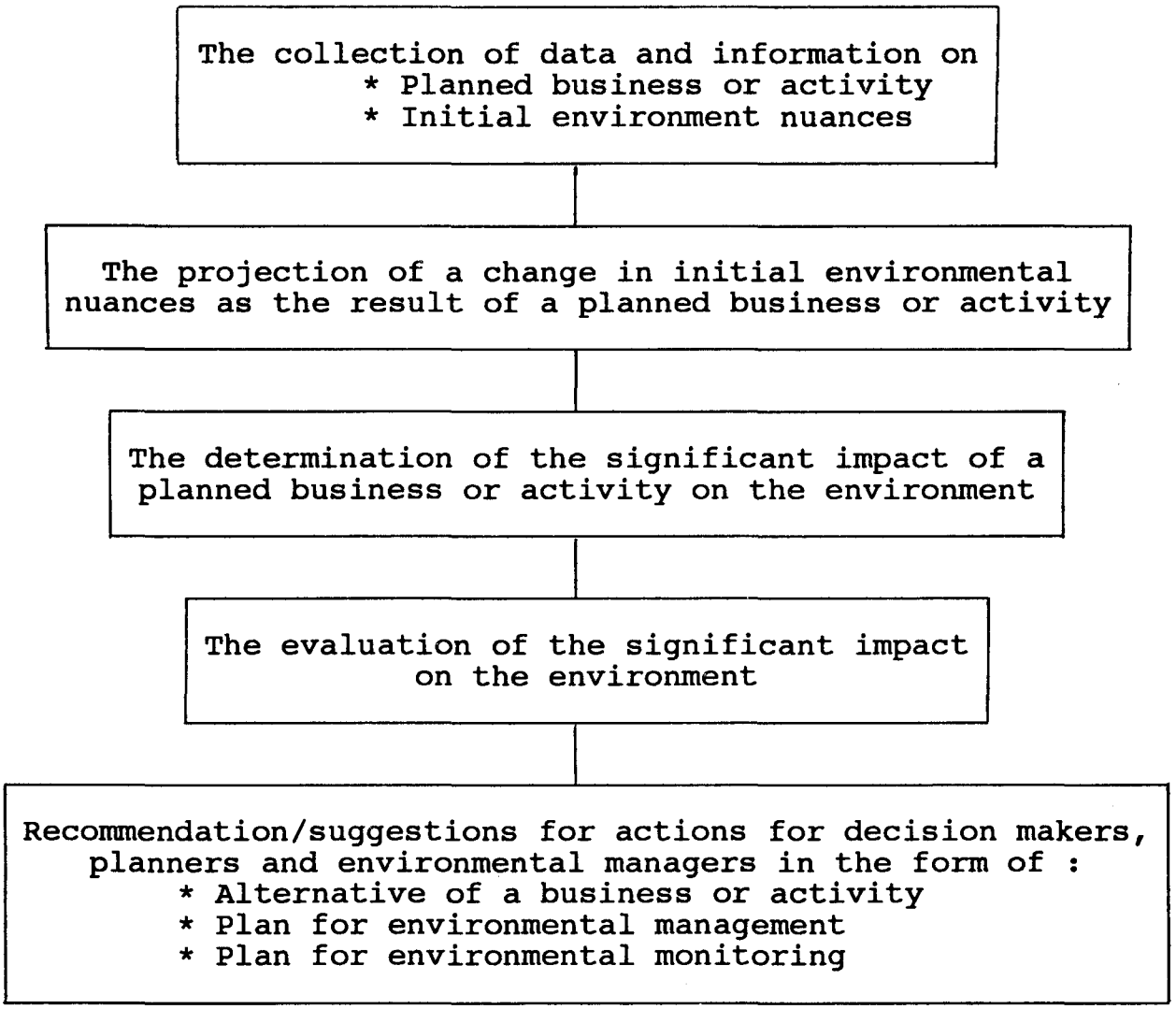
5. Parties involved in the drawing up of KA-ANDAL

Parties that are directly involved in the drawing up of KA-ANDAL are initiators, responsible institutions, (would-be) compilers of the study of ANDAL. KA-ANDAL (the process of determining the scope of activities) should always be drawn up by involving experts and interested society members in accordance with Article 22 of Government Regulation Number 51 of 1993 on the Analysis of Impact on the Environment.

6. Users of the result of ANDAL and their involvement in the drawing up of KA-ANDAL.

According to Article 6 of Government Regulation Number 51 of 1993, the analysis of impact on the environment is part of a feasibility study for a planned business or activity. The result of a feasibility study is useful not only for planners but decision makers as well. Therefore, KA-ANDAL for ANDAL should be drawn up with the assumption that the result of ANDAL will be part of a feasibility study to be used by decision makers and planners.

Though that is the case, unlike part of a feasibility study of factors supporting and impeding the realization of the plan for a business or activity from the standpoints of economy and technology, ANDAL more clearly predicts the possible impact of a business or activity on the environment. Therefore, the drawing up of KA-ANDAL should follow the procedure below in order to give inputs to planners and decision makers :



7. KA-ANDAL outlook

KA-ANDAL documents should clearly and firmly reflect the environmental outlook which must be considered in developing the plan for a business or activity. In line with this, the following matters should be observed :

a. KA-ANDAL documents should accommodate various aspirations which according to those involved in the study of ANDAL are important to be studied.

b. Since AMDAL is part of a feasibility study, the study of ANDAL should study and evaluate alternatives of a planned business or activity which are considered feasible from the standpoint of environmental,

technical and economic aspects as part of efforts to prevent the occurance of the bigger negative impact.

c. Since development activities generally change the environment, it is important to pay attention to the components of the environment having typical characteristics as follows :

1) The components of the environment whose function should be maintained and conserved, such as :

- Protected forest, conservation forest and biosphere preserve.
- Water resource
- Biodiversity
- Air quality
- Natural heritage and cultural heritage
- Environmental convenience
- Environment-oriented cultural values

2) The components of the environment which will undergo a fundamental change which is considered significant by the community living near the location of the planned business or activity, such as :

- The ownership and control of land
- Job and business opportunities
- The living standard of the community
- Public health

d. Basically, the impacts of a planned business or activity on the environment do not stand individually but rather they are interrelated and interdependent. This casual relationship should be understood from the beginning in drawing up KA-ANDAL in order to make the study of ANDAL well-guided and more systematic.
The four factors must become integral part of the process of drawing up KA-ANDAL especially the process of determining the scope of matters.

8. The process of determining scope

The determination of scope is the initial (early) process of determining the scope of problems and of identifying significant impacts related to a planned business or activity (hyphothesis).

The determination of scope is an important process in the drawing up of KA-ANDAL because the process results in :

a. Significant impacts on the environment considered relevant to be profoundly studied in the study of ANDAL by nullifying matters or components of the environment considered less important or important to be studied;

b. The scope of the study of ANDAL based on several consideration, i.e., project limit, ecological limit, social limit and administrative limit;

c. The profoundity of the study of ANDAL covering, among other things, the method used, the number of samples measured, and the number of experts needed in accordance with the available resources (funds and time).

The better the result of the determination of scope of the firmer and clearer the direction of the study of ANDAL will be,

a. The determination of the scope of significant impacts.

The determination of the scope of significant impacts is done through a series of action as follows :

1) The identification of potential impacts.

At this phase the determination of the scope of problems is aimed at identifying all environmental impacts (primary, secondary, etc) which will potentially result from a planned business or activity.
At this phase only potential impacts are inventorized regardless of whether or not the impacts are big or whether or not the impacts are significant. Therefore, no effort is made to assess whether or not the potential impacts are significant at this phase.

The identification of potential impacts is obtained from a series of consultations and discussions with experts, initiators, responsible institutions and interested society members and is equipped with the result of a field observation. In addition, the identification of potential impacts can also be done by using an identification method covering :

- list of test (simple, questionnaire, descriptive)
- simple interaction matrix
- flowchart
- bibliographical study
- filed observation
- content analysis
- group inter-action (meeting, workshop, brain-storming, etc)

For further information on the determination of scope, see the Guidance on the Determination of Scope for the Drawing up of KA-ANDAL according to the Decree of the State Minister for Population and Environment Number KEP-30/MENKLH/7/1992.

2) The evaluation of potential impacts

The determination of scope at this phase is aimed at nullifying/abolishing irrelevant or unimportant potential impacts in order to get a list of significant, hypothetical impacts considered necessary and relevant to be profoundly studied in the study of ANDAL. The list of significant impacts is drawn up based on the consideration of important matters by the people living near the location of a planned business or activity, responsible institutions and experts. At this phase the list of significant, hypothetical impacts is not yet drawn up systematically. The method used at this phase is group inter-action (meeting, workshop, brain-storming). The identification of significant impacts is particularly done by the initiator of the business or activity (in this case the consultant charged with drawing up ANDAL) by taking into account the outcome of consultations and discussions with responsible institutions and interested society members.

3) The focussing of significant impacts.

The determination of scope at this phase is aimed at grouping/organizing the significant impacts already formulated at the previous phase with a view to obtaining main environmental issues reflecting or illustrating fully or entirely :

- The relation between the planned business or activity and the components of the environment undergoing a fundamental change (significant impact);

- The relations among various components of the already-formulated significant impacts.

The main environmental issues are formulated in 2 (two) phases. Firstly, all significant impacts are classified into several groups according to the mutual relations among the significant impacts. Secondly, the already grouped significant impacts are put in a sequential order based on the significance of the impacts from the standpoints of economic, social and ecological aspects.

b. The determination of the scope of study

The determination of the scope of study is aimed at limiting the area for the study of ANDAL in accordance with the determination of the scope of significant impacts and with due observance of limited resources, time and workforce.

The scope of the study of ANDAL is determined on the basis of the consideration of space limits as follows :

1) Project Limit

Referred to as project limit is the space where a planned business or activity will conduct pre-construction, construction and operational activities, and where the planned business or activity will have an impact on the surrounding environment, including the alternative location for the planned business or activity.

2) Ecological Limit

Referred to as ecological limit is the space where the impact of a planned business or activity will spread according to the transportation means of (water, air) waste, and where the natural process occurs will undergo a fundamental change. The space includes space near the location of the planned business or activity ecologically having an impact on the planned business or activity.

3) Social Limit

Referred to as social limit is the space near the location of a planned business or activity where various social inter-actions containing certain stable norms and values (including social system and

structure) exist in accordance with the process of social dynamic of a community expected to undergo a fundamental change as a result of the business or activity.

This social limit is important for parties involved in the study of ANDAL in view of the fact that the social economic and cultural life of communities will undergo a fundamental change as a result of the business or activity. Since the impacts of a planned business or activity on the environment spread unequitably, the social limit covers communities to be affected by positive and negative significant impacts.

4) Administrative Limit

Referred to as administrative limit is the space where the community can freely carry out socio-economic and socio-cultural activities in accordance with the legislation prevailing in the space.
The administrative limit can be in the form of state administrative limit or resource processing concession limit (such as forest concession limit, mining concession limit).
By paying attention to the above limits and taking into account technical obstacles (limited funds, time and workforce), the scope of the study contained in a map with a proportional scale will be obtained.

5) The limit of the scope of the study of ANDAL is the space constituting a combination of the four different areas mentioned above, but it is determined in accordance with the capability of the initiator who is generally confronted with limited resources such as time, funds, workforce, technique and study method. Therefore, the scope of study starts from the space for the planned business or activity, to wider ecosystem space, social space and administrative space.

B. THE DRAWING UP OF KA-ANDAL

I. Introduction

1.1. Background

The brief description of the background for the realization of the study of ANDAL from the standpoints of :

a. The prevailing legislation;
b. The policy on environmental management;
c. The relations between the planned business or activity and the possible significant impact.

1.2. The Objective and Use of Study

The study of ANDAL is aimed at :

a. Identifying planned businesses or activities especially those potentially having a significant impact on the environment;

b. Identifying environmental nuances especially those to be affected by a significant impact;

c. Predicting impacts and evaluating significant impacts on the environment;

The study of ANDAL is used :

a. to help decision makers choose feasible alternatives from the standpoint of environmental aspects;

b. to integrate environmental considerations while making a detailed plan for a business or activity;

c. as guidance to carry out environmental management and monitoring activities.

II. The Scope of Study

2.1. The scope of the planned business or activity to be studied

- Describe briefly the planned business or activity having an impact on the environment;

- Describe the components of a business or activity studied in relation with the impacts it may cause;

2.2. The scope of initial environmental nuances

- Describe briefly environmental nuances affected by the impacts;

- Describe the components of the environment studied because they are affected by the impacts;

2.3. The scope of study areas

The scope of study covers project, ecological, social and administrative areas. The scope of study together with its resultant is called technical area constituting the area of the study of ANDAL.

III. Study Method

3.1. The method of collecting and analyzing data

This part contains the method of collecting and analizing both primary and secondary data which are valid and reliable to :

a. study, measures and observe the components of the environment expected to be affected by significant impacts.

b. study, measure and observe the components of a planned business or activity expected to be affected by significant impacts from the surrounding environment.

3.2. The method of predicting impacts and determining significant impacts.

This part contains the method used in the study of ANDAL to predict the extent of impacts on the environment, and to determine the significance of impacts. The use of formal and non formal methods in predicting significant impacts should clearly be described for each component of the environment expected to be affected by significant impacts.

3.3. The method of evaluating impacts

This part describes the method generally used in the study of ANDAL to evaluate the significant impacts of a business or activity on the environment holistically used :

a. as the basis for studying the feasibility of the environment from the standpoint of the alternative business or activity;

b. as the direction of the management of significant impacts on the environment.

IV. The Realization of Study

4.1. Study Team

This part describes the number and type of experts needed in the study of ANDAL in accordance with the scope of the study of ANDAL.

4.2. Study Cost

This part describes at least the break down of each type of cost needed in drawing up the study of ANDAL.

4.3. Study Time

This part describes the period of time needed in realizing the study of ANDAL starting from the preparatory stage for the submission of reports to responsible agencies.

V. Bibliography

This part describes a list of books and writings used in drawing up KA-ANDAL documents.

VI. Attachment

If considered necessary, important points as the outcome of consultations and discussions with the parties involved in drawing up KA-ANDAL should be attached to KA-ANDAL documents in addition to the biodata of each person involved in drawing up ANDAL.

Attachment II

To be continued

THE GENERAL GUIDANCE FOR DRAWING UP ENVIRONMENTAL IMPACT ANALYSIS (ANDAL)

A. GENERAL ELUCIDATION

1. Definition :

   Environmental Impact Analysis (ANDAL) is a careful and profound study of the significant impact of a planned business or activity (Government Regulation Number 51 of 1993 Article 1).

2. The function of ANDAL documents and the general guidance for drawing them up.

   a. The general guidance for drawing up ANDAL is used as a reference for the drawing up of technical guidance for drawing up ANDAL or as the basis for drawing up ANDAL if the technical guidance for drawing up ANDAL for the relevant business or activity is not yet stipulated.

   b. The general guidance for drawing up ANDAL is also valid for the drawing up of AMDAL for integrated/ multisectoral activities, AMDAL for areas and AMDAL for regions.

B. **THE DRAWING UP OF ANDAL DOCUMENTS**

The summary of ANDAL should be made in such a way so that its content.

1. can directly disclose important inputs which are useful for decision makers, planners and managers of a planned business or activity;

2. can be easily understood by all parties including the community and summarized for the purpose of publication in mass media if considered necessary;

3. can briefly describe :

   a. A planned business or activity together with the significant impact it may cause either at pre-construction, construction or post-construction phases.

   b. Information on the possible gap in information data as well as several shortcomings and limitations faced during the drawing up of ANDAL.

   c. Other matters considered necessary to supplement the summary.

CHAPTER I - INTRODUCTION

This chapter covers :

1. Background

The brief description of the background of the study of ANDAL from the standpoint of :

a. The prevailing legislation
b. The matters underlying the policy on environmental management
c. The relations between the planned business or activity and the significant impact it may cause.

2. The objective of study

a. Objective
The objective of the study of ANDAL is to :

1) identify the planned business or activity having a significant impact on the environment.

2) identify the components of the environment to be affected by the significant impact.

3) predict and evaluate planned businesses or activities having a significant impact on the environment.

b. Use
The study of ANDAL is used :

1) as a material to make the plan for regional development;

2) to help the process of making a decision on the feasibility of the environment of the planned business or activity;

3) to give inputs to make the detailed technical design of the planned business or activity;

4) to give inputs to make the plan for environmental monitoring and management of the planned business or activity;

5) to give information to the community to benefit from the positive impact and to prevent the negative impact as a result of the planned business or activity.

CHAPTER II - STUDY METHOD

This chapter covers the significant impacts studied, study areas, method of collecting and analysing data, method of predicting significant impacts, and method of evaluating significant impacts.
Descriptions in each point in this chapter must refer to KA-ANDAL documents.

1. The significant impacts studied

a) Describe briefly planned businesses or activities having an impact on the environment, especially the components of business or activity directy related to the impacts they cause.

b) Describe briefly environmental nuances affected by impacts, especially the components of the environment directly affected by impacts.

c) The aspects studied as meant in points 1 a) and b) must refer to the result of the determination of scope in KA-ANDAL documents.

2. Study area

The brief description of the scope of study must refer to the determination of study areas outlined in KA-ANDAL and the result of a field observation. The limits of the area of the said study of ANDAL are illustrated in a map with a proportional scale.

3. The method of collecting and analyzing data

a) Since the study of ANDAL is the profound study of the significant impacts of a business or activity on environment, the collected primary and secondary data must be valid and reliable and must be obtained by means of a valid method or instrument.

b) The clear description of the applied method or instruments, and the collecting place of data on several components of the environment examined as meant in Chapter II point 1.b. The collecting place of data should be contained in a map with a proportional scale.

c) The collection of data for demographic, socio-economic and socio-cultural purposes as well as public health uses as far as possible the combination of three methods (triangular method : bibliographical study, secondary data survey, observation/inspection) in order to obtain highly reliable data.

d) The clear description of method or instrument used in analyzing data.

4. The method of predicting significant impacts

The clear description of the method used to predict the extent of impacts of a business or activity on the components of the environment as meant in point II.1.b. The use of formal and non formal methods to predict significant impacts should clearly be described for each component of the environment expected to be affected by the impacts.

5. The method of evaluating impacts

The brief description of the method of evaluating impacts in the study of ANDAL, namely by using the Guidance on the Extent of Significant Impacts in accordance with the Decision of the Head of the Environmental Impact Management Board (BAPEDAL) Number KEP-056 of 1994 to study the significant impacts of a business or activity on the environment, which serves as the basis for studying the feasibility of the environment of alternative businesses or activities.

CHAPTER III - PLANNED BUSINESS OR ACTIVITY

1. The identity of initiator and person drawing up ANDAL

The description of the identity of initiator and person drawing up ANDAL covers :

a) Initiator :

1) The full name and complete address of the agency/ company as the initiator of the planned business or activity.

2) The full name and complete address of the party responsible for the realization of the planned business or activity.

b) Parties drawing up ANDAL

1) The full name and complete address of the institution/company along with qualifications and references.

2) The full name and complete address of the party responsible for the drawing up of ANDAL.

2. The objective of the planned business or activity

The aim and objective of the planned business or activity should be stated in a systematic but unguided manner.

3. The use of the planned business or activity

The description of the use of the planned business or activity from the standpoint of the interest of the initiator and in support of development programmes.

a) The determination of limits of land to be directly used for the planned business or activity must be stated in a map with a proportional scale, and can indicate the linkage and layout relations between the location of the planned business or activity and that of other businesses or activities, such as residence (upgraded environment for general public), and the natural environment near the location of the planned business or activity. Protected forest, nature preserve, wildlife reserve, water source, river and other protected areas near the location of the planned business or activity must be given special marks in the map.

b) The distance between the location of the planned business or activity and the location of available water sources, energy, bionatural resources, non bionatural resources and human resources needed for the planned business or activity after it is operational. This distance must be disclosed in a map with a proportional scale.

c) Alternative businesses or activities based on the result of a feasibility study (for instance : alternative locations, building layout or supporting facilities or production process technology). If based on the result of a feasibility study there are several alternative locations for the planned business or activity, describe each of the alternative locations as meant in points a and b.

d) The layout of the planned business or activity should have a map with a proportional scale containing information on the site of buildings and other structure to be built in the location of the planned business or activity as well as the relations between the buildings/structure and existing buildings near the location of the planned business or activity (highway, railway tracks, pier etc). If there are several alternative layouts for the buildings and other structures, the proposed alternatives must be disclosed in a map with a proportional scale.

e) The realization phase of the planned business or activity and the time schedule for the realization of the planned business or activity, construction phase, operation phase and post operation phase.

1) Pre-construction/preparatory phase

The description of the planned business or activity and the time schedule of the business or activity at a pre-construction phase. The profound description should be focused on the business or activity having a significant impact on the environment.

2) Construction phase

(a) The description of the planned business or activity and the time schedule of the business or activity at a construction phase. The profound description should be focused on the business or activity having a significant impact on the environment. For instance :

(1) The plan for the recruitment of workers according to quantity, place of origin of workers and educational qualifications.

(2) The construction of physical facilities and infrastructures (road, electricity, water supply) of the planned business or activity.

(3) The stockpiling of materials having an impact on the environment.

(b) The description of the construction of environmental impact control units or facilities (for instance : waste processing unit), if the said units or facilities are expected to be built by the initiator. In addition, efforts to overcome environment related problems arising at a construction phase should be disclosed, if any.

(c) The description of the plan for the restoration of former places of materials, warehouses, emergency roads, etc. after the construction activities are completed.

3) Operation phase

(a) The description of the planned business or activity and the time schedule of the business or activity at an operation phase. The profound description should be focused

on the business or activity having a significant impact on the environment. For instance :

(1) The quantity and type of raw materials used in the production process that may have a significant impact on the environment (for instance : pesticide and other hazardous and toxic substances). The water balance should be described if the planned business or activity needs water in large quantity.

(2) The estimate of workers, place of origin of workers and educational qualifications of workers to be directly employed for the planned business or activity at an operation phase.

(3) The plan for the control of danger or physical and social problems at an operation phase.

(b) The plan for the rehabilitation or reclamation of the land to be realized at an operation phase, including the plan for the operation of environmental impact controlling units or facilities built at a construction phase.

4) Post operation phase

The description of the planned business or activity and the time schedule of the business or activity at a post operation phase.
For instance :

(a) The plan for the restoration of the former site for stockpiling materials, temporary barracks, emergency roads, etc.

(b) The plan for the rehabilitation and reclamation of the land to be realized after the end of an operation phase.

(c) The plan for the re-use of the businesses or activities location plan for other purposes when the entire business or activities has ended.

(d) The plan for the handling of workers dismissed after the end of the period of a business or activity.

CHAPTER IV - ENVIRONMENTAL NUANCES

This chapter should disclose environmental information as complete as possible.

1) Environmental nuances in the study area of the planned business or activity should profoundly disclose the components of the environment having the potential to be affected by the significant impacts of a business or activity. In addition, the components of the environment having ecological and economic significance should draw attention.

2) The qualitative and quantitative condition of various natural resources existing in the study area of the planned business or activity either those which have been or will be exploited or those which have the potential to be exploited. The condition of these natural resources should be presented in a map and/or table with a proportional scale, and if necessary, the map and/or table must be equipped with diagram, picture, graphic and photograph.

3) Data and information on environmental nuances
The brief description of environmental nuances in the study areas of the planned business or activity. The description of environmental nuances in this part should be limited to the components of the environment relating to or having the potential to be affected by significant impacts.
Following are several examples of the components of the environment that can be chosen for the purpose of study in accordance with the result of the determination of scope in KA-ANDAL. The components of the environment other than those mentioned in the list of examples can be studied if considered necessary based on the result of a field observation in the study area of ANDAL.

a. Physical-chemical

1) Climate

(a) The components of climate that must be studied include the type of climate, (maximum, minimum and average) temperature, humidity of rainfall, quantity of rain water, state of wind (direction and speed),

intensity of solar radiation.

(b) The periodical data on disasters (annual, five year, etc, cycles) such as the frequency of typhoon, annual flood, flash flood in the study area of the planned business or activity.

(c) The data made available by the meteorology and geophysics station representing the study area.

(d) The quality of air either at the source or area near the study area of the planned business or activity.

(e) The pattern of micro climate, pattern of the spread of air polluting substance either at general weather or the worst weather.

(f) The source of noise and vibration, the level and frequency of noise.

2) Physiographic

(a) The shape topography of land (morphology), geological structure and type of land.

(b) The environmental indicator related to the geological stability and land stability that are particularly stressed in case of a sign of instability, and must be described clearly and thoroughly (for instance : land slide, earthquake, fault, volcanic activities etc.)

(c) The geological uniqueness, peculiarity and vulnerability of land and rock.

3) Hydrological

(a) The physical characteristics of river, lake, swamp (tidal swamp, fresh water swamp).

(b) The average decade, monthly and annual discharge of water.

(c) The sedimentation content, erosion level.

(d) The physical condition of surface and ground

water catchment areas.

(e) The fluctuation and potentiality of ground water (shallow and deep).

(f) The supply and need/utilization rate of water for drinking, taking bath and washing.

(g) The supply and need/utilization rate of water for other purposes such as farming, industry.

(h) The physical, chemical and microbiological quality of water referring to the quality standard and parameter of water relating to the discharged waste.

4) Hydrooceanographic

The oceanic hydrodynamic pattern such as tide, current and wave, coastal morphology, abrasion occurring naturally in the research area.

5) Space, Plot and Land

(a) The inventory of plot and other resources when the plan for a business or activity is submitted and the possible development of plot and other resources in the future.

(b) The plan for the development of areas, the plan for spatial layout, the plan for land use and other natural resources officially or unofficially drawn up by the central, provincial or regencial administration in the study area of the planned business or activity.

(c) The possible conflict or limitation arising from the relations between the plan for land use and other natural resources in connection with the ownership/determination of location for the planned business or activity.

(d) The inventory of aesthetic and scenic values of the extent of nature and recreational parks in the study area of the planned business or activity.

b. Biological

1) Flora

(a) The biogeoclimatic zone map of natural vegetation including the type, characteristic and vulnerability of vegetation in the study area of the planned business or activity.

(b) The description of the types of vegetation and ecosystem protected by the law in the study area of the planned business or activity.

(c) The description of the uniqueness of vegetation and ecosystem in the study area of the planned business or activity.

2) Fauna

(a) The estimated abundance and diversity of fauna, habitat, spread, migration pattern, population of cattle and animals protected by the law in the study area of the planned business or activity.

(b) The estimated spread and density of invertebrate animal population considered important because of the role and potential as foodstuff, or source of pest and disease.

(c) The life of the above important animals, including the way of breeding, cycle, balance life, the way of spawning, the way of laying eggs, the way of giving birth, the way of taking care of offspring, behaviour in their habitat.

c. Social

Among the social components that need to be studied are :

1. Demography

(a) Population structure according to age group, sex, livehood, education and religion,
(b) Population density rate and spread.
(c) Productive workforce,
(d) Birth rate,

(e) Rough mortality rate,
(f) Infant mortality rate,
(g) Population growth pattern.

2. Economy

(a) Job and business opportunities,
(b) Natural resource ownership and exploitation,
(c) Per capita income,
(d) Economic facility and infrastructure (road, market, port, bank, shopping centre),
(e) Natural resource exploitation pattern.

3. Culture

(1) Social institutions in the community,
(2) Prevailing customs and traditions,
(3) Social processes (cooperation, accommodation and conflict) in the community,
(4) Acculturation, assimilation and integration of various social groups,
(5) Social groups and organizations,
(6) Social layers in the community,
(7) On-going social changes in the community,
(8) Public stand and perception towards the planned business or activity.

d. Public Health

(1) The incidence and prevalence of diseases related to the planned business or activity,
(2) Environmental sanitation, especially the availability of clean water (service coverage),
(3) Nutrition status and food sufficiency,
(4) The type and number of health facilities,
(5) The scope of services by doctors and paramedics.

CHAPTER V - THE ESTIMATE OF SIGNIFICANT IMPACTS

This chapter should describe :

1. The accurate estimate of environmental impacts of a planned business or activity at pre-construction, construction, operation and post-operation phases. This activity is carried out by analyzing the difference between the condition of the estimated environmental quality in connection with the business or activity and the condition of the estimated environmental quality in case of no business or activity by using an impact-forecasting method.

2. The determination of significance of the estimated change in environmental quality for the community in the study area of the planned business or activity, and the government by observing the Guidance on the Extent of Significance Impacts.

3. In studying matters as meant in points 1 and 2 direct and indirect impacts should be taken into account. Direct impacts are the impacts directly caused by a business or activity, while indirect impacts are the impacts arising from the change in the components of the environment and/or primary businesses or activities in connection with the planned business or activity. In this connection, it is necessary to take into account the mechanism of impact flow to various components of the environment as follows :

   a) Activities causing direct significant impacts on social components.

   b) Activities causing direct significant impacts on biological and social components consecutively.

   c) Activities causing direct significant impacts on physical-chemical aspects, and then impacts on social components.

   d) A chain of significant impacts on social components.

   e) Significant impacts as meant in points a, b, c and d causing reverse impacts on the planned business or activity.

4. Since the selection of alternative business or activity (from the standpoint of location or technology) which is the component of a feasibility study is still conducted, the study as meant in point V.1 and point V.2 should be conducted for each alternative.

CHAPTER VI - THE EVALUATION OF SIGNIFICANT IMPACTS

This chapter should describe the result of a study of significant impacts of the planned business or activity.
The result of the evaluation then serve as inputs for authorized agencies to decide environmental feasibility for the planned business or activity as meant in Government Regulation Number 51 of 1993.

1. The study of significant impacts

   a. The holistic study of environmental components expected to undergo a fundamental change as meant in Chapter V by using criteria in the Guidance on the Extent of Significant Impacts in accordance with the Decision of the Chairman of the Environment Impact Management Board (BAPEDAL) Number KEP-056 of 1994.

   b. Referred to as holistic impact evaluation is a total study of diverse significant impacts on the environment as meant in Chapter V along with businesses or activities causing impacts. The diverse environmental components affected by positive and negative significant impacts should be studied as a unit of diverse environmental components which are interrelated and mutually influence in order to know to what extent "the balance between the positive significant impacts and the negative significant impacts is.

   c. The significant impacts resulting from the evaluation of significant impacts should be presented as significant impacts that must be managed.

2. Study as the basis for management

   a. The causal relations between the planned business or activity, environmental nuances and positive and negative impacts the planned business or activity may cause. For instance, the planned business or activity likely has a significant impact on environmental nuances, because the planned business or activity is realized in a densely-populated area, or in an area where local people have too low education and income, or by applying inappropriate technology, etc.

   b. The characteristic of the significant impact should be disclosed clearly in the sense whether or not the positive or negative significant impacts will last as long as the planned business or activity is realized, or whether or not there will be antagonistically mutual relations among impacts. If possible, it is also necessary to describe when the threshold of the significant impacts will appear after the planned business or activity is realized, or when the significant impacts will last beginning from the pre-construction phase and will end until the planned business or activity is realized, or whether

significant impacts will continue, for instance, until more than one generations.

c. Communities to be affected by negative impacts and those to be affected by positive impacts. The gap between the expected change and the possible change as a result of development activities should be identified.

d. The possible extent to areas to be affected by the significant impacts whether they will be felt locally, regionally, nationwide or worldwide. Therefore, it is necessary to describe the proposal for the control of significant impacts from the standpoint of the government's capability to overcome negative impacts and develop positive impacts at district, regencial, provincial, national and international levels.

e. The analyzis of disasters and the analysis of risks if the planned business or activity is located in a natural disaster prone area or near a source of natural disaster.

CHAPTER VII - BIBLIOGRAPHY

This chapter should describe a reference of data and important statements that must be supported by scientific, up-to-date documents and must be presented in a bibliography with standard writing.

CHAPTER VIII - ATTACHMENTS

This chapter should mention material attached :

1. Licences or recommendations obtained by the initiator until ANDAL is drawn up.
2. Letters of decision, qualification, reference and identity of managers and researchers and environmental impact analysis.
3. Photographs depicting initial environmental nuances, proposed business or activity in order to give deeper horizon on the mutual relations and the possible significant impacts of the planned business or activity on the environment.
4. Other diagrams, maps, pictures, graphics and tables not yet attached.
5. Other matters considered necessary or relevant to be attached.

Attachment III
To be continued

Attachment III :

THE GENERAL GUIDANCE FOR DRAWING UP ENVIRONMENTAL MANAGEMENT PLANS (RKL)

A. GENERAL ELUCIDATION

1. The Scope of Environmental Management Plans (RKL)

RKL documents serve as guidances containing efforts to prevent, control and overcome negative significant impacts on the environment and develop positive significant impacts of a planned business or activity.

Environmental management efforts cover four different activities :

a. Environmental management aimed at avoiding or preventing negative environmental impacts through the selection of alternative layouts (micro space), locations, building designs for a project.
b. Environmental management aimed at overcoming, minimizing, or controlling negative impacts occurring when a business or activity is operational or until a business or activity ends (for instance : the rehabilitation of the location for a project).

c. Environmental management aimed at developing positive impacts in order to give the greater advantage to the initiator and other parties particularly society members enjoying the positive impacts.

d. Environmental management aimed at giving economic consideration as the basis for giving compensations for unrenewable, lost or damaged resources (either from the standpoint of socio-economic and/or ecological aspects) as a result of a business or activity.

2. The Profoundity of Environmental Management Plans (RKL)

Since AMDAL documents constitute part of a feasibility study, RKL documents will only give main directions, principles or requirements to prevent/avoid/control impacts. If considered necessary, RKL documents can be equipped with a reference of literatures on building design to prevent/avoid/control impacts. This is because :

a. At the phase of feasibility study information on the planned business or activity is relatively general, does not have detailed technical specification and still has several alternatives. This is merely because at this phase the feasibility study aims to know to what extent the project is considered feasible from the standpoint of technical and economic aspects before investments are used and workers are employed. The lack of data and information on the planned business or activity will certainly influence the model of environmental management that can be formulated in RKL documents.

b. Main directions, principles and requirements of environmental management contained in RKL documents will then be integrated or serve as the basis for the drawing up of a detailed engineering design by engineering consultants.

It should be noted that the environmental management plan contained in RKL documents should be linked to ANDAL documents in the sense that the managed environmental components should be those undergoing a fundamental change as meant in ANDAL documents.

3. Environmental Management Plan

Environmental management plan can be the prevention and control of negative impacts and the improvement of positive

impacts that are strategic. The environmental management plan should be clearly and systematically described and have main characteristics as follows :

a. The environmental management plan should contain main directions, principal guidances, or requirements to prevent, avoid, and control strategic significant impacts as well as improve strategic positive impacts, and if considered necessary, it can be equipped with a reference of literatures on the building design for the control of the said impacts.

b. The environmental management plan should be formulated in such a way so that it can serve as consideration for the drawing up of a detailed engineering design, and as the basis for the realization of environmental management activities.

c. The environmental management plan should cover efforts to improve the knowledge and capability of employees of the initiator in managing the environment through training courses. The types of training course should be contained in the environmental management plan along with the number and qualification of employees to be trained.

d. The environmental management plan should cover the establishment of an organizational unit in charge of environmental affairs to implement the environmental management plan. Among the aspects that should be described in connection with the establishment of the organizational unit are organizational structure, task and authority of the organizational unit as well as the number and qualification of employees.

4. Environmental management approaches

The significant impacts that are already predicted through the study of ANDAL can be handled by using one or more environmental approaches, i.e., technological, social, economic and institutional approaches.

a. Technological Approach

This approach is the method or technology used to manage significant environmental impacts. For instance :

(1) To control hazardous and toxic waste, the following steps must be taken :

(1.1) Restricting or isolating waste;
(1.2) Recycling waste:
(1.3) Neutralizing waste by adding certain chemical substances to it so as to cause no danger to human beings and other creatures;

(2) To prevent, reduce or improve damaged natural resources, the following steps must be taken :

(2.1) Building terraces or planting land-covering trees to prevent any erosion;
(2.2) Reclaiming areas from former mining sites by covering them with land and planting land-covering trees.

(3) The improvement of positive impacts in the form of added value to existing positive impacts can be conducted, for instance, through the improvement of the efficiency of the positive impacts.

b. **Socio-economic approach**

This approach is the steps that will be taken by the initiator to control significant impacts through social and economic activities. For instance :

(1) Inviting the people living near the location of the planned business or activity to take active part in environmental management activities;

(2) Requesting the government to take part in controlling significant environmental impacts;

(3) Applying to the government for the reduction of import duty on pollution-controlling equipment;

(4) Prioritizing the recruitment of local workers in accordance with their expertise and skill;

(5) Paying compensations for the land belonging to the local people for the purpose of the planned business or activity under a mutually beneficial principle;

(6) Granting public facilities to the people living near the location of the planned business or activity in accordance with the capability of the initiator;

(7) Establishing harmonious social interactions with the nearby people so as to prevent social jealousy.

c. **Institutional approach**

This approach is the institutional mechanism that will be adopted by the initiator to control significant environmental impacts. For instance:

(1) Cooperation with institutions interested in and related to environmental management.

(2) The supervision of the work performance of environmental management by the authorized agency.

(3) The reporting of the result of environmental management to the interested parties periodically.

5. **The format of RKL documents**

Since RKL, ANDAL and RPL documents are drawn up and evaluated all at once, the format of RKL documents are directly oriented towards the four environmental management plans as meant in point 1 above.

B. THE DRAWING UP OF ENVIRONMENTAL MANAGEMENT PLAN (RKL) DOCUMENTS

I. The background of environmental management

1. The description of the background on the need to implement an environmental management plan (RKL) viewed from the interests of the initiator and interested parties as well as from the wider interests within the framework of supporting development programmes.

2. The systematic, brief and clear description of the objective of environmental management to be conducted by the initiator in connection with the planned business or activity.

3. The description of the advantage of environmental management either for the initiator of the business or activity, interested parties or the public at large.

4. The brief description of areas, communities or ecosystem near the location as a result of the planned business or activity on the basis of the result of ANDAL.

5. The clear description of the following matters by means of map with a proportional scale (administrative map, location map, topographic map, etc)

   (1) The geographic location of the planned business or activity;

   (2) The flow of river, lake, swamp;

   (3) Road network and settlement site;

   (4) Areas, communities or ecosystem near the location of the planned business or activity that are sensitive to changes.

   (5) The administrative limit of the regional administration.

   The map should refer to the result of the study of ANDAL.

II. Environmental Management Plan

The brief and clear description of each type of impact caused by one or more businesses or activities with the sequence of discussions as follows :

1) Significant impacts and a source of significant impacts

   a. Describe briefly and clearly the components and parameters of the environment expected to undergo fundamental changes according to the result of the study of ANDAL.
   It is necessary to affirm that only the components and parameters of the environment affected by significant impacts are disclosed. Describe also to what extent the planned business or activity has developed at a time when RKL is being drawn up (feasibility study, detailed engineering design or construction level).

For the components or parameters of the environment undergoing fundamental changes according to the result of the study of ANDAL, it is necessary to stipulate several matters considered strategic to be managed on the basis of the following considerations :

1) The managed significant impacts are particularly directed to environmental component which, according to the coverage process results (in the framework of composing the ANDAL frame of reference), constitute the main issue of the business plan or activity;

2) The manage significant impacts are impact, classified as creating many derivative significant impact (secondary, tertiairy impacts, and so on);

3) The managed significant impacts are impacts that, if prevented/overcome, will have further impacts on derivative significant impacts.

   In addition, describe also derivative significant impacts that will have impacts due to the fact that the strategic significant impacts are managed.

b. A Source of Impacts

Describe briefly a source of significant impacts :

1) If significant impacts appear as a direct result of a planned business or activity, describe briefly the types of business or activity causing significant impacts;

2) If significant impacts appear as a result of the change in other components of the environment, describe briefly the components of the environment causing the significant impacts.

2) The yardstick of impacts

Explain the yardstick of impacts that will be used to measure the components of the environment to be

affected by impacts of a planned business or activity based on the quality standard (determined by legislation); the decisions of experts that can be accepted scientifically, are generally used, and/or have been stipulated by the relevant institution. The applied yardstick of impacts is the yardstick used in ANDAL.

3) The objective of environmental management plan.

Describe specifically the objective of managing strategic significant impacts together with derivative impacts that are automatically prevented/overcome/ controlled.

For instance, if the quality of waste water is the strategic impact that must be managed in the realization of the plan for a pulp and paper industry, then the specific objective of environmental management effort is : *"To control the quality of liquid waste disposed of into XYZ rivers, especially the parameters of BODS, COD, totally suspended solid matters, and pH; so that they do not go beyond the quality standard of liquid waste as stipulated in the Decree of the Minister of Population and Environment No. KEP 03/MENKLH/II/1991 on the Quality Standard of Liquid Waste of Companies that have been operational"*.

4) **Environmental management**

Explain in detail environmental management efforts that can be made through technological, and/or socio-economic, and/or institutional approaches as already explained in the general elucidation section in point 4.

The said environmental management efforts should also include efforts to operate impact-controlling facilities or united (for instance, waste processing unit), if the said facilities or units in the ANDAL documents are declared the activities of the planned business or activity.

5) **The location of environmental management**

Describe the planned location of environmental management activities by taking into account the spread of the managed significant impacts together with a map/sketch/picture, if possible.

6) **The time period of environmental management**

Describe briefly when and how long environmental management activities will be carried out by taking into account the characteristics of the managed significant impacts (duration, cumulative characteristic, and reverse/irreverse impact), as well as the capability of the initiator (workforce, fund).

7) **The funding of environmental management**

The funding of environmental management plan constitutes the task and responsibility of the initiator of the planned business or activity.

The funding includes :

a) Investment cost, such as the purchase of equipment for environmental management and the cost for other technical activities.

b) Labour cost and operational cost.

c) Cost for operational education and training course.

8) **Environmental Management Institutions**

Mention the institutions that are in charge of, have the interest in, and are related to environmental management activities, for each environmental management plan, in accordance with the prevailing legislation either at national or regional level.

The legislation ragulating environmental management as regulated in Article 18 of the Law Number 4 of 1982 include :

(1) The regulations issued by the State Minister for Environment.

(2) The regulations issued by the Environmental Impact Management Board.

(3) The regulations issued by relevant institutions.

(4) The decisions of the Governor, Regent/Mayor.

(5) Other regulations related to the establishment of environmental management institutions.

The environmental management agencies that need to be described include :

(1) Environmental management executive institutions.

Mention the executive institutions responsible for the implementation of environmental management and the financing of the environmental management. If in carrying out environmental management activities the initiator assigns or cooperates with other parties, then mention the said institutions.

(2) Environmental management supervisory institutions.

Mention the agencies that will act as the supervisor of the environmental management plan. There might be more than one agencies involved in the supervision of the environmental management plan in accordance with the authority, responsibility and prevailing regulations.

(3) The reporting of the result of environmental management.

Mention the agencies to which the result of environmental management will be reported periodically in accordance with the fields of the relevant agencies' activity and the prevailing legislation.

III. **Bibliography**

This section describes the sources of data and information used in drawing up environmental management plans, either in the form of books, magazines, articles or reports of research. The bibliography should be presented with due observance of the procedure for writing bibliography.

IV. **Attachments**

This section discloses attachment on :

a. Brief RKL documents in the form of table with a sequence of columns as follows : The Types of

Environmental Impact, The Objective of Environmental Management, The Plan for Environmental Management, The Location of Environmental Management, The Period of Environmental Management and The Environmental Management Institution.

b. Important data and information referring to the result of the study of ANDAL such as maps (the location of activity, the location of environmental monitoring etc), engineering design, matrix and main data related to the environmental management plan to support the content of RKL documents.

Attachment IV :

THE GENERAL GUIDANCE FOR DRAWING UP ENVIRONMENTAL MONITORING PLANS (RPL)

A. GENERAL ELUCIDATION

1. The scope of environmental monitoring can be used to know phenomena occurring at all phases, ranging from a project phase (to understand "the behaviour" of the impact of a business or activity), to a regional phase, depending on the degree of care over the problems faced. In addition to the degree of care, there are 2 (two) key words distinguishing between monitoring and random or momentary observation, which constitutes an activity orientated towards systematic, repeated and planned data.

2. The profoundity of Environmental Monitoring Plan (RPL)

   There are several factors that should be taken into account in drawing up RPL documents, namely :

   a. Only components/parameters of the environment undergoing a fundamental change or affected by a significant impact are monitored, therefore, not all the components of the environment are monitored. Matters considered unimportant or irrelevant should not be monitored.

   b. The possible linkage between ANDAL, RKL and RPL documents. The aspects that are monitored should correctly monitor the significant impacts in ANDAL, and the characteristics of environmental impact management formulated in RKL documents.

c. Monitoring can be limited to a source of impacts and/or components/parameters of the environment affected by impacts. By monitoring the two aspects environmental management activities can be as assessed/examined whether or not they are effective.

d. The environmental monitoring should economically be feasible. Although only important aspects such as those mentioned in point (a) up to point (c) will be monitored, the cost incurred to monitor the aspects should be taken into account in view of the fact that the environmental monitoring activities are carried out as long as the business or activity is operational.

e. The plan for collecting and analysing data on the aspects that should be monitored covers :

(1) The types of data to be collected;
(2) The location of monitoring;
(3) The frequency and period of monitoring;
(4) The method of collecting data (including instrument used to collect data);
(5) The method of analysing data;

f. RPL documents should contain environmental monitoring institutions.
Hereinafter referred to as environmental monitoring institutions are whose responsible as the financier of environmental monitoring, the executive institution of environmental monitoring, the user of the result of environmental monitoring, and the supervisor of environmental monitoring. The coordination and cooperation among institutions are considered important to be strengthened so that the data and information disseminated to users can be effective, timely and reliable.

B. THE DRAWING UP OF ENVIRONMENTAL MONITORING PLAN (RPL) DOCUMENTS.

I. The background of environmental monitoring.

1. The description of the background on the need to implement environmental monitoring plan (RPL) viewed from the interests of the initiator, interested parties and public general within the framework of supporting development programmes.

2. Sistematic brief and clear description on the objective of the environmental monitoring to be endeavoured by the initiator relating to the business or activities plan management.

3. Description on the utility/benefits of the implementation of environmental monitoring for the business or activities initiator, the interested parties and for the community.

II. **Environmental Monitoring Plan (RPL).**

Describe briefly and clearly each type of impact caused by one or more activities with a sequance of discussion as follows :

1. **The significant impacts that are monitored.**
Mention briefly :

   a. The types of environmental component or parameter considered strategic to be monitored.

   b. The indicators of the components of significant impact to be monitored. Indicators are a means of monitoring (something) that can give directive or information on the condition of something.

      For instance, relevant indicator for the quality of waste water and river water in connection with the characteristics of a planned business or activity are pH, BOD, temperature, nuance, odor, oil content and heavy metal.

2. **The Source of Impacts.**

   Describe briefly a sources of significant impacts :

   a. If a significant impact appears as a direct result of a planned business or activity, then describe briefly the types of business or activity causing the significant impact.

   b. If a significant impact appears as a result of the change in other environmental components, then describe briefly the environmental components or parameters causing the significant impact.

3. **The environmental parameters that are monitored.**

Describe specifically the objective of monitoring a significant impact on the environment by observing the significant impact managed, the model of environmental monitoring plan, and the derivative significant impact that may appear.

4. **The objective of Environmental Monitoring Plan.**

Describe specifically the objective of monitoring a significant impact on the environment by observing the significant impact managed, the model of environmental monitoring plan, and the derivative significant impact that may appear.

For instance, the quality of waste water is the strategic impact managed in the realization of a plan for a pulp and paper industry, so that the specific objective of environmental monitoring plan is to :

a. Monitor the quality of liquid waste disposed of into XYZ rivers, especially the parameters of BOD5, COD, totally suspended solid matters and pH.

b. Monitor the quality of water of XYZ rivers, especially the parameters of BOD5, COD, totally suspended solid matters and pH.

5. **The Method of Monitoring the Environment.**

Describe briefly the method of monitoring the indicators of significant impacts to be used, covering :

a. The method of collecting and analysing data. Mention briefly and clearly the method of collecting data together with the types of instrument or form to be used. Also mention the accurate level of instrument used in collecting data in connection with the accurate level as required in the Book on Environmental Quality. Describe the method of analysing data resulting from measurement activities. In addition, also mention the types of instrument and formula used in the process of analysing data, and the yardstick used to assess the condition of environmental quality monitored, and used as a feed back of environmental management activities.

It should be noted that the method of collecting and analysing data should be as far as possible consistent with that used at a time when ANDAL is drawn up.

b. The location of environmental monitoring.
Mention the correct location for the monitoring of impacts together with a map with a proportional scale indicating the said location. It should be noted that the location for the monitoring of impacts should be as far as possible consistent with the location for the collection of data at a time when ANDAL is drawn up.

c. The period and frequency of environmental monitoring.
Describe the time period of environmental monitoring together with the frequency of time unit. The period and frequency of monitoring should be determined by taking into account the characteristics of monitored significant impacts (intensity, duration, and cumulative characteristic of impacts).

6. **Environmental Monitoring Institutions.**

For each environmental monitoring plan, mention the institutions that will be in charge of, have the interests in and are related to environmental monitoring activities in accordance with prevailing regulations either at the national or regional level. The regulations regulating environmental monitoring activities should be as regulated in Article 18 of the Law Number 4 of 1982, including :

a. The regulations issued by the State Minister for Environment;

b. The regulations issued by the concerned institutions;

c. The regulations issued by the Regional Administration;

d. The decisions of the Governor, Regent/Mayor;

e. Other decisions related to the establishment of an environmental monitoring institution.

Among the environmental monitoring institutions that should be disclosed are :

a. Environmental monitoring executive institutions. Mention the institutions responsible for the implementation of environmental monitoring plan and as the financier of environmental monitoring activites;

b. Environmental monitoring supervisory instituion. Mention the agency that will act as the supervisor of the implementation of environmental monitoring plan. There might be more than one agencies involved in the supervision of environmental monitoring in accordance with the fields of authority and responsibility as well as prevailing regulations.

c. The reporting of the result of environmental monitoring.
Mention the institutions to which the result of environmental monitoring will be reported periodically in accordance with the fields of the relevant institutions' task.

III. **Bibliography**

This section should disclose sources of data and information used in drawing up RPL either in the form of books, magazines, papers, articles or reports of researches. This bibliography should be presented with due observance of the procedure for writing bibliography.

IV. **Attachments**

Enclose the following documents to RPL

a. Brief RPL documents in the form of table with a sequence of columns as follows : The Monitored Significant Impacts, The Source of Impacts, The Objective of Environmental Monitoring, Environmental Monitoring Plan (including the method of collecting data, the location for environmental monitoring, the period and frequency of environmental monitoring and the method of analysing data), and Environmental Monitoring Institutions.

b. Data and information considered important to be attached because they support the content of RPL documents.