

**National Report on the Implementation of the
UNCCD**

INDONESIA

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SUMMARY

Land Degradation problems in Indonesia has reached an alarming member. of 48.5 million hectares in which 27.8 million hectares are already in critical condition.

The underlying causes of land degradation in dry areas of Indonesia are rooted in complexity of social, economic and aggravated by over-exploitation and poor land management.

Various form of degraded land known widely in Indonesia as critical land related to water scarcity and long drought season are widely distributed in several provinces of Indonesia especially in the provinces of eastern part of Indonesia.

Several institutions and agencies are involved in the implementation of land rehabilitation and soil conservation and monitoring of drought in Indonesia. Coordination mechanism in the planning and implementation of land degradation control has been established particularly by Directorate General of Land Rehabilitation and Social Forestry, Ministry of Forestry and Estate Crops (MOFEC).

It was agreed during National Workshop on the Implementation of UN-CCD conducted on 13 June 2000 in Bogor that the National Coordinating Body (NCB) of the UN-CCD in Indonesia is the Ministry of Forestry and Estate Crops and the National Focal Points are:

- Director of Land Rehabilitation and Soil Conservation, Director General of Land Rehabilitation and Soil Conservation, MOFEC
- Director Bureau of Planning and International Cooperation, MOFEC

The implementation of land rehabilitation is regulated by several laws : Forestry Law, Agrarian Law, Autonomy Law and other related government regulation. Several guidelines and manuals on watershed rehabilitation, soil conservation, land rehabilitation and drought monitoring, ex- mining reclamation, have been formulated by related institutions.

Biophysical, social, economical and cultural constraints have affected the low degree of success in implementation of critical land rehabilitation in Indonesia. Economic crisis, low level of community participation and lack of coordination among the related institution are the main burden which need to be solved for better implementation of land rehabilitation in the near future.

Research activities to find adoption technologies for combating degraded lands in dry areas based on local bio-physics, socio-economic and cultural condition is conducted by Forestry and Estate Crops Research and Development Agency (FERDA) including research programme for the management of agroforestry in dry ecosystem, and improving land degradation control technology.

Empowerment of local communities and promotion of traditional knowledge in land rehabilitation control and agroforestry will be main part of the action program for 1999-2004 in line with decentralization process of development activities.

Project ideas priority actions were identified by several institutions for the implementation of UN-CCD among others are : study on fast growing tree species for land rehabilitation, promotion of animal husbandry for dry region, climatic variability analysis and agroforestry technology development on dry areas of Indonesia.

Indonesia is expecting its participation in the convention will improve national and international capacity building, enhance implementation and experiences exchanges and promote international support for land degradation control and drought impact mitigation in the country.

I. INTRODUCTION

Desertification is now a direct threat to over 250 million people around the world, and an indirect threat to a further 750 million people. Over the last twenty years, desertification has become increasingly apparent in the dry sub-humid region of the world, where mean annual rainfall ranges from 750 - 1500 mm., and where the majority of the human inhabitants of the drylands now live. This facts were brought to the attention to over 100 heads of state attending the UNCED, which led to the formulation of Chapter 12 of UNCED: Combating Desertification, and a recommendation to pursue development of a convention on desertification.

The United Nations Convention to Combat Desertification (UN-CCD) entered into force on 26 December 1996. The Convention emphasizes the need to co-ordinate research efforts and action programs for combating desertification, and promotes a new approach to managing dry-land ecosystems and to managing development aid flows.

The Government of the Republic of Indonesia has ratified the Convention by Presidential Decree No: 135/1998, dated 28 August 1998. By ratifying the Convention Indonesia will do her best to fulfil obligations as party of the convention including national reporting, preparation of National Action Plans and participate actively in convention activities at national, regional and international level.

Indonesia realizes that the problem of desertification is not merely a regional problem, as it has shifted to a global issue. Accordingly, the Indonesian Government has indicated its serious commitment to deal with the global environmental issues by joining the United Nations related conventions on environment.

Three programme areas of Chapter 12 of the Agenda 21 relevant to Indonesia are:

1. Combating land degradation
2. Developing drought preparedness and drought relief schemes
3. Encouraging and promoting local community participation and environmental education, focusing on management of the effects of drought

Indonesia has actively participated in the activities of the UN-CCD, among others through the following activities:

1. Participation in COP-1 in Rome, Italy, October 1997
2. Participation in COP-2 in Dakar, Senegal, December 1998
3. Participation in the Launching of Asia TPN-1 in Beijing, July 1999
4. Awareness Raising Seminar in Jakarta, September 1999

This Seminar has 3 main topics, i.e.: Socialization of UN-CCD, Land Degradation Control and Mitigation of the Impacts of Drought, and Human Resources Development for Land Degradation Control.

5. Participation in COP-3 in Recife, Brazil, November 1999
6. Participation in the Launching Meeting of Asia TPN-2 in New Delhi, India, March 2000
7. Workshop on The Formulation of National Report in Bogor, June 2000.

Several coordination meetings at the national level have been conducted for identifying priority activities, formulation of project ideas and related institutions inventory. The list of experts in this particular field is presented as Annex 1 and list of project ideas is presented in Annex 2 of this report.

II. RELEVANCY OF THE CONVENTION FOR INDONESIA

A. Characteristics of Climate and Dry Lands in Indonesia

Indonesia is located between two continents (Asia and Australia) and between two oceans (Hindia and Pacific). This situation gives the air mass character of the maritime continent, such that Indonesian area is called Maritime Continent Region. As the maritime continent region, the air is mostly humid, especially where far from the continent and dry or less of the rainfall closed with continent especially with Australia Continent. In the global scale view, the variation of the East-West Circulation (Walker Circulation) catalyze the development of the regional and local scales with the famous phenomena of the so called El Nino (which causes drought), Normal and La Nina (which causes flooding). Those phenomena were very active during the end of the last 20th century, and should be taken into consideration as major causes of dry lands. In the regional scale view, the Monsoon Circulation affects both over Asia and Australia continents, including Indonesia.

Indonesia is also facing a higher frequency of long dry seasons since 1982/1983, although a large part of the country enjoys humid tropical climate. Studies made by the Meteorological and Geophysical Agency and other institutions revealed that the frequent droughts are caused by the El-Nino-Southern Oscillation (ENSO) which may be an indicator of global warming. The most severe droughts were in 1982/1983, 1987,1991 and 1993/1994, leading to economic losses in terms of rice production and stimulation of forest fire.

Based upon this condition and referring to the clear climate pattern, in Indonesia area, there are three typical climate patterns derived from the rainfall parameter. They are the moonsoonal rainfall type, equatorial type and the local type of the typical climate. The monsoon rainfall type is defined by the abundant rainfall during the winter monsoon of Asia (October - March) and less rainfall during the summer monsoon of Asia (April - September); this typical rainfall are found mostly in the south of the equator line except central Moluccas and mostly West Papua. The equatorial rainfall type is defined by monthly rainfall up to 100 mm./month with the two peaks occurred when the sun declination across the equator (in March/April and September/October); they are found along the equator line and in the northern hemisphere part. The local rainfall type is reversibly defined to the first rainfall type, with less rainfall during October - March and abundant rainfall during April - September, most of the central Moluccas and eastern of Central Celebes.

As above defined, dry lands should have an annual rainfall between 700 - 1500 mm. and referring the environmental condition of Indonesia with some adjustment following the balancing of the evaporation and percolation of the water in surface land of Indonesia area, so the dry land over Indonesia are defined with the annual typical

rainfall ranges from 500 to 1800 mm. Based on this criteria, most areas in the north coast eastern Java, North and South - East Coast Bali most Nusa Tenggara, Central Celebes and South Moluccas have this pattern and they should comprise the dry lands of Indonesia as seen in Figure 1.



Figure 1: Distribution of Dry Areas In Indonesia

B. The Problems of Land Degradation

At the 1992 UN Conference on Environment and Development held in Rio de Janeiro, desertification was formally defined as “land degradation in arid, semi-arid and dry sub humid areas resulting from various factors, including climatic variations and human activities”.

Manifestation of desertification include accelerated soil erosion by wind water, increasing salinisation of soils and near surface ground water supplies, a reduction in the productivity of drylands ecosystems, with an attendant impoverishment of the human communities dependent on these ecosystem. A combination of climatic stress and dry land degradation can lead in turn to extreme social disruption, migrations and famine. Those conditions are commencing over several area over Indonesia especially in the central of the Indonesia area.

Indonesia considers the great importance of the problem of desertification or land degradation which affected many parts of the world. The serious problems were caused by many factors such as climate variations and human activities, as desertification is not merely a matter of physical land degradation, but also about the people living in the degraded dry land. The most obvious impact of the degradation of resources is low agricultural productivity that can lead to widespread poverty.

In Indonesia, a country with 17,508 islands extending through the equator, population growth and its uneven distribution have obvious impact on the environment in general, and in land in particular. From a population of 120 million in 1968, it has grown to 179 million in 1990, with an annual growth rate of 1.79 percent. By 1999, the figure had already reached 200 million.

A consequence of the population growth is the demand to satisfy basic needs of the big number of people. Population pressures on land are mostly felt in densely populated areas. To accommodate this population growth, agricultural land and forests are converted uncontrollably to urban uses such as settlement and industrial areas, leading to soil degradation and environmental damages.

Land degradation problems in Indonesia are growing in severity, particularly in the dry areas. Human being searching for available land, over grazing due to high population of livestock, land use practice that are not compatible with the soil, especially in some provinces in eastern part of Indonesia commonly result in shrubland, wasteland, declining productivity and increasing poverty for those living in dry lands. The last record of deforestation rate in Indonesia points out a rate of 1.5 million hectares per year during the period of 1982 - 1990.

Various forms of degraded land - known widely in Indonesia as critical land related to water scarcity and long drought season - are widely distributed in all provinces of Indonesia, especially in the provinces of eastern part of Indonesia. In the eastern parts of Indonesia, which is considerably drier, climatic factors contribute to the dryness and arid conditions in some parts of the islands. Some areas are in recurrent dry condition, for instance the islands of Lombok, Sumbawa, Sumba and West Timor.

Some areas even bear the characteristics of desert, as can be seen in some parts of Lombok, Sumbawa and Central Sulawesi.

The arid and degraded condition is aggravated by over-exploitation and poor land management. Propelled by the economic crisis that hits Indonesia since mid-1997, natural resources, including land, are being exploited more intensively to produce and fulfill basic needs and additional income for the population. As a consequence, land which are not suitable for cultivation are being cleared and cultivated, leading to further land degradation. In sensitive areas, especially in the island ecosystem such as Indonesia, this can result in damages which tend to generate desertification.

Recent data show that critical land and degraded lands have reached 48.5 million hectares, consisting of these following classification.

1. Critical lands	
- protection forest	: 2.2 million hectares
- conservation forest	: 3.7 million hectares
- non-forest lands	: 21.9 million hectares
Sub Total	: 27.8 million hectares
2. Degraded lands	
- protection forest	: 3.6 million hectares
- conservation forest	: 2.9 million hectares
- production forest	: 14.2 million hectares
Sub Total	: 20.7 million hectares
TOTAL 1+2	: 48.5 million hectares

The underlying causes of land degradation in dry areas of Indonesia are rooted in complexity of social, economic and institutional problems. The problems of dry area need to be solved on the basis of holistic and integrated approach. It should intervene the physical of soil, water, crops, and livestock.

Looking at the Indonesian most relevance area of desertification that is, Nusa Tenggara Timur Province, the total of critical land has reached 1,356,757 hectares, consisting of 299,291 hectares in forests land and 1,057,466 hectares in non-forest lands. Total degraded land in the dry areas is 2,923,263 hectares with the detail distribution as presented in [Annex 3](#).

Land degradation in Nusa Tenggara Timur (NTT) is mainly characterized by these following features:

1. Land and Savannah as caused by over grazing and land fire every year.
2. Low rate of topsoil development caused by serious fire
3. Thin layer of topsoil and rocky soil affected by landslides and rill erosion
4. High sedimentation rate in the downstream as caused by severe erosion and floods
5. Degradation of mangrove areas affected by abrasion and sedimentation.

The biophysical condition of NTT which is closely related to land degradation problems is characterized as follows:

1. Geographically NTT is islands with hilly topography, 26-46% slope, and has young volcanic and high erosion sensitivity.
2. Low vegetative cover, low infiltration rate, high run-off and risk of floods.
3. Dry season is about 9 months and rainy season is 3 months with high erosivity rainfall.
4. Land productivity is very low, thus requiring a lot of inputs to restore this main farmers' asset of production.
5. High sediment load during floods which has led to mangrove forest degradation, downstream pollution and other negative environment impacts.

C. Forest Fire Problem

Geographically Indonesia is not part of drought seriously affected countries. However, Indonesia is among the countries affected by the warm episode of El Nino Southern Oscillation (ENSO), receiving much lower rainfall than the normal amount. The drought has stimulated major bush and forests fire in 1997. The term “dry-lands” as used in this report refers to the Indonesia area where the mean annual rainfall is less than 1800 mm/year. This definition is taken on the balance of the evaporation and percolation in the surface land, when the minimal rainfall per 10 days should be 50 mm. or 150 mm per month.

Besides the need to strengthen its capability to control forest and land fire, Indonesia is expecting to explore effective efforts to mitigate the impact of drought, and to promote artificial rain development technology, seasonal forecasting methods and other associated land degradation measures.

D. Socio-Economic Condition

In mid 1997, Indonesia was facing economic crisis affecting serious negative impacts on economy condition of the country. The economic growth has slowed down, and in 1998 it continued to worsen in a wider scale and with higher intensity of deterioration. This economic crisis was mostly due to the prolonged exchange rate devaluation of the Rupiah (Indonesian currency), the crisis of the national banking and private foreign loans, and unfavourable socio-political phenomena.

The impact of these unfortunate economy problems has increased unemployment and has declined people's welfare due to the significant drop of buying power, leading to the aggravating social unrest. In the effort to overcome the economic crisis, the government with technical and financial aids from international institutions and friendly countries co-ordinated by the International Monetary Fund (IMF), initiated economy reform and stabilisation programs. The policy and programs implemented during the reform era has shown a promising progress as reflected in the macro

indicators since the fourth quarter of 1998. The exchange rate of rupiah currency became better and relatively stable, the inflation rate has also dropped significantly.

However, according to the Central Bureau of Statistics (BPS), the poverty rate that had declined to 11% in 1997, had increased dramatically to 39.5% in 1998. Although this number was not believed as an accurate figure, the general public opinion estimated that the poverty was critical. Social safety net program among others economic rehabilitation efforts had been launched by the government to solve economy and social problems in the country. For nearly one year, the Government has given rice subsidy to poor households and special market operation with low price of rice for the poor was undertaken. So, with those programs and action, in fact the Government was able to decrease the level of poverty in favourable limits.

In dry areas of NTT, typical socio-economic factor affecting land degradation and deforestation are:

1. Limited available knowledge and low innovative ability to implement land rehabilitation and soil conservation techniques.
2. Participation of local communities in land rehabilitation activities is still limited
3. Some of traditional practices particularly in fire management for land clearing and in practising shifting cultivation disobey conservation principles.
4. Dependency on agricultural practices, low income and capital
5. Food shortage due to insects attacks
6. Local community empowerment is still not sufficient.

Those biophysical, social, economical and cultural constraints have affected the implementation of critical land rehabilitation in Indonesia particularly in dry areas of NTT, and their solution is still far from that as expected.

To strengthen the efforts in land degradation control and mitigation of the impacts of drought, Indonesia pledges its willingness to cooperate with participating countries in the framework of the convention to jointly solve the challenging global environment problems through co-operative regional thematic programs and effective international endeavours.

Partnership is an important foundation of the convention. It is important to recognize that it is difficult for developing countries to demonstrate commitment if they lack of the necessary resources for its implementation.

III. INSTITUTIONAL ARRANGEMENT

A. Related Agencies and Institutions

Several institutions and agencies are involved in the implementation of land rehabilitation and soil conservation and monitoring of drought in Indonesia. The related parties are listed below.

Government Institutions:

1. Ministry of Forestry and Estate Crops:
 - a. Directorate of Land Rehabilitation and Soil Conservation
 - b. Directorate of Community Forestry
 - c. Forest Planology Agency
 - d. Directorate of Forest Fire
 - e. Watershed Management Technology Center
 - f. Bureau of Planning and International Cooperation
 - g. Forest and Nature Conservation Research and Development Center
 - h. Forestry Research Institutes
 - i. Land Rehabilitation and Soil Conservation Centers
 - j. Forestry and Soil Conservation Service

2. Ministry of Agriculture :
 - a. Directorate General of Food Crops
 - b. Agricultural Research and Development Agency
 - c. Soil and Agroclimate Research Institute

3. State Ministry of Environment
4. Ministry of Transportation
5. Geophysical and Meteorological Agency
6. State Ministry of Public Works
7. Ministry of Settlement and Territorial Development
8. Indonesian Institute of Science
9. Ministry of Mines and Energy
10. Survey and Mapping Coordination Agency
11. Ministry of National Education
12. Universities (particularly which are located in dry areas)

Non-Government Institutions:

1. Indonesian Soil Conservation Society (MKTI)
2. PERHIMPI (Indonesian Agriculture Meteorology Association)
3. Nature Resource Conservation Group (KPSA)
4. Pelangi Foundation
5. Wahana Lingkungan Hidup (WALHI)
6. LATIN

International Institutions/Projects

- | | |
|--------------------|-------------------------|
| 1. World Bank | 6. CIFOR |
| 2. GTZ | 7. ICRAF |
| 3. JICA | 8. Asocon |
| 4. Ford Foundation | (Asia Soil Conservation |
| 5. UNDP/FAO | Network) |

B. Coordination Scheme

Coordination Scheme for cooperative action between related parties is conducted through several established mechanisms consisting of:

1. Coordination in Planning under National Development Planning Agency and Provincial Development Planning Agency
2. Coordination in the implementation is under the coordination of Provincial Government and District Authorities
3. In the forestry sector, Coordinating Group of Indonesian Forestry (CGIF) participated by international forestry donors agencies/projects, private sectors, NGOs and Ministry of Forestry has been established. In this coordinating group, a working group is specifically assigned to coordinate planning and implementation of land rehabilitation and watershed management.
4. Another mechanism of coordination is special meetings conducted for solving particular problems arising in the implementation of land rehabilitation programs

Coordination of Forest Fire Prevention and Mitigation

Desertification in Indonesia has been attributed as land degradation resulting from various factors, including climatic variation and human activities. Forest fire, one form of land degradation which is caused by climatic variation and human activities, has intensified since 1991 due to lack of the rainfall, and caused large fires in 1983, 1991, 1994, and 1997/1998.

The unprecedented frequency and intensity of forest fires during last decade of the 20th century led to several new arrangement for land degradation in Indonesia, and reviving/revamping of old ones. A comprehensive account of past, present and proposed fire project in Indonesia during 1982 - 99, with details such as objective, component activities, target group, geographical coverage, time horizon, counterpart agency, budget level, and where relevant achievements and impacts can be found in the International Funding Agency in Indonesia such as CIFOR, ICRAF, GTZ etc. The fires management as part of the land degradation initiatives and arrangements has been incorporated in national strategies for co-ordinated action.

In response to the forest fires occurrence in 1994, the National Co-ordinating Team for Land and Forest Fires Control was formed in 1995. The Team is headed by the State Minister for Environment and the Director General of Forest Protection and Nature Conservation. Members of the team are the senior officials from the Ministries of Home Affairs, Mining and Energy, Agriculture, Transmigration, Social Affairs, Several Institutions/Agencies such Meteorological and Geophysical Agency, National Aeronautics and Space Institute, etc. The Team was responsible for co-ordinating all related agencies/institutions, in preventing and suppressing forest and land fires. The National Disaster Management Co-ordination Board (BAKORNAS PB) is another body which has the function of co-ordination, consultation and information including on resources mobilization, including land degradation and the associated forest and land fires.

Main functions of the National Co-ordinating for Land and Forest Fires Control of the so called TKNPKHL include : formulate national policy to the prevention and management of land and forest fire; establish operational co-ordination nationally and locally to control land and forest fires; provide guidance and direction on the protection of areas not exposed to pollution and degradation; formulate systems to

strengthen: human resources, awareness, monitoring, reporting and information and development of incentives; provide policy inputs to fire control centres in the provinces headed by the Governor who will prepare the technical operations programs; develop techniques to control fire using various management approaches; and operate for fire detection and early warning system. With regard to its responsibility for fire detection and early warning, the team has conceptually spots areas, fire hazard mapping, communicating with command post, aerial surveillance, ground surveillance and fire prevention/suppression action in co-operation with relevant agencies at national, provincial, district and Local levels. National Environmental Impact Assessment Agency of BAPEDAL in its capacity as secretariat of the TKNPKHL, established an emergency command post (POSKO) to co-ordinate efforts to control land and forest fires. The main activities of the POSKO are to act as the central body to collect, analyse and disseminate information about land and forest fires throughout Indonesia as part of the land degradation management.

According to official reports, information about forest and land fires in Indonesia flows through several agencies. The dominant centres controlling information flow are the command post (POSKO) operating at the Ministry of Forestry and Estate Crops and at the BAPEDAL. The POSKO at the Ministry of Forestry and Estate Crops receives radio reports from all provinces in Indonesia. The POSKO at BAPEDAL receives several types of information daily including processed and unprocessed satellite images from relevant Meteorological Satellites, weather report from the Meteorological and Geophysical Agency and etc. The POSKO also receives detailed boundary maps of concessions for commercial forestry and industrial timber plantations, tree crop and other agricultural plantations, conservation areas, mining and oil and gas concession, and transmigration projects. Daily POSKO operation include, among others: receiving and enhancing satellites images to show hot spot locations; using GIS to overlay hot spot on land use maps to ascertain responsible parties' contacting provincial and district government offices and sectoral departments to report hot spot locations for investigation and control.

Based upon the discussion in above, it can be summarized that the institutions concerned with the management of the land degradation especially land and forest fires are the Ministry of Forestry and Estate Crops with PUSDALKARHUTLA, Environmental Impact Assessment Agency of BAPEDAL with its TKNPKHL, and the National Co-ordination Body for Disaster Management of BAKORNAS PB, Ministry of Agriculture with supporting Agency of Meteorological and Geophysical Agency for climate and environmental monitoring capabilities where land degradation has closed relation with climatic pattern.

C. National Coordinating Body (NCB)

Based on the relevancy with scope and the works of UNCCD in desertification or land degradation control and drought impacts mitigation, the most related agency in Indonesia is Ministry of Forestry and Estate Crops c.q. Directorate General of Land Rehabilitation and Social Forestry.

D. National Focal Points (NFPs)

In the workshop held in Bogor, 13 June 2000 participated by related agencies and institutions discussing national report on the implementation of UNCCD in Indonesia, it was agreed that these following officials were selected as National Focal Points :

1. Director of Land Rehabilitation and Soil Conservation
Ministry of Forestry and Estate Crops (MOFEC)
Telephone : 62-21-5730166
Facsimile : 62-21-5739092
E-mail : dirrlkt.rlps@dephut.cbn.net.id
Address : Gedung Manggala Wanabakti Block I; 13th Floor
Jl. Gatot Subroto, Senayan, Jakarta, Indonesia.

2. Director of Planning and International Cooperation
Ministry of Forestry and Estate Crops (MOFEC)
Telephone : 62-21-5720221
Facsimile : 62-21-5720210
E-mail : karo-can@dephut.cbn.net.id
Address : Gedung Manggala Wanabakti Block 7; 2nd Floor
Jl. Gatot Subroto, Senayan, Jakarta, Indonesia.

Communication from Secretariat of UNCCD is expected to be addressed to the above NFPs for properly followed-up.

IV. LEGAL PERSPECTIVE AND GUIDELINES

A. Related Laws and Regulations

Forestry Law no. 41, year 1999:

Land degradation control is guided as follows:

- a. implementation of land rehabilitation is based on biophysical specific condition
- b. land degradation control is mainly implemented through participatory approach in the framework of promoting local potencies and empowerment of local communities.

Agrarian Law no. 5 year 1960:

It stipulates the obligations for land user and landowner to protect and conserve their respective land in productively managed manner and to make best efforts and necessary measures to avoid physical and productivity degradation process on their land.

Autonomy Law No.22, Year 1999

Article 7, Sub-article 2 : Conservation is under the authority of Central Government

Government Regulation No.25, Year 2000 regarding the authority of Central and Province Government

Article 2, Sub-article 2 : Conservation is under the authority of Central Government

Article 2, Sub-article 4, point (f) : General plan for land rehabilitation and soil conservation is under the authority of Central Government (The Ministry of Forestry and Estate Crops)

Article 2, Sub-article 4, point (l) : Determination of criteria and standard of forest land rehabilitation is under the authority of Central Government.

People's Consultative Assembly (MPR) of the Republic of Indonesia Decree No. XVI.W.R/1998 on Economy Politics in an Economy Democracy

Article 7 regulates the following policies:

- (a) to apply land management through land redistribution and provide compensation from available government budget and with the people's resources to improve the farmers' welfare
- (b) to carry out management for land control and land-use through consolidation of urban and farm land using available government budget and the people's resources.

Decisions of Minister of Forestry and Estate Crops

No. 146/Kpts-II/1999 regarding Guidelines of Reclamation on ex-Mining

No. 284/Kpts-II/1999 regarding Guidelines of Selected Watershed Priority

No. 677/Kpts-II/1998 regarding Improving Community Participation in Forestry Development in Community Forestry.

No. 464/Kpts-II/1995 on The Management of Protection Forest is Delegated to The Regional Government.

No. 677/Kpts-II/1993 regarding Center of Forest Extension was Formed for Conducting Extension in All Managing and Technical Aspects of Forestry Development.

No. 252/Kpts-II/1993 regarding criteria's and indicator of natural production forest on sustainable way

No. 034/Kpts/IV/2000 regarding guidelines of watershed integrated planning

B. MANUALS AND GUIDELINES

Manuals and guidelines have been formulated by Directorate General of Land Rehabilitation and Social Forestry, MOFEC

Directives on proper conduct in the implementation of soil conservation and land rehabilitation, among others are:

- (a) Basic principles of land rehabilitation and soil conservation
- (b) Engineering design manuals on land rehabilitation and soil conservation
- (c) Manuals on watershed management and development

Indonesian Meteorological and Geophysical Agency (BMG)

Based on the internationally recognized method "Circulation Global GCM Model", a drought monitoring guideline has been produced by Indonesian Meteorological and

Geophysical Agency (BMG) for the specific purpose of mitigation of impacts of El-Nino.

Director General of Forest Protection and Natural Conservation, MOFEC

No. 243/Kpts/DJ-VI/1994 and No. 248/Kpts/DJ-VI/1994 concerning fire protection and control

Secretariat of Afforestation and Reforestation Aid

Technical Guidelines on Soil and Water Conservation (Jakarta, 1998)

Technical Guidelines on Village Nursery Development (Jakarta, 1998)

Forestry Extension Center, MOFEC

Information Kit on Upland Resources Management in Indonesia (Jakarta, 1997:

Adapted to Indonesia from *Resource Management for Upland Areas in Southeast Asia*)

C. Policy and Regulation on Forest Fire Prevention and Mitigation

Indonesia has experiences with frequent occurring drought and the accompanying land and forest fires especially in the recent development of the global climatic variability and change, and this should be relevant to the discussion on land degradation problems. Prior to the fires occurrences in the end of the last twentieth century, the Indonesian government had no policies or institutions on forest fire management - including land degradation - at the national level. After the big fires occurrences in 1982/83, the Ministry of Forestry formulated six measures to prevent and control future fires. The six measures, which were not formulated as policies but rather as a set of directives for shifting cultivators, mobilization of community participation, mobilizing participation of forest concessionaires, allocating funding for fire control and operating the plane and helicopters.

Fires in the 1991 and 1994 were more serious than that in 1982, and has prompted establishment of two institutions charged with the forest fire management. The first is the establishment a National Forest Fire Management Center or *PUSDALKARHUTNAS* at the national Level and *Pusdalkarhutla* at the provincial level. The other institution, the National Coordinating Team for Land and Forest Fires Management or *TKNPKHL* under the Environmental Impact Assessment Agency or *BAPEDAL*. The latter was set up to manage land fires that are outside the jurisdiction of the Ministry of Forestry.

Despite repeated fires prior to 1997/1998, land clearing by burning has not been prohibited by agencies related to land and forest use, such as Forestry, Agriculture and Transmigration. In fact in a way, land clearing by burning seemed to have been legalized through the Decree of DG of Forest Protection and Nature Conservation No. 47/Kpts/DJ-VII 1997 on Controlled Burning. The decree stipulates that one must get a permit from authorized official and fulfil certain requirement prior to clearing land by burning, but this regulation was not complied with. Surveys indicate that the companies conduct land clearance by burning. Then this decree was improved through the Decree No. 125/Kpts/DJ-VI/1997 to prevent fires 1997.

The Ministry of Agriculture has introduced the zero burning land clearance policy since 1995 through the decree No. 28/KB-110/DJ.BUND/05.95. Following regulations on forest fires prevention are mostly issued sectorally through Ministry of Forestry Decrees. They are only slightly touched upon in higher legislation such as Act. No. 5/19967, Act No. 5/1994, Act No. 23/1997 and others.

The Drought monitoring guidelines refer to the climate monitoring, analyses and prediction. As it describes in the typical climate over Indonesia including the land degradation definition to be taken from the annual mean rainfall less than 1800 mm totally. The climate monitoring are taken using real time capability by the Meteorological and Geophysical Agency. The global, regional and local circulations are collected, analyzed and processed following the International Standard to be valid for Indonesia. In the global scale the global circulation will give either the El Nino or La Nina episode, in the regional scale to look the monsoon activities and the local scale based upon the rainfall measurement over 6000 rainfall stations over the country. Two consecutive decades of less than 50 mm./decade means the starting episode of dry season. The contrary should indicate the starting of the wet season. This applies in the monsoonal rainfall type. The global and regional circulation are considered when there are abnormal situation of drought, where the El Nino activities always cause drought not only in the monsoonal rainfall type but in most areas with little rainfall. After investigating this condition, the Meteorological Agency should inform relevant institutions in Indonesia especially the *BAKORNAS PB*, the ministries concerned including Forestry and Estate Crops, Agriculture, Environment, etc. *BAKORNAS PB* has the authority to declare a National Disaster including of drought and the related land degradation in Indonesia.

Based upon the experience in the mitigation and rehabilitation of land degradation, maintenance of soil quality should be of prime concern. Action based on economic efficiency should take into account the need to maintain ecosystem diversity and complexity. Community based planning should use appropriate methods and local knowledge and technologies. Fundamental to any successful plan of action to combat the root causes of dry land degradation is an accurate and rigorous diagnosis of the precise causes and processes involved. Drought and flood risk forecasting and assessment should be an integral part of dry land management strategies.

V. PROGRAM AND ACTIVITIES

A. Land Rehabilitation and Soil Conservation

The urgency for immediate action to alter current land degradation particularly in dry area is intended to rehabilitate and re-enhance capability production of forests and lands and degraded land in such a way to recover the functions as production media, water order regulator and environment protection.

The major efforts of land rehabilitation and soil conservation are reforestation and greening/afforestation . The reforestation and greening programs began in early 1960s, and has been enforced since 1976 under the National Forest, Soil and Water

Conservation programme, implemented by means of a Presidential Instruction scheme.

In National level, so far, about nine million hectares have been planted as part of the reforestation and greening programmes during two decades. Although not all of this was established successfully, during the five years from 1994-1999 the program have covered planting of 168,730 hectares dry areas.

Action Plan to Combat Land Degradation(1994-1999):

1. Rehabilitation of critical lands in forest and agricultural as well as mining areas.
2. Prevention of conversion of productive agricultural lands into other types of land use.
3. Development of a more integrated institution to manage natural resources and the environment, involving the government, business sector and the community at the national and local level .
4. Development of capacity at the community level to support sustainable use of resources.
5. Facilitation of credit for land conservation related farming activities.
6. Facilitation of land tenure security (certification of ownership) to farmers who have succeeded in land conservation activities.

B. Watershed Management

The importance of proper watershed management has become major focus of Ministry of Forestry and Estate Crops (MOFEC) to protect and conserve lands forms degradation process. The need for managing watershed as planning units for natural resource utilization was mandated in the National Development Guidelines (*GBHN*) of 1988, and emphasized in the *GBHN* of 1993. During the five years Development Plan VI (*REPELITA VI*) the MOFEC has been conducting watershed management in 60 watershed priority units throughout the country. Five of them are in dry area. The management of watershed covering reforestation, afforestation and constructing soil conservation facilities such as cheek dam, and terrace, should be implemented through integrated and multi disciplinary approaches.

C. Agroforestry

Soil conservation measures have been conducted to rehabilitate the degraded lands. A land use management system which is productively managed and accompanied with efforts to conserve soil, such as agroforestry, should be applied for the rehabilitation of degraded lands. It is hoped that agroforestry practice can be an alternative to solve land management problems within a productive and protective farming system.

Agroforestry has been practised in the tropics since a long time ago. Several agroforestry systems have been developed by local people in Indonesia. In dry areas

of East Nusa Tenggara (NTT) province, for example, there are two systems developed using lamtoro which called **lamtoro** (*Leucaena leucocephala*) based agroforestry systems have been implemented successfully for rehabilitating degraded lands. The first leucaena based agroforestry system has been developed in **Amarasi** sub-district since 1930. The basic principle of this system is to cultivate corn and nuts in a thicket of *L.leucocephala*. The thicket is cut and burnt prior to the planting of corn and nuts. This system is done on relatively poor soil in hilly tropical areas where the climate is characterized by long period of drought. In the second year the farmer will move to adjacent thicket and let the first opening to be fallow and rehabilitated naturally by the re-grown leucaena. The first thicket will be re-cultivated after the cultivation of 2-3 adjacent thickets successively. Leucaena in the Amarasi system functions as a source of fodder and fuel wood as well as soil stabilizer. For two hectares of land consisting 3 blocks (0.67 ha each), this system could support 3 cows. This system also reduces the expansion of *Lantana camara* weed.

The second system has been developed in **Sikka** district since 1973. In this system leucaena is planted following contour lines and cut periodically. Food crops are planted between the rows. The Amarasi and the Sikka systems are examples of permanent cultivation as alternatives to reduce shifting cultivation and wild grazing which are widely practised and considered as main causes of degraded lands in ENT province.

The Directorate General of Land Rehabilitation and Social Forestry (DG-LRSF) of the Ministry of Forestry and Estate Crops (MOFEC) has established demonstration plots called Soil Conservation Demonstration Unit (SCDU) and Sedentary Farming Demonstration Unit (SFDU) to rehabilitate degraded lands. Integrated farming systems introduced in those demonstration units are mostly agroforestry. SCDU is a 10-hectare integrated farming system model in upland area. Soil conservation techniques are applied, mostly by establishing terraces and planting terrace-stabilizing species. Each demo plot is managed by 10 farmers. SFDU is established to be introduced to traditional farmers, in particular shifting cultivators. It is a 20-hectare integrated farming system model in upland area managed by 10 farmers. Both SCDU and SFDU are used for extension purposes.

D. Monitoring of Drought

Land degradation is closely related to minimum rainfall and long period of the dry season. The strong variability of wet and dry situation prevailing in the short duration such as from the beginning of 1980s up to the present time with the El Nino and La Nina episodes. In Indonesia with homogenous climatic parameters except the rainfall, rainfall monitoring is useful to cope with drought situation as well as land degradation. The support of the conventional monitoring of the environment using remote sensing technologies with satellites should improve the capability of the environment monitoring. The combination of the surface and upper observation should encourage the resolution of the environmental monitoring especially the drought monitoring and its impact to the land degradation as well as the desertification. This should be among the actions to be taken for data base arrangement for future plan for the desertification assessment in Indonesia area.

E. Training and Extension Programs

Forestry Training Institute (FTI) in Kupang has a mandate to conduct trainings in forestry (including land rehabilitation and soil conservation) for both government employees of MOFEC and non-government employees (farmers, community, private employees, NGO) in and around Kupang. The FTI in Kupang is one of the 8 institutes under the Forestry and Estate Crops Training Center located in Bogor. During the period from fiscal year 1994/95 to 1999/2000, the center and its eight institutes had trained 7,967 staffs in courses related to land rehabilitation and social forestry. In the fiscal year 2000 the courses related to land rehabilitation to be offered are Soil and Water Conservation, Agroforestry Technique, and Management of Land Rehabilitation Farmer Group. A course entitled Soil and Water Conservation for Extension Worker will be conducted in FTI Kupang.

In the meantime, extension activity on rehabilitation of degraded lands and soil conservation technologies have been implementing routinely by extension workers at forestry and soil conservation district office.

F. Research and Development

Dry areas in Indonesia are scattered in Eastern part such as in East Nusa Tenggara (NTT), West Nusa Tenggara (NTB), South Moluccas, and Central Sulawesi. Land degradation in dry areas is mainly caused by the inappropriate utilization of land resources. Shifting cultivation and wild grazing widely practised in NTT province, for example, has aggravated soil condition which in turn will accelerate land degradation. Some research institutions have formulated programs to find adaptive technologies for combating degraded lands in dry areas based on local bio-physics, socio-economic, and cultural consideration.

Forestry Research Institute (FRI) in Kupang has a mandate to conduct research on forestry (including land rehabilitation and soil conservation) in NTT, NTB, Southeast Moluccas, and Bali. FRI in Kupang is one of the research institutes under the Forestry and Estate Crops Research and Development Agency (FERDA). The missions of the FRI in Kupang are as follows:

1. Improving capacity and capability of researchers and technicians
2. Providing research equipments and infrastructures
3. Providing funds for research and development
4. Providing accurate and reliable research data and information
5. Providing applicable and adoptable integrated technology packages

The institute has produced basic information of suitable species to be used for land rehabilitation as well as farming system and grazing could be applied for degraded lands. The institute has formulated a comprehensive, integrated, and systematic program with the involvement of other related research institutes for the next decade.

The research programs are as follows:

1. Improvement of Plantation Forest Productivity in Dry Areas
2. Management of Agroforestry in Dry Ecosystem

3. Techniques of Forest Land Rehabilitation and Watershed Management
4. Management of Protection Forest.

Center for Environment and Natural Resources Studies of the University of Tadulako in Palu (Central Sulawesi) has conducted some studies to support soil conservation and land rehabilitation program for dry areas e.g. afforestation technology, soil conservation technology with agro-silvopasture, and the development of village nursery. The institute has determined the species and farming system models suitable for dry areas.

G. Empowerment and Enhancement of Land Community Participation

Based on Forestry Act No. 41 / 1999 land degradation control is mainly implemented through participatory approach. Community participation in forestry development, particularly in dry areas, plays an importance role in the pursuit of sustainable development. In this context, the rural poor living inside or surrounding the forest are considered the key actors in improving their own living conditions. Thus, their participation is essential to the success of land rehabilitation and soil conservation activities in dry areas.

The participatory approach in land rehabilitation will promote the process of local empowerment and enhances their capacity to take action. The use of participatory approach will allow integration of local knowledge into local project implementation.

VI. FUTURE PLAN

A. Formulation of National Action Plan

A National Action Plan (NAP) on Combating Desertification will be developed as part of the National Economic and Social Development and Environment Protection Plans. This will involve an analysis of the existing plans, policies and strategies relevant to combating land degradation, and designing the necessary additional ones, along with the budget to finance their implementation, so as to ensure complementary action and avoid duplication or scattered efforts. Measures should be developed to promote synergy, complementarily, etc. The UNCCD principles (participation, partnerships, programme approach, etc.) should be acknowledged and integrated in other environmental and development plans.

Upon the completion of National Action Plan (NAP) for the implementation of UNCCD in Indonesia several thematic working groups will be established as coordinating bodies for cooperative actions in several aspects of land degradation control and mitigation of drought impacts. These working groups will have direct relations and communication with Asia regional Thematic Program Networks (TPN).

B. An Initial Concept of a Master Plan

The basic concept for Integrated Watershed Management in term of land rehabilitation and soil conservation is to seek for the comprehensive solutions to the problems (in respect to dry area) not only the technical point, but also taking to account the socio-economy, environment, cultural and institutional aspect. Before having a definite master plan, several related institutions involved in the implementation of UN-CCD in Indonesia have initiated several project ideas. The proposed project ideas are listed in Annex 2.

Priority areas for the implementation of UN-CCD are as follows:

1. Establishment National Communication on Land Degradation
2. Enhancing Traditional Practices on Fire Management
3. Local Community Empowerment in Land Rehabilitation Program
4. Annual Husbandry for Dry Region
5. Policies Study on Dryland Management
6. Transboundary Watershed Management
7. Strengthening Stakeholders Co-ordination in Land Use Planning and Management

The master plan for integrated watershed management in dry area should be prepared from the viewpoint of middle and long-term land use planning. The master plan should elaborate some elements such as : water conservation, soil erosion, soil fertility and social welfare dimension.

C. Strengthening Co-ordination with other Convention Activities

The utmost important of joining the convention is that it has close relationship with the Climate Change Convention (UN-FCCC) and the Convention on Biological Diversity (CBD). An extreme climate change phenomena causes a serious land degradation and drought that will then affect the existence of our biological diversity resources and disturb fresh water resources.

Efforts should therefore be made to programs and activities should be to the highest possible extent supportive of the three main conventions. This should benefit from the fact that at the international level cooperation has also been initiated between the financial scheme of the UN-FCCC and UN-CBD, i.e. the GEF, with the UN-CCC.

Annex 1 : LIST OF EXPERTS AND SCIENTISTS

No.	National Experts/Scientists	Field Expertise
1.	Dwiatmo Siswomartono, Ir. MSc.	Soil and Water Conservation
2.	Prof. Naek Sinukaban Dr,Ir.	Soil Conservation Management
3.	A. Ngaloken Ginting, Dr. Ir.	Soil Conservation
4.	Hoesodo Soedarisman, Ir.	Soil Conservation
5.	I Nyoman Yuliarsana, Dr. Ir. M.Agr.	Forest Resource Economics
6.	Hadi S. Pasaribu, Dr. Ir.	Natural Resources Policy
7.	Harry Santoso, Dr. Ir.	Rural and Regional Development
8.	Supriyo Ambar, Dr. Ir.	Rural and Regional Development
9.	Odjak Siagian, Drs.	Conservation Trainer
10.	Sunarto Goenadi, Dr. Ir.	Hydrologist
11.	Fachmudin Agus, Dr. Ir.	Soil Scientist
12.	Pratiwi, Dr. Ir.	Soil Scientist
13.	Edi Purwanto, Dr. Ir.	Soil Scientist
14.	Sutadi, Ir. MSc	Soil Conservation
15.	Chairil Anwar Siregar, Dr.	Soil Scientist
16.	Apik Karyana, Ir. MSc.	Nature Resources Management
17.	Hardjono, Ir. M.Eng.	Soil and Water Engineering
18.	Prijo Soetedjo, Ir. MSc.PhD	Plant and Soil Science
19.	Wayan Mudida, Ir. MSc.	Environment Scientist
20.	Made Yusan, Ir.	Agro-sociologist
21.	Ihma Aspartia, Ir.	Agro-sociologist
22.	Cahyo Wibowo, Ir. MScF	Soil Conserveationist
23.	Siti Badriyah Rushayati, Ir. Msi	Climatologist
24.	Nyoto Santosa, Ir. Msi.	Mangrove Rehabilitation
25.	Bambang Hero, Dr. Ir.	Forest Fire Specialist
26.	Sumardjo, Ir.	Soil and Water Conservationist
27.	Jajat Jatnika H., Ir. MM.	Agroforestry and Water Conservation
28.	T. Rameyo AD, Ir. MST	Geophysics/Meteorology
29.	Wahyu Subektiyo, Drs. MST	Satellite Meteorology
30.	Hartoyo As, Ir.	Computer Science
31.	Priyadi Kardono, Dr.	Remote Sensing & GIS
32.	Sumoyono, Ir.	Forestry
33.	Adi Rusmanto, Drs. MTP	Regional Planning

No.	National Experts/Scientists	Field Expertise
34.	Syafril Salim, Drs.	Irrigation
35.	Tauhid Ahmad SP	Social-Economist
36.	Haryadi, Drs.	Social - Institution
37.	Mung Haryanto, Drs. MSc.	Climate Change
38.	Suratmo, Drs. Msi.	Maritime Specialist
39.	Haryanto AS, Ir.	Agriculture Meteorology
40.	Chairil Anwar S., Dr. Ir. MSc	Soil Chemistry
41.	Harris Herman S., Msi.	Soil Chemical Analysis
42.	Teguh Hardi TW., Drs.	Pest and Disease
43.	Harisetijono, Ir. MSc.	Social-forestry
44.	Komang Surata, Ir.	Sylviculture, Soil Scientist
45.	Taulana Sukandi, Dr.	Agroforestry Specialist
46.	Kuswanto S.A., Ir. MS.	Agriculture Economist
47.	Sudar D. Atmanto, Ir. MM.Agr.	Agriculture Economist

Annex 2 : LIST OF PROJECT IDEAS

NO.	TITLE	INSITUTION
1.	Animal Husbandary For Dry Region at Kupang	Bogor Agriculture Institute
2.	Study on Fast Growing Tree Species for Rehabilitation of Abandoned Gold Mining Degraded Land Through Application of Organic, Inorganic Fertilizers and Soil Microorganism	Bogor Agriculture Institute
3.	Application of Rhizobium and Arbuscular Mycorrhizal Fungi to Enhance Growth and Productivity of Legumes Planted in an Agroforestry System to Combat Desertification	Bogor Agriculture Institute
4.	Climatic Variability and Its Relations with Indication the desertification Over Indonesia Maritime Continent Area	The Indonesia Meteorological and Geophysical Agency
5.	Inventory and Prevention of Land Degradation in Indonesia,s Dry Area Using Remote Sensing and Geographical Information System Approach	National Agency for Survey and Mapping
6.	Study on Combating Desertification Caused by Drought Impact at Some Watersheds in Java	Watersheds Management Technology Center, Surakarta
7.	Country Overview of Conservation Approaches and Technologies	Asia Soil Conservation Network
8.	Land Rehabilitation to Combat Desertification on Semi Arid Area in Indonesia	Center for Forest and Nature Conservation Research and Development, MOFEC

Annex 3 : DISTRIBUTION OF DEGRADED LANDS IN DRY AREA

No.	Province/District	Degraded Land (ha)	
		Forest Land	Non Forest Land
1.	NTT (Benain Watershed)		
	a. Sub Flores Watershed		
	- East Flores	14,590	84,287
	- Sikka	17,690	92,577
	- Ende	13,331	42,502
	- Ngada	18,911	66,275
	- Manggarai	7,234	66,890
	b. Sub Timor Watershed	45,782	139,699
	- Kupang	13,587	142,575
	- Southern Timor	50,993	51,021
	- Northern Timor	5,425	22,711
	- Belu	44,587	57,439
	- Alor		
	c. Sub Sumba Watershed		
	- East Sumba	39,819	209,136
	- West Sumba	27,342	82,354
	Sub Total	299,291	1,057,466
2.	NTB (Dodokan Moyosari Watershed)		
	- West Lombok	7,568.5	23,162
	- Central Lombok	2,984.5	2,655.5
	- East Lombok	2,766.5	24,478.5
	- Sumbawa	17,553	115,072
	- Dompu	12,520	11,959
	- Bima	11,127	46,851
	Sub Total	54,519.5	224,178
3.	Bali (Unda Anyar Watershed)		
	- Bangli	9,340	30,818
	- Badung	1,281	10,670
	- Buleleng	45,537	54,930
	- Karang Asem	14,048	33,906
	- Jembrana	25,901	10,645
	- Tabanan	10,157	13,780
	Sub Total	106,264	154,749

No.	Province/District	Degraded Land	
		Forest Land	Non Forest Land
4.	East Java (Sampean Watershed)		
	- Probolinggo	23,949	7,986
	- Situbondo	16,448	50,513
	- Bondowoso	41,119	37,162
	- Jember	72,176	73,536
	- Lumajang	33,323	86,590
	- Banyuwangi	56,089	114,684
	Sub T o t a l	243,104	370,471
5.	Central Sulawesi (Palu Poso Watershed)		
	- Donggala	65,648	64,496.97
	- Poso	87,729	36,622.06
	- Banggai	89,304	32,997.54
	- Buol Toli-Toli	17,388	19,034.92
	Sub T o t a l	260,070	153,151.49
	TOTAL 1+2+3+4+5	963,248.5	1,960,015.49