CDM Country Guide for INDONESIA
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Edited by the Institute for Global Environmental Strategies
2nd Edition
FOREWORD

The Kyoto Protocol, signed in 1997, finally entered into force on February 16, 2005. Since the signing of the Marrakesh Accords in 2001, which set out the fundamental rules for the Kyoto mechanisms—the Clean Development Mechanism (CDM), joint implementation (JI), and emissions trading (ET)—the CDM has been the forerunner. The CDM was designed to assist Annex I countries in meeting their greenhouse gas emissions reduction targets by implementing reduction/sequestration activities in non-Annex I countries and counting the reduced/sequestered amounts as purchasable “credits.” Before the protocol was in effect, investors and project developers were hesitant to move into the CDM field. Since it came into force in February, there has been a steep increase in the number of projects submitted for validation and registration, and this upward trend is expected to continue in the next few years.

Despite the high demand to utilize the CDM and the continuing improvement in CDM rules, many investors and developers still find it difficult to implement projects. There are many factors acting as impediments, including inherent, country-specific problems in attracting foreign investment. One problem directly related to the effectiveness of the CDM, however, is the unpreparedness of developing countries to host projects. The reasons for this include premature institutional development, the existing highly complicated system for endorsing projects, a lack of experience among government officials, and lack of coordination among ministries and relevant governmental institutions—just to name a few. Therefore, it is imperative to ameliorate the situation in host countries in order to foster CDM activities and contribute to the global efforts to combat global warming.

Two key strategies available to enhance the ability of host countries to utilize the CDM are information collection/rearrangement/dissemination and capacity building. In most host countries, some relevant information already exists, but often in disparate pieces or it is not considered in terms of the CDM—and it has never been put together before in a comprehensive form. This is the main reason for publishing this series of guidebooks, which feature information on specific countries in Asia. By making the guidebooks as user-friendly as possible, they provide essential information that project developers and investors will need for most effective CDM project preparation and implementation in each country.

This guidebook is part of a series prepared as a core component of the information dissemination and awareness-raising activities under the Japanese Ministry of the Environment’s Integrated Capacity Strengthening for the Clean Development Mechanism/Joint Implementation (ICS-CDM/JI) programme.

Akio Morishima
Chair, IGES Board of Directors
FOREWORD

Indonesia ratified the Kyoto Protocol mainly because the threat of global warming hit home in this country, causing political stress on policy makers already working hard to achieve sustainable development. The protocol’s strategic objective is the mitigation of greenhouse gas (GHG) emissions caused by human activity. For Indonesia, ratification of the protocol also represents an economic opportunity through its implementation of Clean Development Mechanism (CDM) projects.

As a non-Annex I country, Indonesia wants to attract Annex I countries to collaborate on CDM projects. Based on national strategic studies on its forestry and energy sectors conducted in 2001/02, Indonesia has the potential for reduction of 23–24 million tonnes of carbon dioxide equivalent (CO2e) per year. This huge potential should be vigorously supported by solid institutional arrangements.

Indonesia has much to prepare for implementing CDM projects in its forestry, energy, and other sectors. The Ministry of Environment (MoE) is inviting all stakeholders and sectors to participate so that Indonesia can play a positive role in addressing global warming at the national, regional, and international levels.

On behalf of the Indonesian government, I would like to convey my gratitude and appreciation to the people at Ministry of the Environment, Japan for their generous collaboration in preparing this CDM country guide for Indonesia. This guidebook is one of the essential tools that Indonesia’s MoE needed to have in relation to our preparations for implementing CDM projects in our country.

It is our sincere hope that this guidebook will be useful and beneficial to Indonesia’s contribution to mitigate GHG emissions as it commits to undertake the qualitative policies and measures that meet the objectives of the UNFCCC. The Ministry of Environment wishes to thank all the writers and editors for their dedicated and intensive work in preparing this guidebook.

Masnellyarti Hilman
Deputy Minister for Natural Resources Conservation Improvement and Environmental Degradation Control
Ministry of Environment, the Republic of Indonesia
ACKNOWLEDGEMENTS

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<tr>
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<th>Description</th>
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<tbody>
<tr>
<td>ADB</td>
<td>Asian Development Bank</td>
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<tr>
<td>ADO</td>
<td>Asian Development Outlook</td>
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<tr>
<td>AIJ</td>
<td>activities implemented jointly</td>
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<tr>
<td>AR</td>
<td>afforestation / reforestation</td>
</tr>
<tr>
<td>ASEAN</td>
<td>Association of South East Asian Nations</td>
</tr>
<tr>
<td>BOO</td>
<td>build-operate-own</td>
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<tr>
<td>CDM</td>
<td>Clean Development Mechanism</td>
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<tr>
<td>CDM-EB</td>
<td>CDM Executive Board</td>
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<tr>
<td>CER</td>
<td>certified emissions reduction (unit for the CDM)</td>
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<tr>
<td>CH₄</td>
<td>methane</td>
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<tr>
<td>CO₂</td>
<td>carbon dioxide</td>
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<tr>
<td>COMAP</td>
<td>comprehensive mitigation assessment process</td>
</tr>
<tr>
<td>COP</td>
<td>Conference of the Parties</td>
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<tr>
<td>DNA</td>
<td>designated national authority</td>
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<tr>
<td>DOE</td>
<td>designated operating entity</td>
</tr>
<tr>
<td>EIA</td>
<td>environmental impact assessment</td>
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<td>ET</td>
<td>emission trading</td>
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<tr>
<td>FDI</td>
<td>foreign direct investment</td>
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<tr>
<td>FWI</td>
<td>Forest Watch Indonesia</td>
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<tr>
<td>GDP</td>
<td>gross domestic product</td>
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<tr>
<td>GHG</td>
<td>greenhouse gas</td>
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<tr>
<td>GNP</td>
<td>gross national product</td>
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<tr>
<td>GoI</td>
<td>Government of Indonesia</td>
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<tr>
<td>Gt</td>
<td>gigatonnes</td>
</tr>
<tr>
<td>GW</td>
<td>gigawatt</td>
</tr>
<tr>
<td>ICSID</td>
<td>International Center for Settlement of Investment Disputes</td>
</tr>
</tbody>
</table>
IEA  International Energy Agency
IGES  Institute for Global Environment Strategies
IPCC  Intergovernmental Panel for Climate Change
IPPs  independent power producers
JI  Joint Implementation
LULUCF  land use, land-use change, and forestry
Mha  million hectares
MIGA  Multilateral Investment Guarantee Agency
MMER  Ministry of Mineral and Energy Resources
MoE  Ministry of Environment
MoF  Ministry of Forestry
MPTE  multi purpose tree species
Mt  million tonnes
MW  megawatt
N$_2$O  nitrous oxide
NCCDM  National Comission on Clean Development Mechanism
NOx  nitrogen oxides
NGO  non-government organization
NPTT  non permanent technical team
NSS  national strategic study
PCN  project concept note
PDD  project design document
PRPA  poverty reduction partnership agreement
PSC  production sharing contract
PTT  permanent technical team
RE  renewable energy
UNEP FI  United Nations Environmental Programme Finance Initiative
UNFCCC  United Nations Framework Convention on Climate Change
WB  World Bank
EXECUTIVE SUMMARY

Social, economic, and political profile

Indonesia is a country governed by a presidency, with a population of 215 million inhabitants, which consists of 30 provinces extending from Aceh in the western part of North Sumatra to Merauke in the eastern part of West Papua (BPS 2004).

Since gaining independence on August 17, 1945, Indonesia has continued to progress economically, socially, and politically. In the past, it was considered an authoritarian government when Soeharto led the country. Starting from the reform era of semi-democratic government in 1998, the relationship between the government and people has become more open, as seen by intensive communication (freedom of information), public consultation, and a participatory approach in all facets of the House of Representatives and the different levels of government, which includes planning, monitoring, and regulation.

In relation to the social aspect, several schemes have been instituted to provide support to the most vulnerable in the community, including micro-insurance; agriculture insurance; social funding for the homeless, single mothers, and physically and mentally challenged people; micro-credits for small business activities; child protection; and subsidies for education, particularly for elementary schools, poor communities, and victims of natural disasters.

After the monetary crisis that shocked Indonesia in 1997/98, the economy of the country has improved, as indicated by its gross national product (GNP), which has continued to grow from 2001–2005 (3.5%, 3.7%, 4.1%, 4.5%, and 4.5%, respectively). However, the poverty rate remains high—standing at 18.2 percent in 2002 and 17.4 percent in 2003.

With the new government, it is strongly hoped that political, economic, and social stability will be achieved and that this will be conducive to further improvement of Indonesia’s economy and sustainable development. The implementation of regional autonomy has greatly influenced the reform of governance at every level of government, aided by non-governmental institutions in conjunction with globalization in every aspect.

CDM-related government authorities

Designated national authority

Indonesia has established the National Committee for the Clean Development Mechanism (NCCDM) to coordinate CDM project implementation. In Indonesian, its name is Komisi Nasional Mekanisme Pembangunan Bersih, or Komnas MPB. It is a governmental organization created by Ministry of Environment Decree No. 206 (July 21, 2005) to function as Indonesia’s designated national CDM authority. Komnas MPB is supported by the secretariat and technical team, who will perform the daily work of the NCCDM.

CDM-related government authorities in the energy sector

The Ministry of Mineral and Energy Resources (MMER), through its Research and Development Center for Energy and Electricity Technology (Pusat Penelitian dan Pengembangan Teknologi Energi dan Ketenagalistrikan), has defined sustainable development

criteria for energy-related CDM projects (Ministerial Decree No. 953.K/50/2003), which will be embedded in the national sustainable development criteria.

In the CDM host country approval process, the Research and Development Center for Energy and Electricity Technology represents the MMER as a member of the energy sector’s evaluation team. Although the national sustainable development criteria established by the DNA will be the basis of the project approval process, understanding the interests of the sector is also important.

**CDM-related government authorities in the forestry sector**

The Ministry of Forestry issued a sectoral regulation (Minister Decree 14/2004 [Peraturan Menteri Kehutanan 14/2004 tentang Tata Cara Aforestasi dan Reforestasi (AR) dalam Kerangka Mekanisme Pembangunan Bersih]) for the implementation of A/R CDM project activities in forestry. The spirit of the regulation is to guide proponents to conduct planting activities within the framework of A/R CDM.

In the forestry sector, a unique entity has been established with the task of helping and facilitating the initial stages of A/R CDM project implementation in Indonesia, the CDM Working Group, under the coordination of the Deputy Minister of Forestry. Within this working group, coordination and linkages are established among several units within the Ministry of Forestry and related government institutions dealing with forestry and land tenure. It should also be noted that non-governmental organizations and community groups often have great concerns about land tenure issues, although they are not officially tied into the process.

**CDM project potential in Indonesia**

Indonesia ratified the Kyoto Protocol on June 28, 2004. It is hoped that this will increase the opportunities to attract more investors and project proponents to develop and register CDM projects that will benefit Indonesia’s sustainable development. This will impact on several aspects of the country’s preparation of policy, financial, and technical regulations, as well as the legal aspects of implementing CDM project activities in Indonesia.

The potential CDM energy in Indonesia is estimated to be 2.1 percent from the total mondial or 1,200 million tonnes of carbon dioxide (MtCO₂) per year. The mitigation options that are most likely feasible to be implemented in Indonesia are geothermal energy, the utilization of flared gas, integrated combined cycle, fuel switching, cogeneration, and heating systems.

In addition, the potential in CDM forestry is predicted to be about 28 MtCO₂ per year. According to the NSS Forestry Report, around 32.5 million hectares of land have the potential for forest carbon projects, where about 50 percent could be eligible for CDM projects according to the rules of the Kyoto Protocol.
1. INTRODUCTION

This section explains the purpose of this guide in the use of the Clean Development Mechanism (CDM) in Indonesia. It provides background information and the objectives of the CDM in order to facilitate users in getting the fullest benefit of this guidebook as possible. Not all sections are complete, however, since some aspects are still works in progress. In order to avoid confusion, matters still under development and/or being studied are not discussed.

1.1 Background

Increased greenhouse gas (GHG) emissions resulting from economic and demographic growth over the last two centuries have exacerbated the global warming effect, leading to potentially irreversible climate change. Growing international concern was remarkably highlighted through the adoption of the United Framework on Climate Change Convention (UNFCCC) by most countries at the 1992 Earth Summit in Rio de Janeiro, Brazil. Since then, the discussion on climate change issues has reached some important milestones. A major one is the 1997 Kyoto Protocol of the UNFCCC, in which developed countries listed in Annex B of the protocol (hereinafter called Annex B countries) committed to targets which could reduce their GHG emissions with the aim of stabilizing the atmospheric concentration of GHGs.

The CDM is one of three flexible mechanisms of the Kyoto Protocol designed to facilitate Annex B countries in fulfilling their commitments to reduce GHG emissions, while at the same time assisting non-Annex B countries, mostly developing countries, in achieving sustainable development. The CDM is the only flexible mechanism that involves non-Annex B countries. Under the protocol, developing countries have no obligation to constrain their own GHG emissions, but may voluntarily contribute to global emission reductions by hosting CDM projects.

The Kyoto Protocol can only enter into force if at least 55 Parties to the UNFCCC ratify it and if their combined emissions equal 55 percent of Annex I Parties’ carbon dioxide (CO₂) emissions in 1990.² This condition was included to ensure that no single Party can block the protocol’s entry into force. With Russia having deposited its instrument of ratification with the UNFCCC secretariat in November 2004, the protocol officially entered into force on February 16, 2005. Thus, its three flexible mechanisms to mitigate or remove GHG emissions—emissions trading (ET), activities implemented jointly (AIJ), and the CDM—will absorb streams of awkward funds and attract more countries to participate.

Indonesia ratified the UNFCCC in 1994 (Act on Ratification of Climate Change Framework Convention No. 6/1994). Its House of Representatives passed an act to ratify the Kyoto Protocol on June 28, 2004, which was signed on October 19 and promulgated as Act No. 17/2004. In line with this process, the Minister of Foreign Affairs deposited the instrument of ratification on December 3, 2004. Ratifying the protocol will increase the opportunities for Indonesia to attract more countries and project proponents to develop and register CDM projects, which will benefit its efforts toward sustainable development. Consequently, it will further affect many aspects of

² Annex I countries refers to those listed in Annex I of the UNFCCC, mostly industrialized countries.
the preparation of policies, financial and technical regulations, as well as the legal aspects of implementing CDM project activities in Indonesia.

Despite the clear modalities and technical aspects spelled out for implementation of CDM projects, there are still dominant issues remaining to be tackled, including uncertainties during the transition period of decentralization of Indonesian governance and other technical aspects. Accordingly, the 2001 National Strategy Study (NSS) of the CDM in Energy and the NSS on the forestry sector in 2003 indicated that Indonesia faces tremendous challenges in implementing CDM projects.

1.2 Challenges

Considering the widespread use of “business-as-usual” practices in both the energy and forestry sectors, CDM projects can open up a wide possibility of GHG emissions reduction and removal.

The national strategy studies indicated that the potential CDM volume in the energy sector is about 2.1 percent of the total volume of the 1,200 million tonnes of CO₂ (Mt CO₂) that Indonesia emits per year. This works out to 25.2 Mt CO₂ annually at the current price of US$1.83 per tonne. The mitigation options most feasible in Indonesia are, among others, geothermal energy, the utilization of flared gas, integrated combined cycle, fuel switching, and cogeneration and heating systems. In the forestry sector, the NSS reported that around 5.5 gigatonnes (Gt) of CO₂ could potentially be removed through forest carbon sequestration by afforestation and reforestation activities, which is equal to 32.5 million hectares (Mha) of land. According to Kyoto Protocol rules, about 50 percent of this would be eligible for CDM projects, so the available lands for afforestation and reforestation CDM projects is predicted to be 16 Mha, equivalent to a 2.75 Gt CO₂ carbon sink, with a potential volume of about 184 Mt CO₂ per year.

As stated in the Ministry of Forestry’s list of program priorities, highlighted is its consideration of using the CDM to intervene in the “business-as-usual” focus of the nation’s forestry program through programs such as rehabilitation of huge areas of critical land and replanting activities in heavily degraded natural forest. At the same time, its priorities include reducing poverty among communities living in or close to forested areas, preventing illegal logging, implementing sustainable forest management through forest certification and timber product chain-of-custody systems, establishing plantation forests, reforesting land, and protecting forests.

The CDM as a global mechanism to mitigate GHG emissions is not simple enough to be easily followed by multi-stakeholders who are interested and linked. Technical and non-technical regulations at the international level that have to be followed are numerous and must first be interpreted and then adapted to national regulations. In addition, it is also a prerequisite that potential CDM projects should be based on the sustainable development principle adopted by Indonesia. The numerous technical and non-technical issues that may be present in project activities led to the realization of the important need for this guidebook. It has been developed for the purpose of providing a practical guide on CDM project potential and the challenges of implementing CDM project activities in Indonesia, particularly in the energy and forestry sectors.
1.3 Objectives of the guide

This guidebook is meant to be a practical tool for use by countries, project developers, and other parties interested in CDM projects in Indonesia.

It has a dual purpose of facilitating CDM project development in both developing countries in general and particularly in Indonesia by providing the information necessary to reduce investment risks and allow further development of CDM projects in developing countries. In addition, project developers can learn more about the issues upon which countries place importance when looking for CDM projects in which to invest. Therefore, this could further contribute to the overall improvement of CDM project quality. The main focus of this project is to go beyond most CDM guidebooks—which usually contain either only general information or detailed information with wide geographical coverage—but rather to present country-specific information from the practical aspect of implementing CDM projects in developing countries.

This guidebook is part of the CDM Country Guide Project, which aims to enhance capacities for CDM project development and implementation in developing countries. It is a component of the activities of the Integrated Capacity Strengthening for Clean Development Mechanism/Joint Implementation (ICS-CDM/JI) Program, hosted by the CDM Programme of the Institute for Global Environmental Strategies (IGES). The ICS-CDM/JI Program was launched in October 2003 as one of several CDM/JI promotion initiatives funded by Japan’s Ministry of the Environment. The program disseminates information, contributes to the establishment of networks in Japan and partner countries, and builds capacity to initiate, develop, and implement CDM projects.

The CDM Country Guide Project was implemented in Cambodia, India, Indonesia, the Philippines, and Thailand through the IGES ICS-CDM/JI Program. Using a basic template for all countries, the guidebooks provide comprehensive information that is easy to compare between participating countries, and thus they will be useful in each country to further improve their national CDM strategies.

This study refers to existing studies conducted on the CDM in Indonesia. Since these were limited to the energy and forestry sectors, this guide focuses on these sectors only. Although other sectors such as agriculture and transportation may hold substantial CDM potential, in-depth studies have not yet been conducted for them.

1.4 How to read the guide

This guide consists of nine sections, with what is considered the most important information contained in section 6 (CDM Project Approving Procedures and Requirements in Indonesia), section 8 (Financing and Financial Issues), and section 9 (Government Incentives).

It is necessary for project developers, countries, and other parties interested in opportunities offered through the CDM scheme to understand its basic requirements. Although section 4 provides an overview of the CDM project cycle, readers are also encouraged to read the CDM and JI in Charts, published by IGES, to get a better understanding of the Kyoto Protocol and

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3. IGES is a research institute in Japan that conducts pragmatic and innovative strategic policy research to support sustainable development in the Asia-Pacific region.
CDM procedures and modalities. This guidebook elaborates on several important aspects and provides a practical guide for CDM project implementation in Indonesia.

1.5 Summary of each section

1. Introduction

The introduction provides readers with a general understanding of CDM terminology and a brief description of each section of the guidebook.

2. Social, economic, and political Information

This is a general country profile of Indonesia, particularly on matters related to recent developments in social, economic, and political aspects, with special emphasis on the energy and forestry sectors.

3. CDM project cycle

This describes the CDM project cycle in the context of Indonesia, including project modalities, procedures, and eligibility. There are certain modalities and operational procedures to follow in the development and registration of CDM projects, as set out by the UNFCCC, as well as important criteria used to ensure real, measurable, and long-term emission reductions, including baseline and monitoring methodology and the benefits of the activity in terms of carbon sequestration (technically called additionality). These criteria differ from project to project or from one sector’s scope to another, and they are highly influenced by the socioeconomic, political, and regulatory environment of the host country.

In addressing additionality issues, the CDM can be viewed not just as a tool for reducing GHG concentrations but also to enhance the implementation of sustainable development and self-reliance in terms of energy security. Revenue from emissions reduction credits (CERs) generated by a CDM project will assist in reducing some of the major obstacles that have long been faced, for instance, in increasing economic viability, transferring technology know-how, accessing financial support, and removing market barriers for end-use energy efficiency projects.

As in the energy sector, additionality in the forestry sector corresponds to the effort of reducing emissions or carbon sequestration resulting from a project that would not occur otherwise. The additionality will cover not only the additionality in carbon sequestration but includes environmental, social, financial, and investment additionalities as well.

4. Potential CDM projects in Indonesia

It is important for countries, potential project proponents, and other interested parties to understand the potential sectors for the CDM—along with their risks and consequences—in view of common business practices. To date, Indonesia has conducted various studies aimed at identifying potential sectors of GHG abatement and potential mitigation technologies. Based on these, significant potential has been identified in the energy and forestry sectors, but awareness of this among potential project proponents is still low.

This guidebook will help readers understand the basic requirements for implementing a CDM project. While knowledge of international regulations covering the CDM is important, this guide also provides an illustration of the national context by elaborating on the above aspects in

more detail. It is hoped that this will be useful for generating ideas on potential CDM projects to be developed and assessing their eligibility in Indonesia.

5. **CDM-related government authorities**

In non-Annex I countries, the designated national authority (DNA) has the authority to officially issue the host country’s approval of CDM projects. Depending on the country’s policy, each is given flexibility to develop its own DNA structure and operational procedures, as well as the sustainable development criteria applied to screen CDM projects. This section outlines approval procedures of the CDM and Indonesia’s DNA.

6. **CDM project approving procedures and requirements**

This section focuses on the procedures and steps that project proponents must follow to secure a recommendation from Indonesia’s DNA. As a prerogative right of CDM host countries to set their own criteria, sustainable development will be highlighted. The sustainable development criteria of the energy sector will also be briefly discussed to provide readers with an understanding of the sector’s point of view.

7. **Laws and regulations**

Although conducting a CDM project is not business-as-usual, common business practices are still applied in project development planning. Certainty of policy and regulatory supports is a major consideration for countries/project developers in making decisions. Only a few regulations directly related to the CDM were promulgated in Indonesia, but the regulations and policies of the energy sector most likely to influence CDM project design need to be discussed. For example, geothermal-based electricity generation, one of the most progressive sectors in the energy field, is already covered by Act No. 27/2003, which concerns regulations for management and development of geothermal sources both as a commodity and an energy source for direct and indirect utilization. In the forestry sector, Act No. 34/2002 (which concerns rules and regulations for the environmental services from forest areas) and Minister of Forestry Decree No. 14/2004 (regarding the procedure for getting a recommendation from the Ministry of Forestry on eligible land for CDM project activity), were issued, in principle, with the aim of facilitating the implementation of afforestation and reforestation CDM projects.

8. **Financing and fiscal issues**

Development of CDM projects highly involves financial aspects. Different types of CDM credits buyers exist, and their requirements for projects vary depending on their needs. However, information on these buyers is not readily available in a concise manner, so the topic will not be covered in this guidebook. In addition, different types of project financing infrastructure available for business-as-usual projects—which may or may not obtain revenue from selling carbon credits—might make tree planting more interesting and attractive for accelerating the improvement of environmental quality.

Other financial aspects related to CDM project development are carbon emissions pricing, fiscal issues, and available government incentives through certain programs, which may not necessarily be dedicated to the CDM but may support the CDM scheme. For example, the Indonesian government launched a program to favor the development of small-scale renewable energy electricity generation, called PSK Tersebar (Ministerial Decree No. 1122K/30/MEM/2002). Through this scheme, the price of electricity generated is already standardized for both low- and
medium-voltage grids. Since most renewable energy technologies are still having difficulty in meeting generation costs, the CDM provides additional incentives apart from this program, thus promoting utilization of clean energy sources.

9. Government incentives

Again, CDM projects are not a usual type of investment project; they should maintain environmental integrity in terms of reducing GHG emissions. As an economic instrument option to implement climate-friendly projects, however, assessing investment feasibility is a must in order to gain support from various parties, especially financiers and countries. This section discusses the potential of CDM projects in terms of resource potentiality, technology accessibility, cost structure and benefits (i.e., financial aspects and removal of barriers). Discussion is also provided on a project’s compliance with national policies and its relevance to national programs in order to facilitate countries and project developers in assessing their project’s overall implementation feasibility.
2. POLITICAL, ECONOMIC, AND SOCIAL INFORMATION

This section provides background information on the social, economic, and political aspects of Indonesia relevant to CDM implementation. It first provides an overview of the country’s demographics and examines various sectors that are important as sources of national income. Taking into account their importance to the CDM, a more detailed discussion on the forestry and energy situation is given. This chapter also provides brief information on a GHG emissions inventory as an introduction to GHG mitigation potential in Indonesia that could possibly be executed through the CDM.

2.1 Country overview

2.1.1 Geography and demography

Indonesia is the world’s largest archipelago, consisting of about 17,500 islands, that stretches from 06°08’ North latitude to 11°15’ South latitude, and from 94°45’ to 141°05’ East longitude. It includes 3.1 million square kilometers (km²) of territorial waters (62% of its total area), almost 2 million km² of land (38%), and 81,000 km of coastline. The Indonesian climate is tropical—hot and humid, but more moderate in the highlands. Climatic and weather conditions of the archipelago are characterized by an equatorial double rainy season. The dry season generally prevails from May to September, and the wet season generally prevails from December to March. These patterns do not always rigidly take place, however, since a large part of the archipelago is covered by sea and diurnal differences are not significant, which makes precipitation possible anytime. The mean annual relative air humidity ranges from approximately 80 to 90 percent. The mean maximum temperature can reach 33°C, whereas the mean minimum air temperature is 21°C. Figure 2.1 presents the geographic location of Indonesia.

The total population was 165 million in 1985, 183 million in 1990, and reached 238 million in 2004 (CIA 2004), representing the fourth most populated country in the world. The urban population was about 43 percent in 2003 (World Bank Group 2004). The current population growth rate is about 1.5 percent annually, and it is projected that at the current rate the population will exceed 300 million by 2030.

Looking at the three pillars of politics, economics, and society that form a nation’s strength, Indonesia has the potential to recover and further develop its nation, people, and natural resources. A brief description of the most recent status of political, economic, and social aspects of Indonesia is provided next to get an up-to-date, comprehensive country profile.
2.2 Political profile

The political situation in the country is very often related to its social and economic conditions, which influence one another. Discussion of Indonesia’s political history is usually divided into the Old era, the New era, and the Post-New era. Some experts have stated that the new era regime is centralistic, authoritarian, bureaucratic-militaristic, etc., which is generally considered a lower type of democracy.

The Post-New era was signaled by a spirit of reform and is also well known as the reform era. The reform period started in 1997 up to the present day, and major change has been experienced in political processes in the move towards a democratic society. This change has produced various enabling instruments and laws meant to achieve democracy, and one of these is a constitution on regional autonomy.

Measuring democracy is normally done by looking at the three parameters of competition, participation, and accountability. In the Post-New era, there was a rapid improvement in these parameters, such as having the freedom to choose and get involved in political parties and freedom to participate in general elections. Nevertheless, by using the indicators developed by Freedom House, the level of accountability of the people’s representatives is rated above a “four,” meaning Indonesia’s democracy is semi-authoritarian or can be seen as “elitist” and “oligarchic” (Bappenas 2004). It is expected that, starting with the new president, the development of democracy will improve.

2.2.1 Regional autonomy

Indonesia is a country consisting of 33 provinces, 440 regencies, and 81 municipalities, which is still developing, and hence the exact figure is still change with the development of the
new regions. The previous governmental system tended to be centralized. Since January 2001, however, based on Act No. 22/1999, the government system has changed from being centralized to decentralized, with a focus on regencies/municipalities. Governmental structure can be classified into four levels: central, province, regency/municipality, and village.

Each level has its own authorities. The central government has authority over international relations, defense, and security, as well as monetary issues, the judiciary, and religion. Provinces have authority over inter-municipality/regency affairs and other affairs that cannot be implemented by regencies and municipalities, while regencies/municipalities have authority over public works, health, education, culture, agriculture, transportation, trade, industry, investment, environment, land use, cooperatives, and the labor force. The lowest level of governmental system is the village, which is responsible for any kind of fiscal performance of the village. The hierarchy of the government structure is shown in figure 2.2.

![Governance Structure Diagram](image-url)

**Figure 2.2. Hierarchy of Indonesia’s governance structure (urban areas)**

*Source: SMERU 2001.*
Instruments that enable regional autonomy were initiated in Act No. 5/1974, yet the process of democratization has not adequately progressed due to the obstructive position of the Regional House of Representatives (DPRD) as a part of the regional government element.

At the end of the New era and in the Post-New era, the implementation of regional autonomy was highly influenced by the development of a strategic environment both nationally and internationally. The development of this environment is moving very fast and dynamically, which has presented the opportunity for implementation of more regional autonomy.

To handle the failure of the decentralization process, and along with the spirit of regional autonomy in the reform era, the People’s Advisory Assembly (MPR), through its Decision No. XV/MPR/1998, provides instruction for the judicious realization of regional autonomy and the use of national resources and monetary balance between the central and regional governments. Based on the decision, the government, together with the House of Representatives (DPR), set up an *arranging package* of regional autonomy in the form of a constitution, Act No. 22/1999 on Regional Government, as the substitute for Act No. 5/1974 on the Principles of Regional Government, and Act No. 25/1999 on Monetary Balancing between Central and Regional Government as the substitute for Act No. 32/1956 on Monetary Balancing. Basically, Act 22/19999 arranges the sharing of authority between the central and regional governments (*power sharing*), while Act 25/1999 details *financial sharing* as an implication of power sharing.

A fundamental change has occurred concerning changes in authority from the central government to the local government. Act No. 22/1999 provided room for regional regulations, especially those related to managing natural resources not considered as having national and global importance. Act No. 22/1999 was revised and became Act No. 32/2004 to get more appropriate and effective governance at the regional level to accelerate people’s welfare achievement and regional competitiveness based on democracy, equality, and justice, in line with the 1945 Nation Act.

The flow chart in figure 2.3 shows the relationship between executive and legislative bodies at the national and regional/local levels.
Act No. 32/2004 is a regional autonomy act that distribute central government authorities into the regional offices. With this decentralize authority, the region will have stronger power and authority to administrate wider aspect of expectedly good governance. The decentralized authorities is especially given to the district / municipality to enables them to consider their local characteristics into their policy and legislation.

Act No. 33/2004 is content the financial balance between central and local government. It is expected that the act will create a harmony of the financial relationship between central and local government in particular with fiscal stability, sustainability and balance. The law will be detailed and followed by the government regulation which is being under preparation at the moment. The government regulation will comprise of regional financial management, balance fund, de-concentration and assistance task fund, regional loan, regional financial information system, regional grant, and emergency fund. With the incoming government regulations, there will be synergy and harmony on national fiscal policy on State Revenue and Expenditure Budget as well as regional fiscal policy on Regional Revenue and Expenditure.

### 2.2.2 Prospects of the new government

The safe and successful direct election of the president and the peaceful succession of presidents are expected to be the beginning of a history of implementing improved democracy in Indonesia, bringing brighter prospects and a promising future for the nation.

The policies of the current government, among others, are corruption removal by forming the Committee of Corruption Removal, government transparency, improvement of decentralization implementation or regional autonomy by replacing Act 22/1999 with Act 32/2004, and political
stability in the form of executive-legislative relations, which is better and ensures certainty and sustainability. It is hoped that these policies will create better political stability in Indonesia.

It is hoped that improved political stability is a start for creating social stability through community conflict resolution and the implementation of community social programs. By establishing political and social stability, there is hope that Indonesia’s economic growth will increase by strengthening the investment climate, improving judicial and regulatory institutions, and resolving outstanding decentralization issues.

There are high expectations for the current government to reach more stability in politics, economics, and law enforcement, and these efforts for successive democratic leadership in Indonesia should improve the situation in Indonesia. Likewise, the expectation of having a climate more conducive to investment is indeed important for nation-wide development.

2.3 Economic profile

2.3.1 Economy and employment

Indonesia was one of the countries most severely hit by the 1997 economic crisis in Asia. More than five years later, it began to experience an economic recovery, although at a very slow pace. Table 2.1 provides some key economic indicators from 1985 to 2003. Total GDP and per capita GDP at current market prices grew during that period, although the level of growth after the crisis occurred at a low rate (less than 5%). The Asian Development Bank (ADB) Annual Report 2004 shows that the key reasons for the lower rate of economic growth included, among others, poor governance, inefficiency and corruption, and ineffective environmental laws and regulation, implementation of decentralization, security, and infrastructure (road transportation, water supply and sanitation, electric power, and telecommunications).

Indonesia’s economy policy has been directed at boosting the growth of the industry and service sectors to increase GDP, while maintaining the contribution of the agricultural sector at a modest level. In 2003, the agriculture sector contributed about 17 percent to total GDP, while the contributions of the industry and service sectors were about 43 percent and 40 percent, respectively (World Bank Group 2004).

The ADB is optimistic and confident that Indonesia’s economic growth will increase in 2004 above the 4 percent rate. From the state financial note and budget plan on revenue and expenditure for period of 2006, the government of Indonesia report that for the last three years Indonesia has reached economic growth of 5.1% in the year 2004. This is due to some external factors, for instance oil price and exchange rate which influence the increase of state non-tax revenue sources, especially from natural resources (oil and natural gas). In the last quarter of 2005, the economic growth of Indonesia was challenged by the world oil price, which exceed government prediction and has caused the increase of government subsidy on oil. This eventually causes the increase of inflation rate. Thus, the economic growth of 2005 is slightly under the previous prediction.
Table 2.1. Indonesian economic indicators, 1987–2004

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</thead>
<tbody>
<tr>
<td>Gross Domestic Product (GDP)</td>
<td>Trillion Rupiah</td>
<td>95</td>
<td>263</td>
<td>384</td>
<td>398</td>
<td>1,443</td>
<td>1,506</td>
<td>1,580</td>
<td>1,661</td>
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<tr>
<td>GDP per-Capita</td>
<td>Thousand Rupiah</td>
<td>738</td>
<td>1,176</td>
<td>2,334</td>
<td>6,752</td>
<td>8,081</td>
<td>8,828</td>
<td>9,572</td>
<td>10,642</td>
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<tr>
<td>Real GDP growth</td>
<td>%</td>
<td>4.9</td>
<td>9.0</td>
<td>8.2</td>
<td>4.9</td>
<td>3.8</td>
<td>4.4</td>
<td>4.9</td>
<td>5.1</td>
</tr>
<tr>
<td>GDP Contributor:</td>
<td>% GDP</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>- Agriculture</td>
<td>23.3</td>
<td>19.4</td>
<td>17.1</td>
<td>15.6</td>
<td>15.6</td>
<td>16.0</td>
<td>15.9</td>
<td>15.4</td>
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<tr>
<td>- Industry</td>
<td>36.3</td>
<td>39.1</td>
<td>41.8</td>
<td>45.9</td>
<td>46.8</td>
<td>44.6</td>
<td>43.6</td>
<td>43.7</td>
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<tr>
<td>- Services</td>
<td>40.4</td>
<td>41.5</td>
<td>41.1</td>
<td>38.5</td>
<td>37.6</td>
<td>39.3</td>
<td>40.5</td>
<td>40.9</td>
<td></td>
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<tr>
<td>Gross Domestic Saving</td>
<td>% GDP</td>
<td>32.9</td>
<td>32.3</td>
<td>30.6</td>
<td>31.8</td>
<td>31.5</td>
<td>26.8</td>
<td>24.9</td>
<td>25.3</td>
</tr>
<tr>
<td>Government Finance:</td>
<td>% GDP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Total Revenue</td>
<td>16.7</td>
<td>18.8</td>
<td>17.7</td>
<td>14.7</td>
<td>17.8</td>
<td>16.1</td>
<td>16.7</td>
<td>15.2</td>
<td></td>
</tr>
<tr>
<td>- Ttl Expenditure</td>
<td>20.1</td>
<td>19.6</td>
<td>14.7</td>
<td>15.8</td>
<td>20.3</td>
<td>17.6</td>
<td>18.4</td>
<td>16.3</td>
<td></td>
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<tr>
<td>- Overall Surp/Def</td>
<td>-3.5</td>
<td>-0.8</td>
<td>2.2</td>
<td>-1.1</td>
<td>-2.4</td>
<td>-1.5</td>
<td>-1.7</td>
<td>-1.1</td>
<td></td>
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<tr>
<td>Payment Balance:</td>
<td>% GDP</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>- Export</td>
<td>22.7</td>
<td>23.4</td>
<td>23.5</td>
<td>39.6</td>
<td>34.9</td>
<td>29.6</td>
<td>26.9</td>
<td>27.9</td>
<td></td>
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<tr>
<td>- Import</td>
<td>-16.5</td>
<td>-18.8</td>
<td>-20.2</td>
<td>-24.5</td>
<td>-21.1</td>
<td>-17.8</td>
<td>-16.6</td>
<td>-19.6</td>
<td></td>
</tr>
<tr>
<td>- Trade Balance</td>
<td>6.2</td>
<td>4.7</td>
<td>3.2</td>
<td>15.2</td>
<td>13.8</td>
<td>11.7</td>
<td>10.3</td>
<td>8.2</td>
<td></td>
</tr>
<tr>
<td>Average Interest Rate</td>
<td>% per 12 month</td>
<td>18</td>
<td>18</td>
<td>15</td>
<td>15</td>
<td>14</td>
<td>16</td>
<td>13</td>
<td>8</td>
</tr>
<tr>
<td>Exchange Rate</td>
<td>Rupiah - US Dollar</td>
<td>1644</td>
<td>1843</td>
<td>2249</td>
<td>8422</td>
<td>10261</td>
<td>9311</td>
<td>8577</td>
<td>8939</td>
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</table>


However, for 2006, the government emphasize on fiscal policy strategy that expected to increase Indonesia economic growth. The main fiscal policy will be directed to enforce economic activity that will increase state revenue through tax and non-tax. In addition, the government also will focus on the prospect of continuous growth, which keeps increasing to raise the long term obligation ability through economic growth. Therefore, fiscal endurance will be maintained. Such condition would re-invite and re-grow investment, which will eventually increase the export.

The country, however, faces the dilemma of a typical developing country, where employment opportunities provided in the industry and service sectors are considerably smaller compared to those in the agriculture sector. In 2003, out of the total population of more than 215 million, the agriculture sector employed 42 million workers, or about 43 percent of the total labor force, while the industrial and service sectors only employed about 11 million workers or about 11.9% of the total labor force (see table 2.2).

Agriculture sector absorbs employsments (43%) more than the industry and service sector (11.9%). While, agriculture sector contributes income to the GDP (17%) less than the industry sector (43%) and service sector (40%). Therefore, balancing earning from agriculture sector in the form of increasing income contribution to GDP and industry-service sector by increasing the national employment opportunities is one of the major challenges faced by the current government.

In general, the largest proportion of GDP contribution came from the agriculture, industry, and service sectors. Increasing GDP and national employment opportunities is one of the major challenges the government faces.
Table 2.2. Population and employment indicators, 1987–2004

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<tr>
<td>Total Population</td>
<td>Million</td>
<td>169.2</td>
<td>179.4</td>
<td>194.8</td>
<td>205.8</td>
<td>208.4</td>
<td>211.1</td>
<td>213.7</td>
<td>216.4</td>
</tr>
<tr>
<td>Population Density</td>
<td>Persons per km²</td>
<td>88</td>
<td>94</td>
<td>101</td>
<td>108</td>
<td>109</td>
<td>111</td>
<td>112</td>
<td>114</td>
</tr>
<tr>
<td>Annual Change</td>
<td>%</td>
<td>2.0</td>
<td>2.0</td>
<td>…</td>
<td>…</td>
<td>1.3</td>
<td>1.3</td>
<td>1.3</td>
<td>1.3</td>
</tr>
<tr>
<td>Labor Force</td>
<td>Million</td>
<td>72.2</td>
<td>77.8</td>
<td>86.3</td>
<td>95.6</td>
<td>98.8</td>
<td>100.7</td>
<td>102.7</td>
<td>…</td>
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<td>Employed:</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>- Agriculture</td>
<td>Million</td>
<td>70.4</td>
<td>75.8</td>
<td>80.11</td>
<td>89.83</td>
<td>90.80</td>
<td>91.64</td>
<td>92.81</td>
<td>…</td>
</tr>
<tr>
<td>- Manufacturing</td>
<td>Million</td>
<td>38.72</td>
<td>42.37</td>
<td>35.23</td>
<td>40.67</td>
<td>39.74</td>
<td>40.63</td>
<td>43.04</td>
<td>…</td>
</tr>
<tr>
<td>- Mining</td>
<td>Million</td>
<td>5.8</td>
<td>7.6</td>
<td>10.12</td>
<td>11.64</td>
<td>12.08</td>
<td>12.11</td>
<td>11.49</td>
<td>…</td>
</tr>
<tr>
<td>- Others</td>
<td>Million</td>
<td>…</td>
<td>0.52</td>
<td>0.64</td>
<td>0.52</td>
<td>-</td>
<td>0.63</td>
<td>0.73</td>
<td>…</td>
</tr>
<tr>
<td>Unemployed</td>
<td>Thousand</td>
<td>1842</td>
<td>1952</td>
<td>6251</td>
<td>5858</td>
<td>8005</td>
<td>9132</td>
<td>9939</td>
<td>…</td>
</tr>
<tr>
<td>Unemployed rate</td>
<td>%</td>
<td>2.5</td>
<td>2.5</td>
<td>7.2</td>
<td>6.1</td>
<td>8.1</td>
<td>9.1</td>
<td>9.9</td>
<td>…</td>
</tr>
<tr>
<td>Labor Participation</td>
<td>%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Male</td>
<td>%</td>
<td>-</td>
<td>54.7</td>
<td>-</td>
<td>67.8</td>
<td>68.6</td>
<td>67.8</td>
<td>65.7</td>
<td>…</td>
</tr>
<tr>
<td>- Female</td>
<td>%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>…</td>
</tr>
</tbody>
</table>

Source: ADB 2005 (Regions & Countries-Indonesia).

2.3.2 Investment conditions

From 1967 to 2004, the investment rate in Indonesia has continued to increase, with the largest foreign investment project occurring in 2001 (figures 2.4 and 2.5). Even during the economic crisis in 1997 the investment rate was considerably high. This shows that Indonesia is still attractive to foreign investors.

Investment policy in Indonesia is very open to foreign investment access. This, among others, is indicated by only a small number of restricted sectors, the availability of fiscal incentives to attract foreign investors, no limitation on the value of investment, the possibility for foreign investors to fully own their investments in almost all sectors, and a simplified investment approval process. The government is preparing a unified regulation on investment that will replace the existing Domestic Capital Investment regulation and the Foreign Investment regulation and regulate investment in all sectors, in line with the National Guidelines of the Republic of Indonesia (GBHN).

The ADB report, Country Economic Review of Indonesia, published in December 2004, shows that Indonesia’s modest yet stable growth performance over the last three years has shifted the growth debate from a focus on recovery and stability to the challenges of attaining higher and sustainable growth levels. The Asian Development Outlook 2005 (ADO),6 the annual ADB flagship publication that forecasts economic trends in the region, says that Indonesia’s economy is on a moderate growth path. Starting from a low base, gross investment is expected to increase to 22–26 percent of GDP, stimulated by the new government's planned measures to enhance certainty for investors.

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The 2004 presidential elections was a landmark event in Indonesia’s history, with the country of over 210 million selecting its president directly in relatively smooth elections. New government has prioritized fostering economic growth through greater investments in development, tackling corruption, and enhancing security as the key items of his vision for Indonesia from 2004 to 2009. Macroeconomic stability coupled with greater political certainty is bound to increase consumer confidence and, combined with the new administration’s processed policy measures, could facilitate a revival of investment in Indonesia and provide an impetus to economic growth. The new government has set itself a target of 6 percent real GDP growth on average per year during the next five years of its term. For this to be realized, Indonesia needs to attract greater foreign and domestic investment.
The new unified regulation on investment will incorporate market-oriented principles of investment policy and establish basic guarantees, such as equal treatment of Indonesian and foreign investors, whenever possible, and protection against expropriation of investments. Free repatriation of foreign investment capital and returns and also a reasonable part of the salaries and wages of expatriate personnel and related measures are concepts drawn from regional and international best practices.

The government recognizes that the security of investors’ assets is of paramount importance. In the case of foreign investors, it has negotiated and concluded several bilateral investment treaties, which provide direct protection to investors for the security of their assets as well as assurances for the repatriation of proceeds from their investments. It has also joined the Multilateral Investment Guarantee Agency (MIGA). The government plans to actively work to pursue concluding additional bilateral investment treaties with other countries.

The government recognized that foreign investors must have an appropriate forum to resolve disputes that are not able to be settled amicably. While such disputes would normally lie within the jurisdiction of a competent court, parties may agree in certain cases to pursue extra-judicial adjudication and choose an appropriate forum, including international conciliation or arbitration. To this end, Indonesia has become a member of the International Center for Settlement of Investment Disputes (ICSID) in Washington, DC.

To assist the president in implementing development policies in the field of investment, there is the Investment Coordinating Board (BKPM), which is a non-departmental government agency serving under and responsible directly to the president. The BKPM is not only responsible for planning and administering investment but it also assists investors to find feasible investment projects and suitable local partners, and to overcome some problems that might occur during implementation stages.

In addition to the BKPM, there are several other government agencies that assist investors with implementing their investment projects. For example, at the provincial level there is the Provincial Investment Board (Instansi Penanaman Modal Propinsi, or IPMP), headed by a chairman who is a subordinate of and responsible to the provincial governor. At the district level are the National Land Agency municipality and city offices (Badan Pertanahan Nasional [BPN] Kabupaten/Kota) headed by a chairman who is a subordinate of and responsible to the head of the provincial BPN. The task of the BPN Kabupaten/Kota is to assist investors with obtaining land for locating investment projects. At the regional level is the Regional Environmental Impact Protection Agency (Badan Pengendali Dampak Lingkungan Daerah, or BAPEDALDA), which is responsible for assessing environmental impact studies and monitoring environmental issues, i.e., environmental impact assessment (Analisis Mengenai Dampak Lingkungan, or AMDAL).

2.4 Social profile

Although Indonesia consists of different ethnic groups with diverse cultures, the people share the same soul and spirit as the Indonesian nation. With the spirit of Bhinneka Tunggal Ika (literary means Unity in Diversity), the ethnic groups are united as Indonesian. They are able to put aside their ethnical ego and aiming for prosperity for the whole nation. Government also supports this spirit through development programs on various sectors. The physical and spiritual developments are continuously implemented towards a better welfare of the community. The
programs to develop infrastructure for transportation, clean water, health, education, economic, small scale business and many other activities which are more toward the small scale and self sufficiency effort are planned periodically for the short term, medium term and long term periods.

Social protection programs that are being consistently and gradually executed consist of policies and programs designed to alleviate poverty and reduce vulnerability by promoting an efficient labor market, diminishing people’s exposure to risks, and enhancing their capacity to protect themselves against hazards and interruption or loss of income.

There are five main types of social protection program:

1. Labor market policies and programs designed to promote employment, efficient operation of labor markets, and protection of workers
2. Social insurance programs to cushion the risks associated with unemployment, ill health, disability, work-related injury, and old age
3. Social assistance and welfare service programs for the most vulnerable groups with no other means of adequate support, including single mothers, the homeless, and physically or mentally challenged people
4. Micro- and area-based schemes to address vulnerability at the community level, including micro-insurance, agricultural insurance, social funds, and programs to manage natural disasters
5. Child protection to ensure the healthy and productive development of children

These programs have been implemented for decades by the Indonesian government through the annual programs of related departments, as dictated by the Constitution of 1945 (UUD 1945). It must be admitted, however, that because of limitations of government capacity, implementation is not generally satisfying the Indonesian citizenry at the moment. The social protection program is included in the National Development Programs (Program Pembangunan Nasional, or Propenas).7 One of the programs is poverty alleviation, which includes strategies to provide for the primary needs of poor families, develop the social security system, and empower the business efforts of poor people.

While decentralization has been carried out with no major disruptions in public service provision, there has also been little improvement. For example, recent regional expenditure studies indicate that there are concerns as to the actual overall spending on development (ADB 2003), because increased spending by the regions may not have compensated for reduced spending by the central government. Moreover, the aggregate picture hides major regional variations. Concerns continue regarding the non-equalizing nature of revenue-sharing arrangements and the lack of adequate central fiscal instruments to reduce regional disparities.

There is now a general consensus in Indonesia that lack of investment is the economy’s primary constraint to growth and poverty reduction. The economy grew by only 3.7 percent in 2002 and is likely to show growth of 3.4 percent in 2003, which has caused increased unemployment and persistence of high poverty levels (ADB 2003).

Based on a detailed poverty assessment, the Indonesian government and the ADB signed a three-year Poverty Reduction Partnership Agreement (PRPA) in April 2001. In the middle of 2002, the Coordinating Minister for People’s Welfare initiated preparation of a poverty reduction strategy

paper in consultation with the donor working group on poverty, in which ADB is an active member. The strategy paper is expected to be finalized by May 2004. It will also provide the framework for the second PRPA for 2005–2009. The poverty assessment study will be reviewed in 2004 in order to provide input on both the strategy paper and ADB’s second PRPA (ADB 2003).

2.5 Energy situation

Indonesia largely depends on historically rich fossil fuel reserves to meet its energy demand; most of its energy needs are met through fossil fuel combustion. In 2002, oil accounted for 47 percent of energy consumption, while natural gas contributed 30 percent and coal made up 20 percent. The remaining 3 percent was supplied by hydroelectric and non-hydroelectric renewable energy, e.g., geothermal, wind, solar (EIA 2004). However, economic constraints, depletion of oil reserves, and environmental needs are leading Indonesia towards greater exploitation of renewable energy sources.

Growth of Indonesia’s energy consumption has greatly increased in the past two decades, reflecting industrial development during that period. In terms of carbon emissions generated by the energy sector, Indonesia consumed 4.8x10^6 terajoules of energy in 2001 and released 87.1 million metric tons of carbon dioxide, representing 1 percent of the world’s total energy-related carbon emissions (EIA 2004). 8

2.5.1 Potential of renewable energy

Indonesia has vast potential resources of renewable energy, of which only a small portion has been exploited. Table 2.3 presents the estimation of renewable energy reserves in Indonesia (DJLPE 2001). The potential of solar energy ranks the highest, followed by biomass and geothermal. It should be noted, however, that unproven and costly technology and the geographical conditions of the country might hinder the utilization of solar energy. Indonesian people living in remote areas have very limited access to technology, hence the cost of solar energy, even though advanced technologically, is usually considered as having a high cost.

Given the potential, maturity of the technology, and impact on the environment, geothermal energy has more advantages compared to other types of renewable energy resources. About 40 percent of this potential is located in Java and Bali, the two most populous islands in the Indonesian archipelago. However, exploitation of geothermal resources remains highly tentative, since energy from hydropower are available almost unlimited and cheaper.

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8. The total energy consumption statistics cited are based on International Energy Agency (IEA) data and include petroleum, dry natural gas, coal, net hydro, geothermal, solar, wind, wood, and waste-generated electric power. The carbon emissions estimate is also based on the IEA data (http://www.eia.doe.gov/iea/).
Table 2.3. Renewable energy reserves in Indonesia (DJLPE 2001)

<table>
<thead>
<tr>
<th>Energy sources</th>
<th>Potential (in megawatts [MW])</th>
<th>Installed capacity (MW)</th>
<th>Share of utilization (%)a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geothermal</td>
<td>19,658.00</td>
<td>886.90</td>
<td>4.5</td>
</tr>
<tr>
<td>Micro-hydro</td>
<td>458.75</td>
<td>20.80</td>
<td>4.5</td>
</tr>
<tr>
<td>Solar</td>
<td>$1,203.00 \times 10^6$</td>
<td>51.50</td>
<td>$4.2 \times 10^{-3}$</td>
</tr>
<tr>
<td>Wind</td>
<td>2,287.00</td>
<td>0.90</td>
<td>$9.6 \times 10^{-3}$</td>
</tr>
<tr>
<td>Biomass</td>
<td>49,807.00</td>
<td>212.90</td>
<td>0.4</td>
</tr>
<tr>
<td>Biogas</td>
<td>685.00</td>
<td>0.06</td>
<td>$8.7 \times 10^{-3}$</td>
</tr>
</tbody>
</table>

Source: Directorate General of Electricity Development and Energy (DJLPE).

*The share of utilization represents the current utilization of renewable energy sources divided by their potentials.

Prior to the 1997 economic crisis, the Indonesian government awarded contracts for 11 geothermal projects that would have had a generating capacity of 3,400 MW. The government is now attempting to resuscitate seven of the contracts. One possible additional source of the funds necessary to develop Indonesia’s geothermal resources is the Kyoto Protocol’s Clean Development Mechanism (CDM). Since the protocol has come into force (February 2005), the CDM will allow energy providers from developed countries to invest or purchase GHG emission reduction credits from renewable projects in developing countries as a way of offsetting their own GHG emissions elsewhere.

To ensure sustainable development of natural resources related to energy, the government has implemented five main policies concerning energy diversification, intensification in energy exploration, energy conservation, and energy prices based on market mechanisms. The programs include restructuring of energy prices, which was initiated to gradually eliminate subsidies.

2.5.2 Electricity generation profile

In terms of electricity, Perusahaan Listrik Negara, or PLN (State Electricity Company) is responsible for the majority of Indonesia’s electricity generation and has a total monopoly on transmission, distribution, and supply. The PLN is the sole buyer of electricity in the power market and purchases the power produced by independent power producers (IPPs). Understanding the regulation and contract arrangement structure (see chapter 7) between the PLN and IPPs is important to ensure sustainability of projects, which becomes one of the main concerns under the CDM.

Indonesia has installed electrical generating capacity estimated at 21.1 gigawatts, with approximately 84 percent coming from thermal sources (oil, gas, and coal), 15 percent from hydropower, and 2 percent from geothermal. Table 2.4 shows the typical share of power generating units in the total installed capacity in Indonesia.
Table 2.4. Share of typical power generating unit to total installed capacity

<table>
<thead>
<tr>
<th>Type of power generating unit</th>
<th>Installed capacity (MW)</th>
<th>Share of total installed capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steam (coal and fuel oil-powered)</td>
<td>6,900</td>
<td>33%</td>
</tr>
<tr>
<td>Combined cycle</td>
<td>6,863</td>
<td>33%</td>
</tr>
<tr>
<td>Diesel</td>
<td>2,588</td>
<td>12%</td>
</tr>
<tr>
<td>Gas turbine</td>
<td>1,225</td>
<td>6%</td>
</tr>
<tr>
<td>Hydropower</td>
<td>3,156</td>
<td>15%</td>
</tr>
<tr>
<td>Geothermal</td>
<td>380</td>
<td>2%</td>
</tr>
</tbody>
</table>


2.6 Forestry and land-use situation

Forests in Indonesia are classified into the following six types: protection forest, conservation forest, limited production forest, non-convertible production forest, forest with specific function, and convertible production forest (table 2.5).

Table 2.5. Description of forest categories in Indonesia

<table>
<thead>
<tr>
<th>No.</th>
<th>Forest function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Protection forest</td>
<td>Extremely vulnerable to soil and water degradation</td>
</tr>
<tr>
<td>2.</td>
<td>Conservation forest</td>
<td>Reserved for scientific purposes, parks, wildlife sanctuary</td>
</tr>
<tr>
<td>3.</td>
<td>Limited production forest</td>
<td>• Vulnerable to soil and water degradation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Less vulnerable compare to protection forest</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Manageable for material supply with intensive and good management</td>
</tr>
<tr>
<td>4.</td>
<td>Permanent and non-convertible</td>
<td>Has value for permanent production forest using good management practices</td>
</tr>
<tr>
<td></td>
<td>production forest</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Convertible production forest</td>
<td>Not a permanent forest due to its high potential for agriculture or economic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>development, conversion into agriculture and other land uses allowed</td>
</tr>
<tr>
<td>6.</td>
<td>Forest with specific function</td>
<td>Assigned as</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• education forest</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• experiment forest</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• other uses related to science and technology development in forestry</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• place for practical student research</td>
</tr>
</tbody>
</table>

More than half of Indonesia’s land is covered by forest, i.e., about 108,571,713 hectares (ha) (45% of Southeast Asia’s tropical forest). Other land-use types are plantation (8.6%), especially big plantations of rubber and palm oil, followed by shifting cultivation area (6.7%) and fallow land (5.4%). The last two vegetation types are mostly considered as idle and unproductive land that has potential for replanting. About 9.4 percent of the land area is still considered as mosaics of mixed vegetation cover and others. According to a Forest Watch Indonesia calculation taken from national forest inventory data in 1996 (FWI and GFW 2001), around 8 percent of total forest land, or 8,899,976 ha, is considered as completely deforested. Table 2.6 shows rough estimates of land area potential for carbon sink projects.
Table 2.6. Categories of land-use cover in Indonesia in 2000

<table>
<thead>
<tr>
<th>No</th>
<th>Category</th>
<th>Area (ha)</th>
<th>% of land cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Forest cover*</td>
<td>108,571,713</td>
<td>56.7</td>
</tr>
<tr>
<td>2</td>
<td>Woodland / agroforestry</td>
<td>8,905,200</td>
<td>4.7</td>
</tr>
<tr>
<td>3</td>
<td>Agriculture / paddy field</td>
<td>8,106,356</td>
<td>4.2</td>
</tr>
<tr>
<td>4</td>
<td>Plantation</td>
<td>16,543,663</td>
<td>8.6</td>
</tr>
<tr>
<td>5</td>
<td>Fallow land</td>
<td>10,260,492</td>
<td>5.4</td>
</tr>
<tr>
<td>6</td>
<td>Grassland</td>
<td>2,424,469</td>
<td>1.3</td>
</tr>
<tr>
<td>7</td>
<td>Shifting cultivation / wasteland / garden</td>
<td>12,768,711</td>
<td>6.7</td>
</tr>
<tr>
<td>8</td>
<td>House compound and surroundings</td>
<td>5,131,727</td>
<td>2.7</td>
</tr>
<tr>
<td>9</td>
<td>Dyke / ponds</td>
<td>642,905</td>
<td>0.3</td>
</tr>
<tr>
<td>10</td>
<td>Mosaic of mixed vegetation cover and others</td>
<td>17,922,705</td>
<td>9.4</td>
</tr>
<tr>
<td></td>
<td>Total land area *)</td>
<td>191,277,938</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: NSS CDM Forestry (MoE 2003).

Deforestation is defined as the conversion of forest into other uses as a result of human activities such as agriculture, development of areas for transmigration and infrastructure, shifting cultivation, illegal logging, and forest fires (Kaimowitz 1998). The World Bank estimated that the annual rate of deforestation in Indonesia in the early 1990s reached a level of 1.3 million ha/year from a total natural forest area of 108.57 million ha. Based on 1997 satellite imagery, however, the Ministry of Forestry and Estate Crops has produced new forest cover maps for the islands of Kalimantan, Sulawesi, and Sumatra that show a shocking loss of more than 17 million ha within 12 years (Walton and Holmes 2000). Based on these figures, Boer et al. (2001) estimated that the nation-wide annual deforestation rate might reach more than 1.5 million ha/year.

Due to the 1997 economic crisis and continuing financial problems in Indonesia, the implementation of several forest rehabilitation programs—such as afforestation (commonly called penghijauan, or re-greening) on private community lands, reforestation (commonly called planting in state forest lands of very degraded vegetation condition), and industrial forest plantation in unproductive permanent production forest—has significantly decreased since 1998.

2.7 Indonesia’s GHG emissions inventory

Indonesia’s first national communication to the UNFCCC includes the country’s 1994 GHG emissions inventory (MOE 1998), which is the official updated information on Indonesia’s GHG emissions profile. Some exceptions are made, however, particularly in the forestry sector, due to the unavailability of reliable and accurate information. The GHGs included in the inventory are CO₂, methane (CH₄), carbon monoxide (CO), nitrous oxide (N₂O), and nitrogen oxides (NOx). Only the GHGs relevant to the Kyoto mechanisms, which are those GHGs except CO, are discussed in this section.

The main sources of CO₂ emissions in 1994 were the forestry and energy sectors. These two sectors contributed about 97 percent of total CO₂ emissions. The CO₂ emissions from the forestry sector resulted mainly from the burning of biomass during forest and grassland conversion activities. The main source of CH₄ emissions was the agricultural sector (51 percent),

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9. The revised IPCC 1996 methodology was used in establishing this inventory. Classification of sectors in the national communication also follows this methodology.
where most of these emissions are generated in rice fields. \( \text{N}_2\text{O} \) was mostly generated by the agricultural sector, comprising 86 percent of total \( \text{N}_2\text{O} \) emissions, while the main source of NOx was the energy sector (88%).
3. THE CDM PROJECT CYCLE

Before reading country-specific information related to CDM project development and implementation, it is important to understand some of the CDM terminologies and rules. The CDM has its own specific modalities and procedures, and this chapter explains the basics of them by going through CDM project cycle.10

3.1 Overview of the Clean Development Mechanism

The CDM is a mechanism where Annex I countries with a specific obligation to reduce a set amount of greenhouse gas (GHG) emissions by 2012 under the Kyoto Protocol assist non-Annex I countries to implement project activities to reduce or absorb (sequester) at least one of six GHGs (see box 3.1 and figure 3.1). Non-Annex I countries are signatories and ratifiers to the Kyoto Protocol; however, they do not adhere to reduction targets stipulated under the protocol. The reduced amount of GHGs becomes credits called certified emission reductions (CERs), which Annex I countries can use to help meet their emission reduction targets under the protocol (UNFCCC 1997).11

Box 3.1. The six greenhouse gases addressed under the Kyoto Protocol

<table>
<thead>
<tr>
<th>Greenhouse gas</th>
<th>Global warming potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Carbon dioxide (CO₂)</td>
<td>1</td>
</tr>
<tr>
<td>2. Methane (CH₄)</td>
<td>21</td>
</tr>
<tr>
<td>3. Nitrous oxide (N₂O)</td>
<td>310</td>
</tr>
<tr>
<td>4. Hydrofluorocarbons (HFCs)</td>
<td>140–11,700</td>
</tr>
<tr>
<td>5. Perfluorocarbons (PFCs)</td>
<td>6,500–9,200</td>
</tr>
<tr>
<td>6. Sulfur hexafluoride (SF₆)</td>
<td>23,900</td>
</tr>
</tbody>
</table>

Source: UNFCCC 1997.

10. Readers are encouraged to refer to the official documents of the United Nations Framework Convention on Climate Change (UNFCCC) for further details. All the documents are available at http://cdm.unfccc.int. The foundations of modalities and procedures for the CDM were established in the Marrakesh Accords (UNFCCC 2001). In addition, the CDM Executive Board regularly meets and makes decisions on details and clarifies rules set in the accords. There are many textbooks available on the CDM. Following are some of the publications recommended: CDM and JI in Charts, ver. 2.1 (MOE and IGES 2005) will facilitate a basic understanding of the CDM. Readers are also suggested to read the CDM Manual for project developers and policy makers (Ministry of the Environment, Japan, Global Environment Centre Foundation, Pacific Consultants Co., Ltd., 2004) and CDM Methodologies Guidebooks (Ministry of the Environment, Japan, Global Environment Centre Foundation, Climate Experts, Ltd., November 2004).

11. The CDM is one of the Kyoto mechanisms introduced to supplement domestic actions to reduce GHG emissions levels in Annex I countries. Under the UNFCCC rulebook, there is no legal restriction for Annex I countries to limit the usage of CERs or any other credits acquired under the Kyoto mechanisms to meet their reduction targets, except for the CERs from carbon sink activities (UNFCCC 2001b, 2). However, each Annex I country may introduce its own rule to ensure that sufficient efforts are made domestically.
3.2 Eligible project activities

CDM project activities must result in reducing or absorbing (sequestering) GHGs that are real and measurable and would not have occurred in the absence of the proposed project activity (additionality) (UNFCCC 2001b, 20). In other words, to qualify for credits, a project activity must demonstrate that GHG emissions were reduced against the “baseline scenario,” a representation of GHG emissions under normal circumstances.

Another important aspect of the CDM is that proposed CDM project activities must demonstrate their contributions to environmental integrity and the host country’s sustainable development goals (UNFCCC 2001b, 20). Reducing GHG emissions alone may not suffice to meet this requirement. Many host country governments provide information on their prerequisites, often referred to as “sustainable development criteria” (see chapter 6 for more details).

In addition, other disqualifications for use of the CDM are:

- emission reductions from nuclear facilities (UNFCCC 2001b, 20),
- a diversion of official development assistance (ODA) from Annex I countries (UNFCCC 2001b, 20), and/or
- any other type of sequestration activities apart from afforestation and reforestation (UNFCCC 2001b, paragraph 7[a], 22).

Table 3.1 summarizes the possible types of CDM project activities and some examples. Country-specific information on possible CDM project activities in China is covered extensively in chapter 4.

It is important to note that existing or newly built facilities already under commission can still be registered as CDM project activities, provided the following conditions are met (UNFCCC, 2001b, paragraph 13, 23; 2003a, paragraph 1[c], 5):

- the proposed project activity started between January 1, 2000, and the date the first CDM project activity was registered (November 18, 2004);
• the project activity is submitted for registration to the CDM Executive Board, the supervisory body of the CDM, before December 31, 2005; and
• proof is given for the CDM being considered at the project’s design stage.

3.3 Classification of CDM project activities

CDM project activities can be classified in two main areas: (1) GHG emission reductions and (2) sequestration (sink). Within these two main categories, there are sub-categories based on project size (figure 3.2).

![Figure 3.2. Classification of sub-categories of CDM project activities](image)

Table 3.1. List of project categories eligible under the CDM

<table>
<thead>
<tr>
<th>Emission reductions activities</th>
<th>Sectoral scope</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Energy industries (renewable/non-renewable sources)</td>
<td>Renewable energy</td>
<td>Wind power, solar photovoltaic (PV), hydro, geothermal</td>
</tr>
<tr>
<td></td>
<td>Non-renewable energy</td>
<td>Combined heat and power (CHP); fuel switching from coal or fuel oil to natural gas</td>
</tr>
<tr>
<td>2 Energy distribution</td>
<td>Electricity</td>
<td>Transmission and distribution lines</td>
</tr>
<tr>
<td>3 Energy demand</td>
<td>Energy efficiency</td>
<td>High-efficiency equipment and lighting</td>
</tr>
<tr>
<td>4 Manufacturing industries</td>
<td>Energy efficiency</td>
<td>High-efficiency equipment</td>
</tr>
<tr>
<td></td>
<td>Fuel switching</td>
<td>From coal to natural gas; clean coal technology</td>
</tr>
<tr>
<td>5 Chemical industries</td>
<td>Process change</td>
<td>Nitrous oxide abatement</td>
</tr>
<tr>
<td>6 Construction</td>
<td>Material substitution</td>
<td>Energy-saving measures; shorter transport distance for trucks</td>
</tr>
<tr>
<td>7 Transport</td>
<td>Energy efficiency</td>
<td>Improved vehicle efficiency, transit expansion</td>
</tr>
<tr>
<td></td>
<td>Fuel substitution</td>
<td>Biofuels, natural gas fuels</td>
</tr>
<tr>
<td>8 Mining/mineral production</td>
<td>Fuel substitution</td>
<td>Coal mine methane recovery</td>
</tr>
<tr>
<td>9 Metal production</td>
<td>Energy efficiency</td>
<td>Improved process efficiency</td>
</tr>
<tr>
<td></td>
<td>Process change</td>
<td>Dry coke quenching</td>
</tr>
<tr>
<td>10 Fugitive emissions from fuels (solid, oil, and gas)</td>
<td>Fuel substitution</td>
<td>Recovery and utilization of gas from oil wells</td>
</tr>
</tbody>
</table>
Table 3.1—Continued

<table>
<thead>
<tr>
<th>Sectoral scope</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>11 Fugitive emissions from production and consumption of halocarbons and sulphur hexafluoride</td>
<td>HFCs</td>
</tr>
<tr>
<td></td>
<td>Incineration of HFC-23 waste streams</td>
</tr>
<tr>
<td>12 Solvent use</td>
<td>Material substitution</td>
</tr>
<tr>
<td></td>
<td>Replacement with less GHG-emitting materials</td>
</tr>
<tr>
<td>13 Waste handling and disposal</td>
<td>Fuel substitution</td>
</tr>
<tr>
<td></td>
<td>Landfill gas recovery, wastewater treatment, animal waste treatment</td>
</tr>
<tr>
<td>14 Afforestation and reforestation</td>
<td>Afforestation</td>
</tr>
<tr>
<td></td>
<td>Reforestation</td>
</tr>
<tr>
<td>15 Agriculture</td>
<td>Sequestration</td>
</tr>
<tr>
<td></td>
<td>Methane production avoidance from biomass decay</td>
</tr>
</tbody>
</table>

Source: UNFCCC 2005a; Pembina Institute 2003; Houghton et al. 1997; Shimizu Corporation 2004; editor’s contribution.

3.4 Small-scale CDM projects

Although the CDM is devised to foster the sustainable development of host countries, developing small-scale CDM project activities, which are known to be beneficial to the sustainable development of local communities, are often burdened with high costs for low returns. In order to leverage the development of small-scale CDM project activities, the UNFCCC introduced fast-track modalities and procedures with some preferential treatment. A project activity can be qualified as small-scale CDM if it meets one of the three following conditions (UNFCCC 2001b, paragraph 6[c], 21):

- **Type I**: renewable energy project activities with a maximum output capacity equivalent to up to 15 megawatts (or an appropriate equivalent)
- **Type II**: energy-efficiency improvement project activities which reduce energy consumption on the supply and/or demand side by up to the equivalent of 15 gigawatt-hours per year
- **Type III**: other project activities that both reduce anthropogenic emissions by sources and directly emit less than 15 kilotonnes of CO₂ equivalent (CO₂e) annually

Small-scale CDM project activities benefit from a number of privileges, which allows them to speed up their registration process. The details of the special treatment given to small-scale projects can be found in the overview of the CDM project cycle (section 3.7).

One special feature applicable only to small-scale CDM project activities is bundling and debundling. **Bundling** is to cluster projects that are too small to be attractive for investment, even with the additional CER revenues. By using the bundling scheme, small projects can become cost-effective and thus become sufficiently attractive with CER revenues. Many community-based projects (e.g., small hydropower), as well as projects for small- or medium-size enterprises, with significant contribution to local sustainable development often face difficulties in attracting sufficient interest for investment without a substantial level of public support. These projects can use the bundling scheme to improve their overall financial viability. Projects can be bundled into “sub-bundles” based on the small-scale project types (type I, II, or III) and project characteristics, such as technology types, emission reduction measures, location, and baseline methodologies.
Furthermore, bundling of one or more sub-bundles is possible and there is no limitation on the number of projects that can be sub-bundled, as long as the total size of the each sub-bundle cluster does not exceed the ceiling set for its small-scale project type (UNFCCC CDM EB 2005d, 1–3). While it is possible to bundle small projects together, however, large projects are not allowed to be debundled to smaller project sizes well within the range of small-scale CDM rules (box 3.2), in order to avoid anyone taking advantage of the CDM’s fast-track and cost-effective scheme for small-scale CDM projects. While the bundling scheme may appear to be an ideal solution for small projects beneficial to sustainable development, there also exists a number of difficulties involved with the practice, for example, in developing a plan for monitoring all bundled project activities.

Box 3.2. How to determine if a project can be considered debundled

The UNFCCC (UNFCCC 2002, 27) recognizes any small-scale activity as being eligible for being debundled from a large project activity if it is already registered or expected to be registered as a small-scale CDM project activity, and if it is
- with the same project participants,
- in the same project and technology/measure category,
- registered within the previous two years, and
- whose project boundary is within 1 km of the project boundary of the proposed small-scale activity at the closest point.

3.5 Forestry and the CDM

The CDM qualifies only afforestation and reforestation (A/R) project activities as credible sink activities under the current ruling, and they are defined as follows (UNFCCC 2001a, paragraph 1[b], [c], 58):

- **Afforestation** is the direct, human-induced conversion of land that has not been forested for a period of at least 50 years to forested land through planting, seeding, and/or the human-induced promotion of natural seed sources.
- **Reforestation** is the conversion of land from being non-forested to forested that was previously forested but then cleared. For the first commitment period, reforestation activities will be limited to reforestation occurring on this type of land that was not forested before December 31, 1989.

For non-Annex I Parties to host afforestation and/or reforestation (A/R) CDM project activities, in addition to the general participation requirements in the CDM Modalities and Procedures (annex to Decision 17/CP.7), the DNA of the host Party needs to define and report to the CDM EB on the following thresholds (UNFCCC 2003, paragraph 7–8, 17):

a. A single minimum tree crown cover value between 10 and 30 percent
b. A single minimum land area value between 0.05 and 1 hectare
c. A single minimum tree height value between 2 and 5 metres

The UNFCCC defines small-scale afforestation and reforestation project activities as “those that are expected to result in net anthropogenic greenhouse gas removals by sinks of less than 8 kilotonnes of CO₂ per year and are developed or implemented by low-income communities and individuals as determined by the host Party” (UNFCCC 2003, paragraph 1[1], 16). Project
developers should be aware that even if a small-scale A/R project activity results in actually removing more than 8 kilotonnes of CO$_2$e per year, no issuance of credits is allowed for any excess removals that take place.

Although the project cycle is similar to the one for mitigation activities, A/R CDM project activities need to follow a different set of rules under the UNFCCC. Some of the notable differences include the manner in which GHG emissions sequestration is calculated and CERs are issued (see section 3.7.3 on setting a project baseline).

### 3.6 Credits and crediting periods

One of the main features of CDM project activities is that they are able to generate tradable emission credits (CERs).\footnote{Non-Annex I Party participants can sell or transfer the credits to Annex I Party participants. However, non-Annex I Party participants are not allowed to freely trade the credits in the emissions trading market.} Table 3.2 summarizes the different options for the crediting period and types of credits to be issued for GHG emissions reduction and A/R project activities.

<table>
<thead>
<tr>
<th>Crediting periods</th>
<th>GHG mitigation project activities</th>
<th>A/R project activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. 7 years with the option of renewing twice (total crediting period = 21 years)</td>
<td>i. 10 years without the renewal option</td>
<td>ii. 10 years without the renewal option</td>
</tr>
<tr>
<td>ii. 10 years without the renewal option</td>
<td>i. Temporary CERs (tCERs): The net GHG removals by sinks achieved by the project activity since the project starting date, which should be replaced by other Kyoto Protocol credits before the end of the subsequent commitment period</td>
<td>ii. Long-term CERs (lCERs): The net GHG removals by sinks achieved by the project activity during each verification interval</td>
</tr>
</tbody>
</table>

The renewal of crediting period requires the review of baseline scenarios at each renewing time for both GHG mitigation and sequestration project activities. Each Annex I Party can carry over a maximum 2.5 percent of its assigned amount to the next commitment period (envisaged to start from 2013).\footnote{The total amount of units an Annex I party will be assigned, calculated by its base-year emissions minus its emissions reduction target.} In addition, there is a ceiling placed on the credits from A/R CDM project activities, at least for the first commitment period, stipulated as “not to exceed 1 percent of base year emissions of that [Annex I] Party, times five” (UNFCCC 2001b, paragraph 7[b], 22).

The calculation of net GHG removals by A/R CDM project activities is described in the baseline section of this chapter (3.7.3).
3.7 Overview of the CDM project cycle

In December 2001, negotiators worked out the detailed modalities and procedures of the international climate change policy regime, including the rules and regulations of the CDM, which were formulated as the Marrakesh Accords. The CDM Executive Board was established as the UNFCCC secretariat to oversee the CDM process. In order to be registered as a CDM project activity, project proponents need to go through the steps detailed in figure 3.3.

3.7.1 Project formulation

The first step in CDM project formulation is to identify a project activity and to examine whether or not it is eligible for the CDM. It is also important to collect information on the designated national authorities (DNA) of concerned Parties and their requirements and procedures for project approval. Since the CDM is a mechanism designed to contribute to the sustainable development of non-Annex I countries, information from the DNA of the host country becomes crucial in determining the eligibility of the proposed project under the CDM. Some countries specify a list of sustainable development criteria and some DNAs have a list of the CDM priority project types.

Project developers should also identify at this stage whether their proposed project activity is normal size or small scale, as different conditions apply to benefit small-scale project activities (UNFCCC 2002, paragraph 9, 20), including the following:

- A simplified project design document (PDD) (including the additionality test)
- Simplified, predefined baseline methodologies provided by category
- Simplified monitoring plans
- The possibility to hire the same operational entity for validation, verification, and certification
- Lower levies by the UNFCCC to cover administrative expenses and registration fees (UNFCCC 2002, paragraph 21, 220)
- Half the normal registration evaluation period (the period for normal projects is eight weeks upon the date of receipt of the request for registration) (UNFCCC 2002, paragraph 24, 23)

Many project developers also begin with searching for potential buyers for CERs. In order to facilitate discussions, they produce a summary of the project description, known either as project idea note (PIN) or project concept note (PCN). Some donor organizations purchasing CERs have their own standardized form for application, while others may use the PIN form of the World Bank or the PCN form provided by host governments.

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14. The Marrakesh Accords were signed at the Conference of Parties (COP) at its seventh session, organized at Marrakesh, Morocco, in 2001. The accords adopted many operational rules of the Kyoto Protocol and established the modalities and procedures for the CDM (UNFCCC 2001b).
3.7.2 The project design document

The project proponent needs to prepare a project design document (PDD) in order to be registered as a CDM project activity. The PDD presents information on the essential technical and organizational aspects of the project activity and is a key input into the validation, registration, and verification of the project, as required under the Marrakesh Accords. Currently, different forms are available for the following project categories:

- Normal-size GHG emissions reduction project activities
- Small-scale GHG emissions reduction project activities (applicable to all except for afforestation/reforestation)
- Afforestation/Reforestation project activities

Project participants should consider that
(a) the planned project activity will assist the host country's sustainable development, and
(b) the planned project activity is additional.

Project participants should
(a) download the standard PDD form from the UNFCCC Web site and complete it according to the guidelines provided by the CDM EB.

Project participants should
(a) learn about the approving process of concerned Parties and all the requirements from designated national authorities (DNAs), and
(b) obtain the written approval of voluntary participation from the DNAs.

Project participants should
(a) have the validation done by a designated operational entity (DOE) accredited by the CDM EB, and
(b) pay a registration fee to the CDM EB.

The DOE will submit all necessary documents to the CDM EB and request project registration.

Project participants should
(a) monitor according to the monitoring plan and report to the operational entity.

The operational entity should
(a) verify the monitoring results and certify the exact amount of GHG emissions reduction resulting from the project activity, and
(b) report the result to the CDM EB.

The CDM EB will
(a) issue a certified amount of CERs within 15 days after receiving a request for issuance, and
(b) deduct a “share of proceeds” from the issued CERs.

Figure 3.3. Overview of the CDM project cycle
The common components of the PDD forms include (UNFCCC 2001b, Appendix B, 43–45):  

- A general description of the project activity  
- A baseline methodology  
- The duration of the project activity/crediting period  
- Justification for additionality  
- Monitoring methodology and plan  
- Calculation of GHG emission by sources  
- Environmental impacts  
- Stakeholder comments

3.7.3 The baseline

Establishing a “baseline scenario” (commonly referred to as the “baseline”) is the crucial part of designing a CDM project activity. It sets the “base” from which the amount of total GHG emission reductions and credits is calculated. The baseline scenario describes what the current level of GHG emissions is prior to introducing the proposed CDM project activity. As shown in figure 3.4, whatever the amount of emissions reduced or sequestered within a given project boundary during the crediting period will be accounted as the direct emissions reduction.

For normal-size GHG mitigation project activities, the Marrakesh Accords allow the baseline for GHG mitigations to be established by one of the three approaches below (UNFCCC 2001b, paragraph 48, 37).  

1. Existing actual or historical emissions  
2. Emissions from a technology that represents an economically attractive course of action, taking into account barriers to investment

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15. This guidebook briefly touches on the concepts of baseline and additionality; however, complete guidelines and details of requirements for PDDs are available at http://cdm.unfccc.int.

16. The document is available at http://cdm.unfccc.int/Reference/COPMOP.
3. The average emissions of similar project activities undertaken in the previous five years, under similar social, economic, environmental, and technological circumstances, and whose performance is among the top 20 percent of their category.

There are various methods to calculate baseline scenarios and GHG emission reductions. Project developers can propose a new methodology to establish the baseline scenario or use the standardized methodology (consolidated methodologies) or already approved methodologies. As of June 2005, there are three consolidated methodologies and 22 approved methodologies (see 4.9.1).

Emission reductions and baselines are determined by setting a project boundary that encompasses “all anthropogenic GHG emissions by sources under the control of the project participants that are significant and reasonably attributable to the CDM project activity” (UNFCCC 2001b, paragraph 52, 37). Project developers need to check whether there is a “leakage” in the proposed project activity. Leakage refers to GHG emissions outside the project boundary that are “measurable” and “attributable” to the project activity (UNFCCC 2001b, paragraph 51, 37). The total GHG emission reductions need to be netted out of the leakage. For small-scale project activities, the UNFCCC provides the simplified baseline methodologies to relieve project developers from the burden of elaborating baselines and the associated high costs.

For A/R CDM project activities, project proponents can choose one of the following three approaches (UNFCCC 2001b, paragraph 22, 21):

1. “Existing or historical, as applicable changes in carbon stocks in the carbon pools within the project boundary”\(^{17}\)
2. “Changes in carbon stocks in the carbon pools within the project boundary from a land use that represents an economically attractive course of action, taking into account barriers to investment”
3. “Changes in carbon stocks in the pools within the project boundary from the most likely land use at the time the project starts”

The calculation of net GHG removals by sinks is shown in figure 3.5.

\(^{17}\)Carbon pools are above-ground biomass, below-ground biomass, litter, dead wood, and soil organic carbon (UNFCCC 2003, paragraph 1[a], 16).
Figure 3.5. Baseline scenario and the net GHG removals by sinks

Figure 3.6 explains the basic method for calculation of net GHG removals by A/R CDM project activities.

For small-scale A/R CDM project activities, the CDM EB was to develop simplified methodologies for the following activities (UNFCCC 2004, Appendix B, paragraph 4, 38):

- Grassland to forested land
- Cropland to forested land
- Wetland to forested land
- Settlements to forested land

So far, the simplified methodologies for grassland and cropland have been developed (UNFCCC Afforestation and Reforestation Working Group [AR WG] 2005, 1).

### 3.7.4 Additionality

Additionality is another important aspect of the CDM. Additionality is the justification of the proposed CDM project activity not being the baseline scenario. The CDM Executive Board introduced the additionality tools (figure 3.7) at its 16th meeting (UNFCCC 2004b). It is not mandatory to use the additionality tools,\(^{18}\) but it is highly recommended.

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\(^{18}\) The exception to this is when the additionality tools are imbedded in the approved methodology. In other words, if the selected and approved methodology you would like to use for your project specifically use the additionality tools to demonstrate the project’s additionality, then they are considered part of the methodology, and therefore any users of that methodology are required to use the tools (UNFCCC CDM EB 2005c, 5).
Figure 3.7. Project assessment using the additionality tools

*Projects commissioned after January 1, 2000, can be still considered as being a CDM project.

For small-scale mitigation project activities, the project proponent needs to justify its additionality using at least one of the barriers listed in table 3.3.
Table 3.3. Criteria for justifying additionality for a small-scale CDM project activity

<table>
<thead>
<tr>
<th>Category</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investment barrier</td>
<td>A financially more viable alternative to the project activity would have led to higher emissions.</td>
</tr>
<tr>
<td>Technological barrier</td>
<td>A less technologically advanced alternative to the project activity involves lower risks due to the performance uncertainty or low market share of the new technology adopted for the project activity, and so would have led to higher emissions.</td>
</tr>
<tr>
<td>Barrier due to prevailing practice</td>
<td>Prevailing practice or existing regulatory or policy requirements would have led to implementation of a technology with higher emissions</td>
</tr>
<tr>
<td>Other barriers</td>
<td>Without the project activity—for another specific reason identified by the project participants, such as institutional barriers or limited information, managerial resources, organizational capacity, financial resources, or capacity to absorb new technologies—emissions would have been higher.</td>
</tr>
</tbody>
</table>


For forestry projects, there is a separate additionality tool and simplified criteria available for normal-sized and small-scale projects accordingly (UNFCCC CDM EB 2005c, 8; UNFCCC AR WG 2005, 19).

3.7.5 Gaining host country approval

CDM project proponents need to obtain written approval from the DNA of the participating country in order to have their project registered under with the CDM EB In general, “participating countries” means both Annex I and non-Annex I countries. However, a project can still be registered as a CDM project without having an Annex I country participating at the time of registration (UNFCCC CDM EB 2005a, paragraph 57, 8). This type of project is called a “unilateral” CDM project as opposed to a “bilateral” CDM project (having both Annex I and non-Annex I countries involved). However, this does not mean that the unilateral project is completely exempted from submitting the approval letter from the DNA of an Annex I country. When a project developer of a unilateral project eventually finds a buyer of the CERs from an Annex I country and requests the CDM EB to transfer the CERs to the partner, the CDM EB still requires the submission of an approval letter from the participating Annex I country. The approval letter should contain the following statements according to the requirements set under the UNFCCC (UNFCCC 2001b, paragraph 29, 32; UNFCCC CDM EB 2004c, 1):

- The country has ratified the Kyoto Protocol.
- The DNA confirms that the proposed CDM project activity is a result of voluntary participation.
- (For the hosting country only.) The proposed CDM project activity contributes to sustainable development.

Although each participating Party to the CDM needs to set up a DNA for the CDM and indicate their approving procedures and requirements, some countries are still in the process of establishing and formulating those rules. It is important to note that some countries require a project concept note (PCN) or PDD for a DNA approval.

3.7.6 Validation and registration

Validation refers to the independent evaluation of the PDD against the UNFCCC’s requirements (CDM Modalities and Procedures, paragraph 34, p. 34). The CDM Executive Board
authorizes third-party agencies, known as designated operational entities (DOEs) to validate PDDs (box 3.4). Validation includes checking the following points:19

- The requirements of participation are satisfied (i.e., being a voluntary participation, having a DNA already established, and being a Party to the Kyoto Protocol).
- Stakeholder comments have been invited, summarized, and taken into account.
- Environmental impact analysis or assessment has been conducted according to the requirements of the host country.
- The GHG emissions reduction is additional.
- Approved baseline and monitoring methodologies have been used or a new methodology has been submitted.
- The proposed project activity is in accordance with all other requirements and decisions by the COP/MOP and the CDM EB.

Box 3.3. Designated operational entities

A DOE is a third-party agency that is allowed to conduct validation or verification and certification of a CDM project activity (for details on verification and certification, see section 3.7.8). For normal-size project activities, a different DOE is required to perform validation and verification/certification. However, upon request the CDM EB may allow a single DOE to conduct all required activities (UNFCCC 2001b, paragraph 27[e], 32), an allowance normally permitted to only small-scale project activities (UNFCCC 2002, paragraph 9, 20). The list of DOEs is available online at http://cdm.unfccc.int/DOE/list. Readers should be aware that DOEs can only perform validation or verification/certification for project activities under the authorized sectoral scope (see http://cdm.unfccc for the list of types of sectoral scope).

The DOE prepares a validation report and submits it to the CDM EB, together with the PDD, approval letter from the host country, and an explanation on how comments are taken into account in order to apply for registration. The registration requires payment of an administrative fee, which was temporarily set according to the project activity size (see table 3.4) but is now under consideration for revision.20 Upon confirmation of the receipt of the registration fee and completed documents, the CDM EB puts the validation report and PDD of the proposed project activity on the UNFCCC Web site for public comment. Unless otherwise arranged through a request for review from the participating parties or at least three members of the CDM EB, the proposed project activity is registered within eight weeks for normal-size CDM project activities and four weeks for small-scale CDM project activities (UNFCCC 2001b, 34–36).

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19. DOEs are provisionally accredited and designated by the CDM EB until confirmed by the Conference of Parties/Meeting of the Parties to the Kyoto Protocol (COP/MOP).
20. The CDM Executive Board (EB) decided at its twenty-first meeting in September 2005 that it would recommend to the COP/MOP at its first session a revised registration fee, which would be calculated as the share of proceeds multiplied by the expected average annual emissions reduction for the project activity over its crediting period. Project activities with average annual emission reductions less than 15,000 tonnes of CO₂-equivalent are exempted from paying the registration fee. The registration fee will be deducted from the share of proceeds to cover administrative expenses (SOP-Admin). The current registration fee (see table 3.4) will continue to apply until the final decision is made by the COP/MOP (UNFCCC CDM EB 2005e, 1). See the section on CER issuance for further information on SOP-Admin.
Table 3.4. Registration fees for CDM projects

<table>
<thead>
<tr>
<th>Volume of CERs generated annually (tonnes of CO₂)</th>
<th>Fee (USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; = 15,000</td>
<td>5,000</td>
</tr>
<tr>
<td>&gt; 15,000 and &lt; = 50,000</td>
<td>10,000</td>
</tr>
<tr>
<td>&gt; 50,000 and &lt; = 100,000</td>
<td>15,000</td>
</tr>
<tr>
<td>&gt; 100,000 and &lt; = 200,000</td>
<td>20,000</td>
</tr>
<tr>
<td>&gt; 200,000</td>
<td>30,000</td>
</tr>
</tbody>
</table>

Source: UNFCCC CDM EB 2002.

3.7.7 Monitoring a CDM project activity

Project proponents are required to monitor the actual emissions reductions or sequestration that take place when implementing the project. Monitoring includes “collection and archiving of all relevant data necessary for determining the baseline, measuring anthropogenic emissions by sources of greenhouse gases (GHG) within the project boundary of a CDM project activity and leakage, as applicable” (UNFCCC 2005b, 10). Thus, the monitoring plan needs to be approved by the CDM EB prior to registration. Just like baseline methodologies, there are approved monitoring methodologies and simplified monitoring methodologies for small-scale project activities.

For normal-size A/R CDM project activities, the collected and archived data should be able to determine the actual net GHG removals by sinks. This means that the monitoring plan should first identify the techniques and methods used for sampling and accounting individual carbon pools and GHG emissions by sources. For small-scale A/R CDM project activities, simplified monitoring requirements will be established by the CDM EB and made available to the public (UNFCCC 2004, Appendix B, paragraph 4, 38).

3.7.8 Verification and certification

Once the actual GHG emission reductions are monitored and reported to the DOE by the project proponent, the DOE conducts the following verification activities in order to certify the authenticity of the report. The DOE conducts the following activities under verification (UNFCCC 2001b, paragraph 62 [a–g], 39):

- Checks if the monitoring report satisfies the requirements of the registered PDD.
- Checks whether monitoring methodologies have been correctly applied.
- Has an on-site inspection conducted or requests any additional information from the project proponent, if necessary.
- Makes recommendations to the project proponents for any revisions related to the monitoring methodology for the future crediting period.
- Determines the actual GHG emission reductions by the CDM project activity.

The DOE prepares a verification report and a certification report, both of which will be made publicly available. The certification report states the verified amount of GHG emission reductions.

3.7.9 Issuance of CERs

Once the CDM EB receives a request to issue CERs, the CDM EB issues the certified amount of CERs within 15 days, unless a party involved in the project activity or at least three members of the CDM EB request a review. The net amount of CERs, after deducting the “share
of proceeds" for adaptation (to climate change) and administrative expenses,\textsuperscript{21} are placed under the appropriate account of the CDM registry under the supervision of the CDM EB. The proceeds for the adaptation are set as 2 percent of the amount of CERs issued (UNFCCC 2001b, paragraph 15, 23), while the percent of proceeds for administrative expenses has been said to be $0.20 per CER, if approved by the COP/MOP at its first session at the beginning of December 2005 (UNFCCC CDM EB 2005e, 1–2).\textsuperscript{22} A/R projects are exempted from providing the adaptation portion of the proceeds (UNFCCC 2004, [d], 26).

\textsuperscript{21}Article 12, paragraph 8, of the Kyoto Protocol (UNFCCC 1997) stipulates that “a share of the proceeds from certified project activities is used to cover administrative expenses as well as to assist developing country Parties that are particularly vulnerable to the adverse effects of climate change to meet the costs of adaptation.”

\textsuperscript{22}SOP for forestry project activities will be set separately at later stage (UNFCCC CDM EB 2005e, 8).
4. POTENTIAL CDM PROJECTS IN INDONESIA

This chapter provides information on potential Clean Development Mechanism projects in Indonesia and discusses a number of challenges that may be encountered in their implementation.

4.1 Market volume of CDM projects in Indonesia

Based on the National Strategy Study (NSS) on the CDM for Indonesia (MOE 2002), the inclusion of the forestry sector increases the potential capacity of Indonesia in developing CDM projects from about 2 to 6 percent of the global market. The total CDM volume in Indonesia was estimated to be about 36 million tonnes of carbon dioxide (CO₂) per year (MOE 2002). The share of the forestry sector in the total volume was much higher than that of the energy sector due to the low price of carbon generated from CDM-forestry based projects (the common term used by the protocol is A/R CDM projects, or afforestation and reforestation CDM projects). However, as the type of carbon credits produced by A/R CDM projects are not permanent, their attractiveness for investor countries may be lower. It is difficult to estimate what the market behavior towards A/R CDM projects would be, as the buyer may have different motives for participation. Irrespective of this, Indonesia has significant potential for CDM projects within its Kyoto-eligible land.

4.2 CDM project categories in various economic sectors

Indonesia has conducted a number of studies to identify potential activities for reducing greenhouse gas (GHG) emissions in the country as well as challenges and barriers for their implementation (MOE 2000, 2001, 2002). Most of the identified mitigation activities could potentially be developed as CDM projects. The following lists the types of projects that would be eligible for the CDM:

- Renewable energy project activities
  - The project categories included are solar, wind, hybrid systems, biogas, biomass, water, geothermal, and waste

- Energy-efficiency improvement projects
  - The project categories included are supply-side projects; end-use projects in all sectors; end-use residential, service, and industry-cross-cutting technologies; and end-use industry-sectors and end-use transport

- Other project activities that both reduce anthropogenic emissions by source
  - The project categories included are agriculture and others

- Afforestation and reforestation (decision 17/CP.7 of the Kyoto Protocol)
  - Small-scale afforestation or reforestation project activity under the CDM will result in net anthropogenic GHG removals by sinks of less than 8 kilotonnes of CO₂ equivalent per

23.UNFCCC.int/cdm/ebmeeting/eb0003/eb03annan2.pdf
24.Ibid.
25.Ibid.
year if the average projected net anthropogenic GHG removals by sinks for each verification period do not exceed 8 kilotonnes of CO₂ equivalent per year (decision CP.10).

The proceeding sections discuss some of the potential CDM projects in Indonesia by sector.

4.2.1 Energy, industrial, and transportation sectors

The main source of GHG emissions in the energy sector is the combustion of fossil fuels in the production and processing of primary energy sources, mainly oil and gas, power generation, and other industrial combustion processes. The current practices used in this sector often utilize technologies that do not result in lower GHG emissions. MOE (2000) stated that many low GHG emissions technologies for the energy sector are available on the market. Due to a variety of reasons, however, most of them are still difficult to implement.

Lowering GHG emissions in the energy sector is generally based on the following principles:

- Reducing the use of carbon-based fuels by switching to non-carbon containing or less carbon containing fuels
- Increasing combustion efficiency
- Minimizing methane leakages and de-carbonization

National studies (MOE 2000, 2001) have identified potential activities for reducing GHG emissions (mitigation options) in the energy sector (table 4.1). The studies assessed the potential of the various options based on their technical potential and marginal abatement costs of GHG emissions reduction using both a top-down (MARKAL-based) and a project-based approach. In the latter approach, the marginal abatement cost is calculated by dividing the difference in the generation cost of two technology options (a base case and a mitigation technology) by the difference in GHG (or CO₂) emission levels of the same technology options. Generation costs (i.e., costs per unit of energy generated) are estimated by taking into consideration the investment costs, fuel costs, and operation and maintenance costs involved in implementing a particular technology option.

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26. The MARKAL (market allocation) model is an energy dynamic model based on a bottom-up approach. Originally, the models were based on linear programming, as is still often the case.
27. The GHG emissions associated with various technology options are calculated using the IPCC’s GHG inventory method (IPCC 1996).
### Table 4.1. Low emission technologies in the energy, industrial, and transportation sectors

<table>
<thead>
<tr>
<th>Industry sector</th>
<th>Existing practice</th>
<th>Potential GHG mitigation technology options</th>
<th>Potential GHG reduction or energy saving in Indonesia</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary energy and power sector</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Upstream oil and gas | Flaring of associated and low pressure gas | • Utilization of flared gas from natural gas for fuel substitute in oil and gas production  
• Minimization of gas flaring on onshore oil fields | • Little or no cost needed (1.5 US$/tCO₂).  
• Annual CO₂ reduction: 10.5 million tonnes.  
• Total potential GH reduction: 84 million tonnes |
| | Inefficient management such as natural gas venting and leakage from pipeline and distribution systems | More efficient management of energy utilization such as application of pneumatic devices to control and eliminate venting, repairing, or replacing pipelines and using automatic shut-off valves | Results in energy savings of around 3%–15% |
| Downstream oil and gas: refineries | GHG emissions due to oil refinery growth, fuel mix used, and average energy intensity of steam production | More efficient management of crude distillation process | Results in energy savings of around 3%–15% |
| | Inefficient energy use in gas refining, particularly in steam production or in direct heating applications | More energy-efficient management in heat and steam generation | N/A |
| Power generation | Conventional coal-fueled steam power plant dominate the national power system (32%), while gas combined-cycle and hydro power plants are 30.54% and 14.64%, respectively | • Utilization of renewable energy resources such as geothermal, mini-hydro, and wind  
• Utilization of biomass in industry sectors (see industry sectors below) that can generate electricity for export to the national grid | N/A |
| **Industry sector** | | | |
| Pulp and paper | Inefficient energy use practices | Replacement of traditional recovery boilers by combining black liquor gasification with gas turbine cogeneration | Result of 23% efficiency with savings of approximately 88 MJ/t of paper production  
Solid waste utilization to generate steam and utilization of cogeneration systems of solid waste combustion. | Total CO₂ reduction potential of 7 million tonnes |

28. The GHG emissions associated with various technology options are calculated using the IPCC’s GHG inventory method (IPCC 1996).
<table>
<thead>
<tr>
<th>Industry</th>
<th>Existing practice</th>
<th>Potential GHG mitigation technology options</th>
<th>Potential GHG reduction or energy saving in Indonesia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Textiles</td>
<td>Use of high carbon content fossil fuels and separate systems for steam and power</td>
<td>Fuel switching to low carbon fuel and utilization of cogeneration systems</td>
<td>Total CO₂ reduction potential of 8 million tonnes</td>
</tr>
<tr>
<td>Cement</td>
<td>High clinker-to-cement ratio</td>
<td>Clinker-to-cement ratio reduction through production of blended cement</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Use of conventional fossil fuels</td>
<td>Fuel switching through the use of alternative fuels</td>
<td>N/A</td>
</tr>
<tr>
<td>Starch/tapioca</td>
<td>Use of conventional fossil fuels</td>
<td>Utilization of renewable energy through biogas methane (CH₄) generation. The biogas is generated through</td>
<td>Total CO₂ reduction potential of 4 million tonnes</td>
</tr>
<tr>
<td>industry</td>
<td></td>
<td>improved waste water treatment.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Use of conventional fossil fuels and separate systems for steam and power</td>
<td>Boiler design improvements allowing the use of renewable energy (biogas) and utilization of cogeneration systems</td>
<td>Potential increase of heat efficiency by 20%–25%</td>
</tr>
</tbody>
</table>
| Palm oil industry| Use of conventional fossil fuels to generate steam and power                       | • Use of renewable energy for cogeneration systems: utilization of Empty Fruit Bunch (EFB) and biogas in the improved boiler design.  
• Production of biogas through improved waste water treatment system | Total CO₂ reduction potential of 14 million tonnes                                                   |
| Transportation sector | Use of conventional fuels in transportation                                      | Fuel switching by using low carbon fuel or renewable energy sources such as bio-diesel                  |                                                        |


Furthermore, it has been recognized that reducing emissions from gas flaring and coal production and the use of renewable energy are potential CDM projects in Indonesia.

The Department of Energy and Mineral Resources has inventoried the potential for renewable energy in Indonesia, as well as the potential coal and oil production across the provinces, as shown in figure 4.3. This figure indicates the possible size of CDM energy projects in Indonesia. For example, current estimates indicate that Indonesia flares about 4.6 billion cubic meters (m³) of gas per year, which corresponds to about 11 million tonnes of CO₂ emissions per year. The government of Indonesia believes that the flare gas can be fed into small-scale electricity generators in order to meet the increasing demand for energy, while at the same time achieving a reduction in GHG emissions (MOE 2001). Similarly, the potential for renewable energy is also very large. According to a recent study (YBUL 2003), Indonesia is conducting a number of energy-related CDM projects that are currently at various stages of development (see appendix VI for details).
4.2.2 Forestry sector

The types of forestry projects eligible as CDM projects in the first commitment period (2008–2012) are limited to afforestation and reforestation only (A/R CDM projects). Afforestation is defined as the direct, human-induced conversion of land that has not been forested for at least 50 years. Reforestation is defined as the direct, human-induced conversion of non-forested land to forest. During the first commitment period, reforestation activities will be limited to those areas that were not forested on December 31, 1989.

The Seventh Conference of the Parties (COP 7) session has decided that forest is defined as land with a minimum area of 0.05 to 1 hectare (ha) with tree crown cover of more than 10 to 30 percent, with the trees having a potential to reach two to five meters at the growing site. It may be a closed or open formation. Young trees that at maturity can reach the definition of forest according to the above definition should be considered as forest. For the purposes of accounting, a country has to choose values within these ranges to define their forests. In this regard, through Minister of Forestry Regulation No. 14/2004, Indonesia has decided to use the limit of 0.25 ha for minimum area, 30 percent for minimum crown cover, and five meters for tree height for the definition of forest. The selection of criteria for forest has affected types of land cover in Indonesia that can be considered as “Kyoto land” (land which has not been forested since December 1989, according to the rules of the Kyoto Protocol). Figure 4.1 shows the schematic of forest definition adopted by Indonesia. A simple and practical guideline to identify Kyoto land is to look for open areas and areas with cover—such as grass, bush, shrubs, and thickets—where the number of trees is less than 190 trees per ha, as well as dry agricultural land (see figure 4.2).

![Figure 4.1. Illustration of forest definition adopted by Indonesia](image-url)
Current data obtained by the NSS on the CDM for the forestry sector (MOE 2002) indicates that the total amount of critical land in Indonesia that may be prioritized for rehabilitation reaches 32.5 million ha. This land may be located outside or inside forested areas (table 4.3). Of the 32.5 million ha, about 30 percent is in the form of critical or degraded land and grasslands which definitely meet the Kyoto definition. However, not all of these areas are eligible for the CDM according to the Kyoto definition, based on the time limit of December 31, 1989. Although at the present time there is no exact data available to show the amount of Kyoto-eligible land in Indonesia, one study estimated that 50 percent of the available land, or about 16.3 million ha, is potentially Kyoto-eligible land (Boer 2002).

By 2000, the total amount of degraded forest/land in Indonesia increased to about 49.2 million ha, and about 53 percent of it is critical or degraded and grassland. Some of the fallow land, shifting cultivation land, wasteland, and gardens may not meet the Kyoto definition, as their crown cover might be more than 30 percent. On the other hand, some of the 1990s critical or degraded land and grasslands might have been converted to other uses or planted with trees in reboisasi (reforestation) and penghijauan (re-greening) programs. As a result, the original Kyoto land of 1990 may have decreased to less than 32.5 million ha today. It was noted however, that the analysis may not be precise, and therefore these figures should be treated as rough estimates. Refinement of the analysis will be done by overlapping maps of Kyoto land before 1990 and the current Kyoto-defined land maps. This activity will be done by the project proponents during development of the project design document (PDD) in consultation with the CDM Working Group at the Ministry of Forestry.

Table 4.2. Estimated potential area for forest carbon projects in Indonesia

<table>
<thead>
<tr>
<th>No</th>
<th>Land-use (LU) cover</th>
<th>Area in 1990 (ha)</th>
<th>Area in 2000 (ha)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Critical land (inside and outside forested areas)</td>
<td>6,787,800</td>
<td>23,725,552</td>
<td>Might have been converted to other land use or planted with trees after 1990</td>
</tr>
</tbody>
</table>

Based on consensus, the government of Indonesia has categorized state land into forested and non-forested areas.
Following the Kyoto definitions of afforestation and reforestation (A/R), there are a number of forest activities in Indonesia that could be classified as A/R projects (table 4.4, figure 4.4). Other potential forestry activities that can increase sinks but are not eligible under the CDM during the first commitment period are protecting forests from exploitation and reducing impact logging (RIL). Protecting forests from exploitation will avoid emissions of GHGs and conserve carbon stocks, while improving silviculture techniques to reduce tree damage during logging will reduce the rate of GHG emissions compared to conventional practices. In Indonesia, the types of RIL are selective cutting and planting (tebang pilih tanam Indonesia, or TPTI) and selective cutting and line planting (tebang pilih tanam jalur, or TPTJ). At present, these projects are only allowed under joint implementation (JI).

<table>
<thead>
<tr>
<th></th>
<th>Activity</th>
<th>HA Before</th>
<th>HA After</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Fallow land</td>
<td>9,823,175</td>
<td>10,260,492</td>
<td>Will not meet the Kyoto definition if the crown cover is greater than 30%</td>
</tr>
<tr>
<td>3</td>
<td>Grassland</td>
<td>3,219,648</td>
<td>2,424,469</td>
<td>Might have been converted into other land use or planted with trees</td>
</tr>
<tr>
<td>4</td>
<td>Shifting cultivation/waste land/garden</td>
<td>12,718,787</td>
<td>12,768,711</td>
<td>Will not meet Kyoto definition if the crown cover is greater than 30% and the land is less than 0.25 ha</td>
</tr>
<tr>
<td></td>
<td>Total land</td>
<td>32,549,410</td>
<td>49,179,224</td>
<td></td>
</tr>
</tbody>
</table>

Source: NSS CDM Forestry (MOE 2003).
<table>
<thead>
<tr>
<th>Categories and project types under A/R CDM projects for Indonesia</th>
<th>Indonesian definitions/descriptions</th>
<th>Kyoto definition</th>
<th>Project activity categories allowed under the Kyoto Protocol</th>
<th>Applicable categories for participation (Annex I countries, CDM, and JI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enhanced natural regeneration (ENR) or enrichment planting</td>
<td>Planting a number of tree species (commercial species) in logged-over forests or in highly degraded forests. By regulation, enrichment planting is carried out if the number of seedlings is less than 400/ha or the number of saplings is less than 200/ha, or the number of poles is less than 75/ha, or if seedlings, saplings, or poles are not evenly distributed. If the number of seedlings is more or equal to 400/ha but they are not evenly distributed, then the form of enrichment activities will aim at reallocating seedlings. Under this condition it is most likely that following the Kyoto land definition, many open spots in the area are considered as non-forest.</td>
<td>May be classified as reforestation as long as the land was already degraded or depleted (not forested) before January 1, 1990</td>
<td>• Reforestation • ENR is considered as forest management. At the present time, it is not considered to be a reforestation activity.</td>
<td>At present this only allows for joint implementation (JI)</td>
</tr>
<tr>
<td>Reforestation (penghutanan kembali) or &quot;reboisasi&quot;</td>
<td>Planting trees on degraded land (critical land and grasslands) of the state forest land mainly for conservation purposes (e.g., fast or slow growing species without rotation)</td>
<td>May be classified as reforestation as long as the land was already degraded (not forested) before January 1, 1990 or denuded for 50 years</td>
<td>Reforestation or afforestation</td>
<td>Applicable for CDM, JI</td>
</tr>
<tr>
<td>Forest plantation or timber plantation estate (TPE) or hutan tanaman industri (HTI)</td>
<td>Planting trees (normally fast growing species) on degraded land (critical land and grasslands) or depleted forests in state forest land for wood production</td>
<td>May be classified as reforestation as long as the land was already degraded (not forested) before January 1, 1990</td>
<td>Full-scale reforestation or afforestation</td>
<td>Applicable for full-scale A/R CDM, JI</td>
</tr>
<tr>
<td>Community forest (agroforestry)</td>
<td>Planting trees on degraded state forest land carried out by state companies in collaboration with the local community for wood production. Before the trees grow large, communities normally use the land for annual crops.</td>
<td>May be classified as reforestation as long as the land was already degraded (not forested) before January 1, 1990</td>
<td>Reforestation or afforestation</td>
<td>Applicable for full-scale A/R CDM, or small-scale A/R CDM projects</td>
</tr>
<tr>
<td>Social forestry (agroforestry, and multi-purpose tree species plantation (MPTS plantation)</td>
<td>Planting trees (mainly fruit trees) in buffer zones (between state forest land and community land). Commonly practised by local people and further more, specialised practiced in transmigration areas.</td>
<td>May be classified as reforestation as long as the land was already degraded (not forested) before January 1, 1990</td>
<td>Reforestation</td>
<td>Small-scale CDM project</td>
</tr>
<tr>
<td>Afforestation or re-greening (penghijauan)</td>
<td>Planting trees on degraded land (critical land and grasslands) of community land mainly for wood</td>
<td>May be classified as reforestation as long as the land was</td>
<td>Reforestation or afforestation</td>
<td>Small-scale CM project</td>
</tr>
</tbody>
</table>
**Categories and project types under A/R CDM projects for Indonesia**

<table>
<thead>
<tr>
<th>Indonesian definitions/descriptions</th>
<th>Kyoto definition</th>
<th>Project activity categories allowed under the Kyoto Protocol</th>
<th>Applicable categories for participation (Annex I countries, CDM, and JI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>production and energy, meanwhile keeping the environmental benefits i.e., soil and water conservation</td>
<td>already degraded (not forested) before January 1, 1990 or as afforestation if the land has not been forested for 50 years</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Private forest**

Placing trees on community land, mainly for wood production

- May be classified as reforestation as long as the land was already degraded (not forested) before January 1, 1990
- Afforestation or reforestation
- Small-scale CM project

**Conversion of agricultural land to forest**

- It might not be recorded that there was some agricultural land previously cultivated for annual crops and then at a point in time it was used for perennial crops (rubber, fruit trees).
- May be classified as afforestation if the land has been used as agricultural land for 50 years.
- Afforestation
- Small-scale CM project

*Source: NSS CDM Forestry (MOE 2003).*

**Table 4.4. Forest carbon project types and areas available for mitigation options**

<table>
<thead>
<tr>
<th>LU cover</th>
<th>Baseline tC/ha, predicted from biomass (Boer 2001)</th>
<th>Potential carbon sink project types</th>
<th>Available degraded area at 1990 for mitigation (ha)</th>
<th>Mitigation potential (tC/ha) obtained using COMAP (Sathaye 1995)</th>
<th>Total mitigation potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1</td>
<td>Type 2 Reboisasi</td>
<td>Type 3</td>
<td>Type 4</td>
<td>Type 5</td>
<td>Type 6 (4 and 5)</td>
</tr>
<tr>
<td>Critical land</td>
<td>5</td>
<td>4,898,800</td>
<td>199</td>
<td>947,702,000</td>
<td></td>
</tr>
<tr>
<td>Critical land</td>
<td>5</td>
<td>Forest plantation/HTI (Timber estate) short rotation (7–8 years)</td>
<td>1,889,000</td>
<td>48</td>
<td>90,672,000</td>
</tr>
<tr>
<td>Fallow</td>
<td>37</td>
<td>Community forest</td>
<td>9,823,175</td>
<td>109</td>
<td>1,070,726,075</td>
</tr>
<tr>
<td>Grassland</td>
<td>10</td>
<td>Penghijauan/re-greening</td>
<td>3,219,648</td>
<td>278</td>
<td>895,062,144</td>
</tr>
<tr>
<td>Shifting cultivation</td>
<td>11</td>
<td>Agroforestry (social forestry/MPTS plantations, or private forest)</td>
<td>12,718,787</td>
<td>198</td>
<td>2,518,319,826</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>32,549,410</td>
<td></td>
<td>5,522,482,045</td>
</tr>
</tbody>
</table>

*Source: NSS CDM Forestry (MOE 2003).*

**4.3 Challenges**

The NSS on the CDM has identified a number of barriers for CDM implementation in Indonesia. The challenge is to identify how these barriers could be removed in order to increase Indonesia's competitiveness on the global CDM market.30

4.3.1 Energy, industrial, and transportation sectors

Many low-GHG emission technologies for the energy sector are available on the world market, but many of these technologies are capital-intensive and sometimes they may be site-specific, for example, with technologies for suppression of methane emissions (e.g., capturing and using or recompressing residuals and purge gases, applying pneumatic devices to control or eliminate venting, repairing or replacing pipelines, and utilization of automatic shut-off valves (MOE 2001). Regulatory barriers are also quite common. For example, subsidy policies for fossil fuels limit switching to renewable sources of energy. However, the government of Indonesia has gradually reduced the subsidy for fossil fuels, which resulted in the increase of the price of oil going from 1,400 rupiahs per liter in 2001 to 2,400 rupiahs per liter in 2005, and this may consequently increase the competitiveness of renewable energy.

Other policy and regulatory barriers that have been identified to limit the implementation of gas flaring projects are production sharing contracts (PSC). The current regulation only governs the sharing of the production of oil and gas, but there is no policy on how to treat certified emissions reduction (CERs), as this issue is still being addressed by the relevant agencies. An additional barrier may be in the form of the high level of investment required to resolve technical matters, such as improvements and maintenance of pipeline systems to reduce leakage. An ongoing study on Indonesia’s Carbon Finance Development for Gas Flaring Reduction, funded by the World Bank aims to address this problem.31

4.3.2 Forestry sector

The NSS CDM forestry study identified a number of potential barriers for the implementation of A/R CDM projects in Indonesia, such as institutional, economical, and technical barriers. Among them, the institutional barriers appear to be the most significant, specifically land tenure, followed by policies, regulations, and the commitment level of local governments. Access to credit and competition with other types of land use appear to be the most important economic barriers, while labor availability and access to location are important technical barriers.

Considering the impact of these, the government of Indonesia has developed a number of initiatives to remove them. The most important step is the issuance of ministerial regulations to partly remove the regulatory barriers (see chapter 6). In addition, the Ministry of Forestry has formed the CDM Working Group which can provide assistance to project developers. The working group as well as the Ministry of Environment and other non-governmental organizations (NGOs) have conducted a number of intensive public awareness programs aimed not only at the local stakeholders but also at financial institutions. At the present time, the program is still limited to a number of districts. These efforts have encouraged a number of local stakeholders (districts) to prepare for CDM project implementation, such as the establishment of local institutional mechanisms for A/R CDM implementation. This process is done with the participation and agreement of the local community, local government, local NGOs, and local stakeholders. This mechanism already exists in the districts of Kuningan (West Java), Lampung Barat (Lampung),

Solok (West Sumatera), Bombana (South Sulawesi), and others. Financial institutions such as banks have also shown their interest in supporting CDM projects.
Figure 4.3. Indonesian Provincial Potential Energy Resources Distribution (YBUL 2003)

W 3
PB 26
C 209

C 1,300
P 1,092
NG 10
O 186

West Java
H 2
G 3,397
BM 2,735
BG 50
WM 3
P 2.9
PV 4.2

Remarks:
Sources:
1. Master Plan Study of Renewable Energy in Indonesia (RIPEBAT)
2. National Electricity General Plan (RUKN) 2004
CDM Country Guide for Indonesia

Figure 4.3. Distribution of potential eligible land for Afforestation and Forestation CDM project activities in Indonesia (MoF, 2003)

<table>
<thead>
<tr>
<th>Inside Forest Area:</th>
<th>Not Priority:</th>
<th>Priority:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outside Forest Area</td>
<td>Not Priority:</td>
<td>Priority:</td>
</tr>
</tbody>
</table>

Table: Distribution of potential eligible land for Afforestation and Forestation CDM project activities in Indonesia (MoF, 2003)
5. CDM-RELATED GOVERNMENT AUTHORITIES

This chapter provides information on CDM-related government authorities that will be involved in the approval process of the proposal on carbon mitigation and sequestration project activities under the Clean Development Mechanism.

5.1 Designated national authority

Indonesia’s designated national authority (DNA), established in July 2005 by the Minister of Environment Decree 206/2005, is the National Committee for the Clean Development Mechanism (NCCDM) (in Indonesian its name is Komisi Nasional Mekanisme Pembangunan Bersih, or Komnas MPB). It is responsible for CDM activities including inter-organizational linkages. The structure of the committee consists of the National Executive Board, with representatives from nine national government agencies represented by the government’s Higher Officers, namely, the Ministry of Environment, Ministry of Energy and Mineral Resources, Ministry of Forestry, Ministry of Industry, Ministry of Foreign Affairs, Ministry of Home Affairs, Ministry of Transportation, Ministry of Agriculture, and the Ministry of National Development Planning (Bappenas). The head of the committee is the Deputy Minister (Deputy Minister for Natural Resources Conservation Enhancement and Environmental Degradation Control) of Ministry of Environment.32

In fulfilling its task, the NCCDM (Komnas MPB) is assisted by the following:

- **Secretariat.** Hosted at the Ministry of Environment under the Climate Change Division.
- **Permanent Technical Team (PTT).** Consists of an experts/technical team representing the nine national government agencies plus one representative from an NGO. The team member will be chosen according to the type of proposal submitted for evaluation by the NCCDM.
- **Non-Permanent Technical Team (NPTT).** Experts from various institutions will be recruited if deemed necessary to support the Permanent Technical Team in evaluating proposals. Members will be chosen from the Ministry of Finance (DepKeu), Ministry of Oceans and Fisheries (DKP), Association of Heads of Districts (APKASI), Indonesian Chamber of Commerce and Industry (KADIN), and NGOs (appointed periodically to represent the energy and forestry sectors).

The role and function of the NCCDM, as written in the Minister of Environment Decree:

- **Provide approval.** Evaluate CDM project proposals submitted for approval according to criteria and indicators of sustainable development as well as with input from the technical team, and/or experts, and stakeholders, if necessary.
- **Submit the result of tracking.** Submit the result of document tracking of CDM projects approved by the NCCDM.
- **Monitoring and evaluation.** Monitor and evaluate CDM projects approved by the NCCDM.

32. The membership in the committee will be terminated if the member has been absent for at least two meetings, has been recalled due to internal shifting of her/his organization, by his/her own desire to resign, from not following ethical standards, or is incapable of doing the task as a member.
- **Annual reporting to the secretariat of the UNFCCC.** Annual reporting to the secretariat of the United Nations Framework Convention on Climate Change on project activities. The Permanent Technical Team is responsible for performing the following tasks:
  - Evaluate the technical aspects of CDM project proposals within the framework of the sustainable development criteria and indicators. If necessary, the PTT can be assisted and updated by additional input from experts and stakeholders through specific public meetings.
  - Report evaluation results and technical recommendations to the NCCDM through the UNFCCC Secretariat. This process should not exceed 21 days.
  - Provide input to the NCCDM concerning its task as promoting agent for CDM implementation in Indonesia.

In principle, the role and function of the National Executive Board of the NCCDM are mainly the following:
  - Conduct the initial and final approval
  - Act as the focal point at the Ministry of Environment for climate change and the UNFCCC
  - Act as liaison between the NCCDM and the UNFCCC
  - Set policies and implementation guidelines for the secretariat of NCCDM

In addition to the role and function of the National Executive Board of the NCCDM, the role and function of the NCCDM secretariat, hosted by the Climate Change Division, Ministry of Environment are as follows:
  - Provide library/database services
  - Provide support through technical assistance
  - Support all aspects related to project design and development
  - Record keeping, document storage, and administration
  - Outreach
  - Coordinate process of project development
  - Coordinate between the National Executive Board and the UNFCCC Secretariat

### 5.2 Other relevant offices

Other relevant institutions and offices that are important in terms of coordination and information gathering for CDM project development in Indonesia are as follows:
  - Ministry of Environment: coordination on environment-related planning and management
  - Ministry of National Development Planning (BAPPENAS): national development planning and budgeting
  - Ministry of Economics: economic sector policy coordination (includes agriculture, forestry, mining, industry, and trade)
  - House of Representative (DPR) (including the DPRD at the provincial and district levels): control and consultation on government policy, plans, and budgeting
  - People's Advisory Assembly (MPR): directing national policy and development
  - Community groups, and/or individuals representing various rights and interests, including traditional community groups
  - NGOs with various forms and focus providing social control in public policies
5.3 CDM-related government authorities in energy sector

The Energy Sector, Research and Development Center for Energy and Electricity Technology (Pusat Penelitian dan Pengembangan Teknologi Energi dan Kelistrikan, or P3TEK) represents the Ministry of Energy and Mineral Resources (MEMR) at the NCCDM. Although not directly related to the CDM, understanding the energy sector legislative framework (table 5.1) may be important for CDM-related parties.

Table 5.1. Policymaking institutions responsible for energy-related activities in Indonesia

<table>
<thead>
<tr>
<th>No.</th>
<th>Institutions</th>
<th>Description of relevant functions</th>
</tr>
</thead>
</table>
| 1.  | Directorate General of Electricity and Energy Utilization | • Preparation and formulation policies in the energy and electricity sector  
• Dissemination of policies in energy and electricity sector based on current regulations  
• Technical and evaluation assistance |
| 2.  | Directorate General of Oil and Gas                | • Policy formulation in the oil and gas sector  
• Implementation of policies in the oil and gas sector based on the actual regulation  
• Guidelines for standardization, norms, guidance, criteria, and procedures in the oil and gas sector |
| 3.  | Directorate General of Geology and Mineral Resources | • Policy framework in geology and mineral resources sector  
• Implementation of policies in the geology and mineral resources sector based on current regulations  
• Guidelines for standardization, norms, guidance, criteria, and procedures in the geology and mineral resources sector |
| 4.  | Directorate of Process and Trade of Oil and Gas   | • Policy and guidelines for trade-related activities which include domestic as well as international trade in oil and gas sector |

The economic and technical regulatory functions reside with the following institutions

<table>
<thead>
<tr>
<th>No.</th>
<th>Institutions</th>
<th>Description of relevant functions</th>
</tr>
</thead>
</table>
| 1.  | Directorate General of Electricity and Energy Utilization | Responsible for regulations, such as:  
• Industry structure  
• Tariffs  
• Permissions  
• Commercial relations  
• Service quality  
Regulations concerning safety:  
• Standard applications  
• Requirements of installation, tools, and electricity beneficial  
• Technical power  
• Electricity inspection  
• Responsible for legislative program in the electricity sector |


5.4 CDM-related government authorities in the forestry sector

In the forestry sector, a unique entity has been established with the task of helping and facilitating the initial stage of afforestation and reforestation (A/R) as a CDM project implementation in Indonesia. The unit is called the CDM Working Group under the coordination
of the senior advisor to the Minister of Forestry (staf ahli menteri). Within this working group, coordination and links are established among several units within the Ministry of Forestry and related government institutions dealing with forestry and land tenure. It should also be noted that NGOs and community groups often have considerable concerns about the land tenure issue, although they are not officially involved. The Minister of Forestry can request any assistance necessary for project evaluation and endorsement, including convening a working group to request suggestions and assistance in facilitating the proposed project implementation. This working group has no direct link with the Permanent Technical Team and the Secretariat, since it works with the potential proponent at the beginning of PDD development. It is hoped that after being cleared by the CDM Working Group at the Ministry of Forestry, the PDD should not have any further technical problems (especially regarding land tenure and Kyoto-eligible land, or fulfilling the criteria and indicators of sustainable development and forest management) in the NCCDM, hence further scrutiny will focus more on CDM aspects (see chapter 6 for details). Table 5.2 indicates the current institutions that regulate and/or affect policies regarding land use aspects in Indonesia.

### Table 5.2. Current institutions/organizations that regulate and/or affect land-use policies in Indonesia.

<table>
<thead>
<tr>
<th>Institutions at the central government level</th>
<th>Description of relevant functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forestry Planning Agency, Ministry of Forestry</td>
<td>Provide clearance on Kyoto-eligible land that is free from conflicts or overlaps into government plans for land rehabilitation programs (GERHAN) and other business-as-usual programs in the forestry sector. Data available for monitoring and evaluation of forestland use can also be used to monitor and evaluate CDM project activities. This would also provide information on critical land, previously programmed for industrial forest plantations or estate wood plantations, that is eligible as Kyoto land.</td>
</tr>
<tr>
<td>Directorate General of Management of Forestry Production, Ministry of Forestry</td>
<td>This institution mainly helps in providing information on management of the forest plantations as well as for CDM projects, including the stakeholder process on community–based forest management practices.</td>
</tr>
<tr>
<td>Directorate General of Land Rehabilitation and Social Forestry, Ministry of Forestry</td>
<td>Important in providing information on reforestation and forest and land rehabilitation activities with or without community participation both in forest state land and private forests.</td>
</tr>
<tr>
<td>Directorate General of Forest Protection and Nature Conservation, Ministry of Forestry</td>
<td>Permits for environmental services (ijin usaha jasa lingkungan), in particular for carbon sequestration projects, are under the authority of this division, which includes also forest protection, forest conservation, and biodiversity conservation.</td>
</tr>
<tr>
<td>Secretariat General, Ministry of Forestry</td>
<td>Activities that relate to foreign investment should consult and coordinate their efforts under this division, as well as for standardization of CDM forest-related project activities.</td>
</tr>
<tr>
<td>Directorate General of Estate Crops, Ministry of Agriculture</td>
<td>Mainly related with the clearance of Kyoto-eligible lands that are still under an estate crop permit (hak guna usaha, or, HGU).</td>
</tr>
</tbody>
</table>
### Directorate General of Decentralization, Ministry of Home Affairs and Decentralization
Decentralization in forestry and other land–use sectors, particularly important to obtain legitimate authorization from local stakeholders to ensure long-term commitment.

### Provincial government
- Important for CDM projects located across provincial boundaries.
- Necessary to consult the provincial spatial planning and management (RTRW Propinsi)

### Relevant provincial offices include BAPPEDA, BAPEDALDA, Provincial Forest Service
Anything related to permits and coordination of environmental services project activities

### District government
Important for district spatial planning and management (RTRW Kabupaten) as well as implementation of project activities

### District Forest Service
Related with the process of permits and approval for land tenure

### Forestry associations, MPI
Represents various forest-based businesses (e.g., HPH and HTI owned by private and state-owned enterprises)

### Forestry associations, APHI
Represents various forest-based businesses (e.g., HPH and HTI owned by private and state-owned enterprises)

### Industrial associations (APKINDO, ISA, Asmindo, APKI)
Represent various forest-based industries

Source: NSS CDM Forestry (MoE 2003).
6. APPROVAL PROCEDURES AND REQUIREMENTS FOR CDM PROJECTS IN INDONESIA

This chapter explains the process of getting CDM project approval from Komnas MPB, as well as criteria and indicators for sustainable development that are used in the evaluation process.

6.1 Approval mechanism for CDM project proposals by KOMNAS MPB

Project proponents who submit a CDM proposal to Komnas MPB for approval should provide the following documents:

- A project design document (PDD).
- A document stating that the project has fulfilled all the sustainable development criteria. (No detailed requirements and specific application forms have yet been prepared, therefore there will be further regulations and requirements to come in the NCCDM rules.)
- An environmental impact assessment (EIA) report, if the regulations so require.
- A report of the public consultation process.
- Other documents that may be required for a related sector. In the case of an afforestation/reforestation (A/R) CDM project, the proponent should also provide an endorsement letter from the Ministry of Forestry, which should include the following:
  - Document(s) or letter(s) to certify the land status, namely, a land certificate or “girik” paper detailing the land ownership if the proposed project is implemented on private land; a customary right (hak ulayat), if the proposed project is implemented on community land; a right to build (hak guna bangunan (HGB)) or right to cultivate (hak guna usaha (HGU)), if the project is implemented on state land but not in a forest area; a forestry business permit (ijin usaha, i.e., IUPHHK-HT, HPHA, or IUPJL; see appendix XI for details), if the project is implemented in a forest area.
  - A map of the location, on a scale of at least 1:10,000, that includes the boundaries of the project and shows the surrounding areas.
  - Land cover status in the form of written or verbal information (berita acara), stating whether the project is considered as an afforestation or reforestation activity.
  - Letters of support from multi-stakeholders, signed by the representatives of communities or related government organizations or non-organizations.

Figure 6.1 shows a diagram of the procedures used by the National Committee for the CDM (Komnas MPB) in the approval process, and figure 6.2 shows the procedure for obtaining an endorsement letter for an A/R CDM PDD from the Minister of Forestry.

1. PDD submission to the secretariat. Once the secretariat receives the documents and verifies that they are all complete, the secretariat presents them to Komnas MPB for an internal meeting. This may take one day. Meanwhile, the secretariat invites stakeholder comments on the proposed project through the Komnas MPB Web site.

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33. Project proponents can be a state enterprise (perusahaan badan usaha milik negara, or BUMN), a regional/district or provincial state company (badan usaha milik, or BUMD), a private company (badan usaha milik swasta), a cooperative entity (koperasi), or an individual who is in collaboration with entities from developed countries (Annex I countries of the UNFCCC).
2. **DNA internal meeting.** At the Komnas MPB internal meeting a person from the technical team is selected to evaluate the project. In addition, it is decided whether additional evaluation by supplementary experts is required. The technical evaluation process is to be completed within five days (2a). (The experts are selected as described in chapter 5).

3. **Evaluation by the technical team.** The assigned technical team member evaluates the project based on sustainable development criteria and indicators (see section 6.2 for details). During the evaluation period, the assigned technical team member may request other experts to assist in evaluating the proposal (3b). If necessary, the technical team member may also present the proposal at one of the technical team meetings (3a) that are organized on regular basis by each sector i.e. energy and forestry. The technical team should submit its evaluation report to the secretariat within twenty-one days.

4. **Submission of the evaluation report to Komnas MPB.** The report is then submitted to Komnas MPB and is made available for public viewing on its Web site.

5. **DNA meeting for the issuance of an approval letter.** In order to decide whether to give approval to the proposed project, Komnas MPB reviews the evaluation report along with stakeholder comments, and any reports from the experts. In case there are diverging opinions and conflicting issues among stakeholders, Komnas MPB organizes a separate meeting (*Forum Pertemuan Khusus*) that is open to the public. (5a). If any additional information is required, the project proponent is given three months to provide the missing data. The revised documentation is processed in the same manner as processing a new project proposal, however the technical team, or expert, will reevaluate only the revised part of the documentation. If the project activity is approved, Komnas MPB issues the letter of approval and the secretariat delivers it to the project proponent.
Figure 6.1. Procedures for CDM project approval used by Komnas MPB.


Note that procedures 2a, 3a, 3b, and 5a are used only if necessary (see details in appendix X).
Figure 6.2. Procedure for obtaining an endorsement letter for an A/R CDM PDD from the Minister of Forestry (required under Minister of Forestry Decree No. 14/2004)
The whole approval process should be completed within eleven weeks, unless revisions or specific stakeholder meetings have to be held.

In the case of an afforestation/reforestation (A/R) CDM project, evaluation by the sector’s technical team (step 3a of figure 6.1) is required by Minister’s Regulation No.14/2004, prior submitting the PDD to the secretariat (step 1 in figure 6.1). The evaluation process is conducted by the CDM Working Group of the Ministry of Forestry. The Ministry will then issue an endorsement letter for the proposed project based on recommendations provided by the working group. The next paragraph explain the process required to obtain endorsement letter from the Ministry of Forestry.

In addition to the document listed on the first page of this chapter, the project proponent of the A/R CDM project activity is required to submit the following documents: (i) proof of land ownership or land management rights (such as ‘sertifikat lahan’, ‘girik’, IUPHHK-HT, HPHA, IUPJL, HGU, HGB), (ii) a letter confirming eligibility of the land to be used for A/R CDM that is signed by the local authorities. The letter is to be signed by the Head of District or the Head of Municipality if the proposed project is located on state land (for IUPJL, IPHHK-HT, HPHA, HGU), and by the Head of the Sub-District, if the project is to be implemented on private land. The form for this letter is given in appendix XI.

In summary, the Indonesian approval process has just been recently established and is still in a preliminary stage. The current information is designed to allow leading ministries and organizations in each sector to take the initiative in responding to sector-specific problems, so that the system as a whole will benefit from a smooth approval process, and possibly prevent any foreseeable problems during the project implementation phase. For A/R CDM projects, the Ministry of Forestry has established the process for obtaining an endorsement letter, as stipulated in Ministerial Decree No.14/2004.

6.2 Criteria and indicators for sustainable development used for evaluation

The following criteria and indicators for environmental protection and sustainable development are used by Komnas MPB in the process for evaluating CDM proposals:

Environment

Criteria: Environmental sustainability by practicing natural resource conservation or diversification
- Indicator: Maintain sustainability of local ecological functions
- Indicator: Not exceeding the threshold of existing national, as well as local, environmental standards (not causing air, water and/or soil pollution)
- Indicator: Maintaining genetic, species, and ecosystem biodiversity and not permitting any genetic pollution
- Indicator: Complying with existing land use planning

Criteria: Local community health and safety
- Indicator: Not imposing any health risk
- Indicator: Complying with occupational health and safety regulation
• Indicator: There is a documented procedure of adequate actions to be taken in order to prevent and manage possible accidents

Economy
Criteria: Local community welfare
• Indicator: Not lowering local community’s income
• Indicator: There are adequate measures to overcome the possible impact of lowered income of community members
• Indicator: Not lowering local public services
• Indicator: An agreement among conflicting parties is reached, conforming to existing regulation, dealing with any lay-off problems

Social
Criteria: Local community participation in the project
• Indicator: Local community has been consulted
• Indicator: Comments and complaints from local communities are taken into consideration and responded to

Criteria: Local community social integrity
• Indicator: Not triggering any conflicts among local communities

Technology
Criteria: Technology transfer
• Indicator: Not causing dependencies on foreign parties in knowledge and appliance operation (transfer of know-how)
• Indicator: Not using experimental or obsolete technologies
• Indicator: Enhancing the capacity and utilisation of local technology

In addition to the criteria and indicators for sustainable development, the Ministry of Energy and Mineral Resources (MEMR), through its Research and Development Centre for Energy and Electrical Technology (Pusat Penelitian dan Pengembangan Teknologi Energi dan Ketenagalistrikan) (a representative of MEMR at the Technical Team) has established sustainable development criteria specifically for energy-related CDM projects (Ministerial Decree No.953.K/50/2003) These were developed on the basis of policies and regulations already released by the MMER.

The energy sector’s sustainable development program has established the following seven criteria with which CDM energy-related projects need to comply:
• Provide support to implement energy diversification and conservation programs
  – Increase utilization of non-oil resources or reduce energy utilization per production unit.
• Provide support for the development of clean energy alternatives and technologies
  – Lower concentrations of NOx, SOx, and GHG emissions.
• Provide support for environmental conservation
  – Compliance with environmental regulations.
• Provide support for local economic growth
− Increase income of the local community and/or local economic activities in the vicinity of the project.

• Maintain current employment rates without cessation of employees\(^{34}\)
  − No layoffs as result of project.

• Provide support for technology transfer
  − Increase utilization of local human resources in quality and quantity, provide new roles for the local workforce, provide career development plans for employees.

• Provide “community development” programs
  − Projects should provide clear and certain community development programs.

Although project approval will be based on the national sustainable development criteria established by Komnas MPB, the MEMR assigns great importance to meeting these criteria when subsequently reviewing proposals for energy-related CDM project activities.

For an A/R CDM project, additional criteria and indicators for sustainable development may be used to encourage sustainable forest management under the current regulations. Project proponents should verify whether their A/R CDM project activities are in accordance with these criteria and indicators for sustainable forest management prior to submitting their proposal to the working group to request a letter of endorsement.

\(^{34}\) If cessation of employees is inevitable, local/national skilled and professional employees must be maintained.
7. LAWS AND REGULATIONS

This chapter describes the laws and regulations that are relevant to CDM implementation in Indonesia. It focuses on the existing legal measures that can readily be used to tackle various issues in CDM implementation. However, the chapter also includes relevant regulations that were the driving force in the issuance of CDM-related regulations, as well as other legal measures that investors need to be aware of or need to take into account regarding CDM implementation in Indonesia. These include Act no.23/1997 on the environment, Act no.32/2004 on district autonomy, Act no.5/1960 on land allocation, Act no.41/1999 on forestry, and Act no.1/1967 on foreign investment. In order to help readers easily understand the relevance of one legal measure over the others, an explanation is arranged in the following order:

- The UNFCCC and Kyoto Protocol
- Sectoral laws and regulations related to CDM implementation
- Other relevant laws and regulations

7.1 The UNFCCC and Kyoto Protocol

For CDM project implementation in Indonesia, the project developer should consider Act no.23/1997, which covers environmental aspects. The Act explains in detail the principles, goals, rights, obligations, and roles of the community and the environmental management authority; environmental function and sustainability; requirements of environmental systems; and environmental conflict resolution, investigation, and penalties for criminal activities.

As a party of both the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol, Indonesia has ratified the UNFCCC on climate change and the Kyoto Protocol through ACT no.6/1994 and ACT no.17/2004 respectively. Under the UNFCCC principle of “common but differentiated”, Indonesia has shown her efforts in contributing to the achievement of UNFCCC’s ultimate objectives, that is, stabilization of GHG concentration in the atmosphere and sustainable development.

The Kyoto Protocol, with its provision on CDM, has given opportunities to non-Annex I countries including Indonesia to participate in global efforts to reduce GHG emissions while supporting national development in a sustainable manner.

7.2 Sector laws and regulations related to CDM implementation

7.2.1 Energy sector

The long-term development of the Indonesian energy sector is guided by a national energy policy (Kebijakan Energi Nasional), issued by the Ministry of Energy and Mineral Resources (MEMR). The most recent one, National Energy Policy 2003–2020 (www.djipe.go.id/kebijakan) states that an enhanced participation of energy ventures and industry leading towards an open market mechanism is one of Indonesia's objectives in the development of its energy sector. It also asserts a target of 90 percent electrification by 2020, and commits to a minimum of 5 percent share of energy from renewable energy sources.

Several strategies that are highlighted by the policy include:
- Energy sector restructuring
- Implementation of market economy
- Decentralized energy planning and energy pricing
- Development of energy infrastructure
- Energy efficiency
- Improvement of national energy industry

In 2003, the MEMR launched the Policy for Renewable Energy Development and Energy Conservation, also known as Green Energy (www.djipe.go.id/kebijakan). The objectives of Green Energy are to ensure the security of energy supply (now, and in the future); to increase the role of renewable energy; and to encourage the use of efficient, diverse, safe, reliable, and environmentally sound energy. The strategies are:

- Set up the price of energy
- Support the development of infrastructure on renewable energy and energy conservation
- Prioritize the use of renewable energy
- Implement energy efficiency principles into energy management
- Increase the role of stakeholders in utilizing the renewable energy and energy conservation
- Develop national, regional, and international cooperation
- Increase energy access for the community
Box 7.1. Hierarchy of regulations

The Indonesian policy and regulatory framework is a complex interaction of a structured hierarchy mechanism. The following description of the hierarchy has been drawn from, "A Review of Legal, Regulatory and institutional aspects of forest and land fires in Indonesia (Simorangkir and Sumantri 2002) as part of project firefight in South East Asia.

Under the constitution, Indonesian regulations follow the hierarchy below (from the highest to the lowest):
- People’s advisory assembly decision (Ketetapan MPR) are regulations made by People’s Advisory Assembly
- Act (Undang-Undang) are regulations issued by legislative power (House of representatives)
- Government regulation (Peraturan Pemerintah) are regulations made by executive powers (government) and approved by legislative power
- Presidential decree (Keputusan Presiden) are regulations made by the president to further describe and clarify the act or to regulate specific affairs under the authority of president
- Minister’s regulation (Peraturan Menteri) are regulations made by the minister on a specific topic related to technical matters and approved by legislative power
- Minister’s decree (Keputusan Menteri) are regulations made by the minister on a specific topic related to technical matters under the authority of the minister
- Local (provincial and district) regulations (Peraturan Propinsi dan Peraturan Kota/Kabupaten) are regulations made by the local government and local house of representatives to further clarify and implement the higher regulations

Act no.22/1999 and government regulation no.25/2000 that regulate the decentralization of authority from the central to local governments brought changes and generated “autonomy euphoria”. Most of the local, provincial, and district governments became reluctant to acknowledge ministerial decrees. The situation has been changed with the issuance of the people’s national assembly decision (Ketetapan MPR) no.III/MPR/2000 concerning regulation order/hierarchy, because it did not mention the ministerial decrees at all. The resulting confusion, conflicts, and overlap between ministerial decrees and local regulations necessitated a clarification from the central government through the minister for justice and human rights letter no.M.UM.01.06-27 dated 23 February 2001, stating that:
- The position of ministerial decree is between the presidential decree and local regulation
- The position of ministerial decree is higher than local regulation

Furthermore, because a minister functions as a sectoral regulator at the national level, the ministerial decree usually contains issues of national importance, thus it prevails for the whole country.

7.2.2 Electricity generation

With respect to electricity generation, Act no.15/1985 regulates the utilization of energy resources to generate electricity. The act stipulates that the state, in this case represented by the state electricity company (PT. PLN), is responsible for the provision of electricity for the country. Despite this act, the private sector and cooperatives are also allowed to take part in generating electricity for public. This participation is further regulated by government regulation (Peraturan Pemerintah) no.10/1989, amended by government regulation no. 3/2005. The participation of the private sector is permitted under the conditions specified by Article 11: The obligation of PKUK and PIUKU to meet electricity demand in its business area could be achieved by purchasing electricity from cooperative or private sector sources that have a license of electrification business, through bidding or direct appointment. Direct appointment may be allowed in the following cases: (a) electricity purchased is generated from renewable energy, marginal gas, coal at the open mining, or other local energy sources; (b) the purchase of excess electricity; (c) the local electricity supply system is in crisis

Act 15/1985 also stipulates the issuance of a national general electricity plan (rencana umum ketenagalistrikan nasional, or RUKN). The RUKN is periodically published by the department of energy and mineral resources, providing general guidelines for the capacity
development of generation and distribution systems in different regions in Indonesia. Investors in the electricity sector are encouraged to consult this document to ensure that their proposed power generation projects are in line with the development planning.

RUKN is an integrated national plan on electricity policy, the estimation of electricity demand, electricity provision planning, electricity facility development planning, and primary energy sources and funds needed for electricity development in order to fulfil energy demand.

The purpose of RUKN is to provide information to various parties including central and local governments, national and foreign private entities, supporting businesses, financial institutions, and others that are willing to participate actively in supporting the electricity project implementation and development.

The following table 7.1 summarizes the regulatory framework of different electricity generation project types in Indonesia. Additional information is also presented here to provide investors with an overview on what to expect with each type of generation project. The relevant institutions column indicates institution(s) that may be engaged in different types of generation activities, as well as their respective form of cooperation when the private sector and cooperatives are involved. The determination of the selling price of electricity is different from one type of generation to another. With large electricity generation units, the price is the result of negotiation between the power producer and PLN, while for small-scale generation it is set by a ministerial decree.

Table 7.1. Regulations relevant to different electricity generation project potential in Indonesia

<table>
<thead>
<tr>
<th>Project type</th>
<th>Legal framework</th>
<th>Relevant institution(s)</th>
<th>Form of cooperation</th>
<th>Electricity price</th>
<th>Incentive(s) available</th>
<th>Other remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wind</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 7.1 describes the following energy resources:

1. **Geothermal** is the most progress issues among others, since it is governed by Act no. 27/2003 and presidential decree no.76/2000; while small scale (<30MW) is governed by Minister of MEMR decree no.119./K/437/M.PE/1998 regarding small scale generations
Institutions which could be involved include government, cooperatives, and the private sector. The form of cooperation is: “collaboration to exploration” with incentive exemption of import duty for operational goods as stipulated in the Minister of Finance decree 766/KMK.04/1992. The price of energy sales in rupiah, and the energy sales contract will be set by MEMR.

2. **Large-scale power generation is governed by Act 15/1985 and govt. reg. 3/2005.** Institutions which could be involved to develop this energy resource are: PLN (as stipulated by Act 15/1985), cooperatives, and the private sector (govt. reg. 3/2005). The form of cooperation is: “build, operate, and own prominently,” as stipulated in presd. decree 37/1992. The electricity price will be negotiated with PLN (presd. decree 37/1992) with incentive exemption of import duty for capital goods (finance ministerial decree 128/KMK.00/1993)

3. **Mini Hydro, wind, biomass, and landfill are governed by Act 15/1985 and govt. reg. 3/2005.** Institutions which could be involved to develop this energy resource are: cooperatives, and the private sector. MEMR will determine the annual capacity allocation for the region/grid. The form of cooperation is: “power purchasing agreement” (MEMR decree 119/.K/437/M.PE/1998) with incentive exemption of import duty for capital goods as stipulated in Minister of Finance decree 128/KMK.00/1993. The price of energy sales is determined by MEMR as stipulated in Minister of MEMR decree 119/.K/437/M.PE/1998.


5. **Distributed power generation, limited to renewable energy only (max. 1 MW) is governed by Act 15/1985 and govt. reg. 3/2005.** Minister of MEMR decree 1122.K/30/MEM/2002 states that the regional PLN is the institution that could be involved to develop this energy resource. The purchase agreement is at low and medium voltage connecting points. The price of energy sales is: 80% * HPP medium voltage pt and 60% * HPP voltage pt. Incentive exemption of import duty for capital goods is regulated by Minister of Fin. decree 128/KMK.00/1993.

6. **Solar photovoltaics and micro hydro for rural electrification is governed by Act 15/1985 and govt. reg. 3/2005.** Minister of MEMR decree 064.K/40//M.PE/1998 states that the institutions that could be involved to develop this energy resource are the local PLN and government. The form of this cooperation is: “developed by government funding and managed by local cooperatives,” The local government is the owner of these assets. The price of energy sales is determined by MEMR (Minister of MEMR decree 119/.K/437/M.PE/1998) with incentive exemption of import duty for capital goods (Minister of Fin. decree 128/KMK.00/1993).

7. **Gas Flaring** (for electricity generation) there is no regulation so far. Institutions that could be involved to develop this energy resource are the PLN (as stipulated in Act 15/1985), cooperatives, and the private sector (govt. reg. 3/2005).
7.2.3 Energy conservation

The legal framework for energy conservation is established through presidential decree (*Keputusan Presiden*) no.43/1991, aiming to conserve energy through selection of technology and efficient and rational energy use. This may be done through standardization, development of a robust energy audit system, and efficiency improvements. The decree stipulates that energy conservation shall be implemented by all energy users in related sectors, industry, commercial, and residential. The decree is followed by the national energy conservation master plan (*Rencana Induk Konservasi Energi Nasional/RIKEN*) published by MEMR in 2002.

Regardless of the regulation, energy conservation is not always a priority for energy users for a number of reasons. In general, a lack of awareness of the benefits of energy conservation, and how it should be implemented, still prevails in Indonesia. The on-going subsidy provision for some types of fuels has not helped in the implementation of energy-efficiency measures. Even among energy users in the industry sector, energy conservation is not widely exercised. The implementation of some energy conservation measures may require the user to provide a significant amount of capital upfront, for example, when replacing old units with more efficient units or systems. Under the current economic situation, where financing is not easy, this may be an option that is not always attractive to all energy users, despite the long-term savings that could be gained.

Realizing this, in 2002 the ministry of energy and mineral resources established a national energy conservation master plan (*Rencana Induk Konservasi Energi Nasional 2002*), targeting a reduction of national energy intensity at a rate of 1 percent per annum until 2010. This target will be achieved through four strategies:

- Information dissemination
- Energy audit, energy-efficient technology, labelling, and standardization
- Incentives/directed subsidy (grant and discount), and soft loans for cost-effective projects
- Market transformation

7.3 Sustainable development in the energy sector

The legal basis for the implementation of CDM projects in Indonesia are Act no.6/1994 regarding the UNFCCC and Act no.17/2004 regarding ratification of the Kyoto Protocol. By adopting these acts, all CDM projects must fulfil the objectives of the convention and the protocol, one of them being sustainable development. To ensure that the objectives of sustainable development are achieved, a set of criteria must be provided. In the energy sector, the ministry of energy and mineral resources, through Minister of MEMR decree no.953.K/50/MEM/2003 has established sustainable development criteria in the energy sector. The details of the sustainable development criteria for energy is listed in Chapter 6, but to summarize, they are:

- Emphasize the use of renewable energy and energy efficiency
- Contribute to the conservation of the environment
- Income generation
- Technology transfer
- Community Development
7.4 Forestry sector

There are two relevant regulations to CDM implementation in the forestry sector, namely, government regulation (PP) no.34/2002 concerning forest land allocation, forest management planning, forest and forest land use; and minister of forestry regulation (PERMEN) no.P.14/2004 on rules and procedures for the implementation of afforestation/reforestation CDM (A/R CDM). Other relevant regulations are also described in this section.

1. Act no.41, 1999, in forestry

This Act mainly consists of guidance for all forestry and other relevant sectors’ activities in production, protection, and conservation of forest areas. It should be noted that all non-forestry activities, including mining and other development activities (e.g., geothermal energy use) taking place in forestrines, need to take this regulation into account.

2. Government regulation (PP) no.34, 2002 on forestry land allocation, forest management planning, forest and forest land use.

Under this regulation, “carbon trading” falls under the category of “environmental services” and is regulated through the issuance of a permit for “environmental service concession” (IUPJL/ Ijin Usaha Pemanfaatan Jasa lingkungan). The aspects under this regulation which are relevant to various issues in land-use CDM projects include:

- The permit for “carbon-based projects” can be carried out in forest areas under the category of protection forest as well as production forest, with the duration and areas of up to 10 years and 1000 ha, respectively
- Individuals, cooperative, private and state-owned enterprises may apply for the permit, each with a maximum of two permits within one province
- The permit holder who can satisfy the requirement under the regulation may be granted a permit renewal
- The permit holder is required to pay a compensation fee amounting to the intrinsic value of forest products paid (elaborated further in “Minister Decree” paid) and is also bound to collaborate with “local cooperatives”.

The application for the permit is directed to three different government institutions. The permit is granted by:

- The head of district for the area within the district jurisdiction, with agreement from the minister of forestry, the governor, and the forest-related authority in the region;
- The governor, if the area is located in more than one district (across districts), with agreement from the minister of forestry, heads of districts, and forest-related authorities in the region;
- The minister of forestry, if the area is located in more than one province (across provinces), with agreement from governors, heads of districts, and forest-related authorities in the region.

To participate in A/R CDM, an IUPJL permit holder needs to follow rules and procedures under the minister of forestry regulation (PERMEN) no.P.14/2004, which will be explained in the later section.

35. To what extent the collaboration will be elaborated further in ‘Ministerial Decree’
3. Government regulation (PP) no.35, 1995 on reforestation fund

The reforestation fund is charged to "timber concession holders"\(^{36}\), and is used to finance reforestation and rehabilitation, and its supporting activities. Rehabilitation is to be financed from the reforestation fund and includes: reforestation and afforestation, plantation management, enrichment planting, application of conservation techniques through planting, and civil engineering techniques in degraded land and non-productive areas. Rehabilitation supporting activities include: forest protection, forest fire management, management of forestation fund, seed development, research and development, education and training, extension, and community development.

Under government regulation no.35/2002, the reforestation fund is implemented per cubic meter. The reforestation fund is allocated into 40 percent for the region of origin of the fund and 60 percent for the central government. The reforestation fund is managed by the minister of finance and reserved in a forest development account. The fund can then be used by the ministry of forestry (60 percent of total forestation fund obtained) to finance its rehabilitation and supporting program, and by the regions of origin (40 percent of total forestation fund obtained) to finance rehabilitation activities.

The allocation of the forestation fund for forest and land rehabilitation by private and state-owned enterprises, autonomous region enterprises, cooperatives, and forest farmers group, is carried out through funding institutions such as banks and/or non-bank funding institutions that are determined by government regulations. The possible impact on a CDM project is only in relation to the use of the allocated funding.

4. Minister of forestry decree no.32/ KPTS-II/2003 on rules and procedures on natural and plantation forest holding systems (IUPHHK-HA and IUPHHK-HT)

The decree regulates rules and procedures for the application of IUPHHK-HA and IUPHHK-HT. The relevance of this regulation to CDM is in relation to IUPHHK-HT, under the minister of forestry regulation (PERMEN) no.P. 14/2004, which is one of the prerequisites in applying to A/R CDM projects.

An entity which does not hold a permit on IUPHHK-HT but wishes to participate in A/R CDM should apply for IUPHHK-HT and treat A/R CDM activities as additional activities in its concession area. According to article 35 of PP34/2002, the lifespan of the project can go up to maximum 55 years without area limitation. The issuance of this permit is based upon an auction mechanism.

5. Minister of forestry regulation (PERMEN) no.P 14/2005 on rules and procedures for A/R CDM implementation

In order to tackle policy and regulatory barriers in the forestry sector, the ministry of forestry has put into effect the minister of forestry regulation (PERMEN) no.P.14/2004 concerning rules and procedures for implementation of A/R CDM in Indonesia. Under PERMEN no.P 14/2004, A/R CDM can be implemented in the production and protection of forest areas, “adat forest”\(^{37}\) land, and non-forest land (state and private lands). A/R CDM in forest lands can be implemented in the area which has been granted a permit either for plantation forest concession

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36. Any forestry company or timber concession holder who has the permit to exploit the trees from the natural production forest must pay a tax for reforestation activities. The tax revenue will be used for rehabilitation of the degraded natural forest or developing forest plantation as explained in Chapter 9.

37. Adat forest is a “Community Custom Forest,” a forest area that has long been determined as a community forest through traditional uses and laws.
CDM Country Guide for India

(Ijin Usaha Pemanfaatan Hasil Hutan pada Hutan Tanaman/IUPHHT), or environmental service concession for carbon trading (Ijin Usaha Pemanfaatan Jasa Lingkungan untuk perdagangan karbon/IUPJL), or area with "adat forest" management rights (Hak Pengelolaan Hutan Adat/HPHA). In the case of A/R CDM in non-forest lands, the project proponent needs to have a permit for estate-crops plantation (Hak Guna Usaha/HGU) if the proposed project location is on state land, or a proof of land ownership (sertifikat or girik) if the proposed project location is on private land.

Under the PERMEN no.P 14/2004, three prerequisites need to be met by the A/R CDM project proponent in order to obtain an approval letter or recommendation from the ministry of forestry, before submitting the project design document (PDD) to the Komnas MPB (NCCDM):

• Valid IUPHHT/IUPJL/HPHA/HGU/private land ownership,
• Approval/recommendation on land eligibility for A/R CDM from head of district (Bupati) or head of municipal (Walikota) for IUPHHT, IUPJL, adat forest, and HGU, or head of sub-district (Camat) for private land,
• Project proposal (project concept note/PCN) which will be the basis for the ministry of forestry to issue recommendations to the DNA.

7.5 Other Relevant Laws and Regulations
7.5.1 Land Use Sector
1. Act no.5, 1960 about land and reform

The basic regulation for the land use system in Indonesia is Act no.5/1960 concerning agrarian affairs. The right over land can be categorized into two areas: (1) all rights which are obtained directly from the state (referred to as the primary right), and (2) all rights which are obtained from the land right holder (referred to as the secondary right). The primary right comprises of ownership right, business utilization right, building utilization right, and management right. The secondary right comprises of leasing right, product sharing right, pawning right, and temporary use right.

There are two government institutions which have the authority to organize land use, namely:

• National land agency (BPN / Badan Pertanahan Nasional) for land use outside forestry land, which includes ownership rights in agriculture land belonging to individual and communal, and business utilization rights in state land for estate plantation.
• Ministry of forestry (MoF) for land use in forest areas, which includes utilization rights and management rights in state forest state land.

2. Act no.24, 1992 on spatial planning

This act regulates the planning, utilization, and control over space (land, water, and air) in Indonesia. Under this article, national spatial planning is under the authority of the central government, while provincial and district spatial planning are under the authority of provincial and district governments. This act relates to CDM projects in regard to allocation of land uses that fall under different authorities. For example, for planting activities in agriculture land and forestry land, agriculture land is under the authority of the national agrarian body while forestry land is under the authority of the MoF.
7.6 Central and autonomous governance

1. Act. no.32/2004 on autonomous government

This act supports the CDM project, in implementation at the local regions, provincial or district.

2. Government Regulation (PP) no.25/2000 on central government authority and provincial authority as autonomous regions

This regulation refers to the allocation of authority to all land-use types in Indonesia, including community land, forest state land, estate land, and community customary land. The setting of the terms for this regional autonomy is to enhance community welfare, fair distribution and justice, democratization, local culture, and potential and diversity of the regions.

Authority of the central government (under this regulation)

- Forest Plantations – determination of criteria and standards. Rules and procedures to obtain permits on forest plantation development is regulated under the minister of forestry decree no.32/2003, explained in the prior section.
- Environment – establishment of standards for quality of environment and determination of guidelines on environmental pollution

Authority of Provincial Government (under this regulation)

- Forestry and plantation sector. Forest plantation development is regulated under PP 34/2002, while rules and procedures to obtain permits on forest plantation development is under the minister of forestry decree no.32/2003, explained in the prior section.
- Forest protection and security
- Environment sector
- Environment control and determination of environment quality based on national standards

One aspect of this regulation directly relates to the authority of government to impact land use decisions within their sphere of influence.

- If an activity is bounded by the local district, the authority for decisions is vested with the local government.
- If an activity crosses two districts, the authority to make decisions is passed to the provincial government.
- If an activity crosses two provinces, the authority to make decisions is passed to the central government.

7.7 Foreign Investment

There are a number of regulations concerning foreign investment, i.e., Act no.1/1995 about private companies (Perseroan Terbatas), Act no.3/1982 about obligation to register a company in Indonesia (kewajiban pendaftaran perusahaan di Indonesia), Act no.8/1995 about market investment (Pasar Modal), and Act no.1/1967 renewed through Act no.11/1970 about foreign investment (Penanaman Modal Asing). However, there is as yet no government policy on whether CDM investment will be treated the same as, or whether it will be exempted from, the requirements that are applied to other foreign investment. In the case of the forestry sector, the CDM follows rules and procedures under the PERMEN no.P. 14/2004, where the CDM is additional to the activities under, for example, IUPHHK-HT, IUPJL, HGU, HPHA, and plantation on private land. With this arrangement, the existing regulations on investment are applied to the IUPHHK-HT, IUPJL, HGU, HPHA, and plantation on private land, not to the CDM activities.
8. FISCAL AND FINANCING ISSUES

This chapter provides information on financial and fiscal issues that could potentially affect the development of CDM projects in Indonesia. The discussion of financial aspects covers both project financing and CDM financing, mainly CER purchases and CDM transaction costs. The fiscal issues discussed include government tax policies and/or regulations that may hinder or promote CDM projects. This chapter also covers fiscal regulations on taxation of CERs, since this has not yet been established.

8.1 Taxation system

- **Corporate tax**
  
  The Indonesian Government applies progressive taxation for both corporation taxes and personal income tax according to the simple classification shown in table 8.1.

Table 8.1. Classification of taxable income.

<table>
<thead>
<tr>
<th>Taxable income (TI)</th>
<th>Tax rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rp. 0 &lt; TI &lt; Rp50,000,000</td>
<td>10%</td>
</tr>
<tr>
<td>Rp. 50,000,000 = &lt; TI &lt; Rp100,000,000</td>
<td>15%</td>
</tr>
<tr>
<td>Rp. 100,000,000 = &lt; TI</td>
<td>30%</td>
</tr>
</tbody>
</table>

For taxable income above Rp.100,000,000, the income amount is divided into three classifications.

In the case of Rp.105,000,000.00, taxable income is divided as follows:

- Rp. 50,000,000 at 10% = Rp. 5,000,000
- Rp. 50,000,000 at 15% = Rp. 7,500,000
- Rp. 5,000,000 at 30% = Rp. 1,500,000

Total tax = Rp. 14,000,000

Taxable incomes include business profits, interest, royalties, capital gains, etc.

- **Value-added tax.** 10 percent of value is charged on receiving material (products) and services.

- **Withholding tax.** A withholding tax (20%) is charged mainly on capital and property income. In business-to-business transactions, the buyer should withhold a certain rate of the price (different by business type; generally 6%–10%)

- **Other taxes.** Luxury products tax (75%), goods tax, stamp duty, and property hold tax.

- **Duplicate imposition.** Indonesia has concluded an agreement for prevention of duplicated imposition with some countries (a treaty to avoid double taxation on business and personal income tax between Indonesia and foreign countries).
8.2 Financial infrastructure

In Indonesia, so-called “institutional financing” supported by the government is very limited. Therefore, foreign countries have to raise the required funds in their home country or arrange offshore loans. Meanwhile, joint ventures for which the foreign share capital is less than 50 percent can obtain loans from the National Commercial Bank.

The Indonesian Central Bank (Bank Indonesia) provides a swap system in order to hedge foreign currency exchange risks caused by devaluation or depreciation of the rupiah.

Fund raising through security markets is available. Debenture bonds could be issued after obtaining approval from the national security audit agency (BAPEPAM).

There are no currency restrictions. Currency inbound or outbound is free, but it is necessary to submit a bill and get permission from the Central Bank, depending on the amount (e.g., a transferred amount of more than US$10,000 should be reported to the Central Bank by a custody bank).

8.3 CDM financing

• Fiscal and financial facility for the CDM

According to the public relations section of the Ministry of Finance, the ministry has not yet prepared any policy, system, or program to facilitate CDM-related businesses (as of July 2005).

• Importance of CER and potential role of the financial sector

The CDM has a unique feature that differs from traditional projects due to its ability to reduce GHG emissions. A reduction in emission levels generated by a CDM project is measured in equivalent tonnes of CO$_2$ (CO$_2$eq). The credit represented by CDM emission reductions is referred to as a “certified emissions reduction” or CER. CDM projects will qualify for an additional stream of income from tradable CERs. To date, in European currency, the range of CER credits vary from €3 to €10 (UNEP FI 2005).

A CDM project may benefit developing countries through contributions of CERs towards their project investment. It is estimated that CERs may contribute about 7–40 percent of CDM project investments, depending on the type of projects and sectors (UNEP FI 2005). This is paid in hard currency (US$ or €), which will then increase the developer’s credentials for the CDM project’s financing itself, particularly for local project developers. From the perspective of Annex-I countries, CERs have the advantage of lowering their cost in meeting the Kyoto Protocol’s commitment.

The potential market for CERs from CDM projects is quite significant. The European Union estimates that about 430 million tonnes of CO$_2$ must be reduced worldwide in order to meet the Kyoto Protocol’s emission reduction requirements, and an important share of this volume is expected to come from CERs (UNEP FI 2005). This will require, however, significant financial resources. The potential role of financial institutions in this respect is to provide project financing and/or insurance. Nevertheless, CDM projects require additional procedures and pose additional risks involving extra costs. This still hinders the participation of financial institutions such as private banks and insurers.
8.4 CDM cost components

CDM cost components include those related to project financing, preparation requirements, capital/investments, CDM transactions, project operating costs, marketing, negotiations, etc. These CDM cost components are detailed in table 8.2.

Table 8.2. Typical cost components of CDM projects

<table>
<thead>
<tr>
<th>Components</th>
<th>Description</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial preparation</td>
<td>• Pre-feasibility study</td>
<td>Assessment of a total project feasibility study in terms of financial, environmental, and social aspects</td>
</tr>
<tr>
<td>requirements</td>
<td>• Feasibility study</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Environmental impact assessment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Public disclosure and community development plan</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Land acquisition and resettlement action plan</td>
<td></td>
</tr>
<tr>
<td>Capital or incremental</td>
<td>Cost of greenfield or retrofit project</td>
<td>Depends on type of project: greenfield or brown field projects.</td>
</tr>
<tr>
<td>costs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CDM transaction costs</td>
<td>• Feasibility study of the CDM project</td>
<td>The feasibility study of a CDM project is the assessment of its CDM eligibility. No fee is taken from the project proponent since the DNA for the time being is financed by the government of Indonesia. But it is still possible to hire a consultant to evaluate the PDD.</td>
</tr>
<tr>
<td></td>
<td>• Project design document including new baseline methodology</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Validation and verification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Monitoring and verification protocol</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Registration</td>
<td></td>
</tr>
<tr>
<td>Operating costs</td>
<td>Directly related to CDM project operation, for example, labor and fuel costs</td>
<td>This may be lower or higher compared to conventional projects generating GHG emissions</td>
</tr>
<tr>
<td>CER Promotional cost</td>
<td>Related to marketing the CERs or finding partners for other CDM-related costs</td>
<td></td>
</tr>
<tr>
<td>Contract arrangement and</td>
<td>Related to contractual issues of CERs purchase</td>
<td>Cost to hire solicitors/legal counsels in preparing the contractual agreement for CER purchase</td>
</tr>
<tr>
<td>negotiation cost</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Not all components apply to each CDM project, however, as table 8.2 shows, the additional CDM-related costs need to be borne by the project developers or proponents. Eco-Securities (Carbon Finance 2004) has recently estimated the average CDM-related costs to be about €150,000, while other sources set the range at US$200,000 to $350,000. Table 8.3 presents the cost components related to the CDM as estimated by Eco-Securities (Carbon Finance 2003).
Table 8.3. Average costs of a CDM project (typical in full-scale energy projects)

<table>
<thead>
<tr>
<th>Task</th>
<th>Cost (€)</th>
</tr>
</thead>
<tbody>
<tr>
<td>General project/enterprise due diligence</td>
<td>20,000</td>
</tr>
<tr>
<td>Development of baseline and PDD</td>
<td>20,000</td>
</tr>
<tr>
<td>Monitoring and verification protocol</td>
<td>10,000</td>
</tr>
<tr>
<td>New methodology</td>
<td>15,000</td>
</tr>
<tr>
<td>Stakeholder consultation</td>
<td>5,000</td>
</tr>
<tr>
<td>Validation of PDD</td>
<td>15,000</td>
</tr>
<tr>
<td>First and second verification</td>
<td>15,000</td>
</tr>
<tr>
<td>Transaction negotiation and contracts</td>
<td>15,000</td>
</tr>
<tr>
<td>Registration costs to CDM Executive Board</td>
<td>15,000</td>
</tr>
<tr>
<td>First baseline revision</td>
<td>10,000</td>
</tr>
<tr>
<td>Second baseline revision</td>
<td>10,000</td>
</tr>
<tr>
<td>Total cost for 7 years with 3 crediting periods</td>
<td>150,000</td>
</tr>
</tbody>
</table>


Given the significant costs associated with the CDM process, the potential of CERs generated in a CDM project is an important consideration to justify the project's eligibility. These costs can be offset in large projects with significant carbon reduction potential, but for small projects these costs are considerably high. In addition, project developers and small business owners rarely have the capacity, time, or resources to complete the steps of the CDM process. This increases the risks for financial institutions to finance CDM projects, particularly small-scale projects.

- **CDM related financing**

  Currently, activities in the CDM market are dominated by multilateral institutions (e.g., World Bank) and national governments, which are able to meet different risk/return requirements compared to private players. More and more private players have begun to participate, however, but private financial institution involvement is generally low due to the risks and complexity of the CDM process.

  Different types of financing from these financial institutions exist, but can generally be classified into the following: provision of CER purchases, participation in project financing with CER purchases, and financial support or contributions to remove some CDM barriers. These are illustrated in table 8.4.
Table 8.4. CDM financing

<table>
<thead>
<tr>
<th>Type of financing</th>
<th>Description</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full or partial equity</td>
<td>Financial institution participates and/or government finances the total/partial investment cost</td>
<td>Support from host country’s financial institutions may be provided in the form of technology supply</td>
</tr>
<tr>
<td>Financial contribution</td>
<td>Allocation for financing the CDM-process related costs such as feasibility studies, PDD, other transaction costs, and capacity building</td>
<td>Available as up-front costs and/or grants that will be offset by the CERs generated</td>
</tr>
<tr>
<td>Loan</td>
<td>Provision of loan or lease at concessional rates for investment requirements</td>
<td>Provision is subject to project feasibility assessment: Return is expected from the project as well as from CER purchases. In the project’s financing decision-making process, the institution providing the loan expects the involvement of insurers to reduce risks</td>
</tr>
<tr>
<td>CER purchase agreement</td>
<td>Payment of CERs becomes an additional revenue stream for the project host</td>
<td>The CER purchase agreement can be used by a project developer to obtain conventional project financing and to steer the project through the CDM approval process</td>
</tr>
</tbody>
</table>

Source: A User’s Guide to the CDM, Pembina Institute, February 2003, and authors’ input.

- **CDM project risks from the financial sector’s perspective**

  Despite many benefits for project developers and the environment, as previously mentioned, numerous risks and barriers still need to be taken into account by private financial institutions prior to engagement in deals for CDM projects. Furthermore, CDM projects take place in developing countries where political and legal uncertainties may influence the economic success of a project. For a financial institution, getting involved in any type of project is always a question of how to identify, allocate, and assign the project’s risks. The main risk categories of a CDM project can be categorized as "conventional project risks" common to all projects, "host country political risks," and "additional specific CDM process risks" (3C Ltd. 2005). These are shown in table 8.5.
Table 8.5.  CDM project risks

<table>
<thead>
<tr>
<th>Type of risk</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conventional project risks</td>
<td>Risks that are common to all projects in developing and industrialised countries, with examples: - Exceeding costs: the chosen technology requires costly repairs or the construction of the project is delayed - Market risks: relevant fuel prices increase and the project is no longer economically viable - Counterparty credit risks: technology provider becomes insolvent - Under-performance: non-achievement of design standard efficiency - Currency risk: high inflation levels; - Force majeure: an event beyond the control of the involved parties, such as earthquake, terrorism attack</td>
</tr>
<tr>
<td>Host country political risks</td>
<td>From a financial sector perspective, projects in developing countries are usually regarded as having a higher level of risk than projects in the industrialized world because of the often less-developed legal and political infrastructure, with examples: - Confiscation, expropriation, and nationalization of CDM projects: war(civil), riot, strike, or civil commotion within the CDM host country - Contract repudiation/frustration: a contract is rendered invalid, such as by a state parliament introducing new legislation(^3) - Credit risk: risk of host country insolvency further administrative barriers, such as host country requires various administrative procedures that delay the project</td>
</tr>
<tr>
<td>CDM process risks</td>
<td>Risks that are specific to the generation and sale of CERs: - CDM Executive Board’s non-approval: no registration of the project; process by the Executive Board or an already approved methodology is withdrawn - CDM risk: there may be no CDM beyond 2012 - Monitoring/verification risk: inaccurate monitoring by the designated operational entity - Public consultation risk: non-acceptance of the project by NGOs or local communities - Institutional barriers: the host country’s designated national authority (DNA) is not fully established or not operating properly - CER legal ownership: unclear ownership or sharing of CERs (arrangements among the project owner, buyer, technology provider, etc.)</td>
</tr>
</tbody>
</table>

\(^3\) Under the previous decentralization scheme in Indonesia, many local governments through local parliaments have issued new legislation intended to help increase local government revenues. In some regions, this problem has already been resolved under the new scheme. However, there are still many regions where the local governments have not been active in removing unnecessary legislation.
9. GOVERNMENT INCENTIVES

9.1 General terms

Ordinarily, in the business context, the word “incentives” refers to:

- Alleviation of regulations, restrictions, and duties
- Providing subsidies, tax cuts, or concessions

All investment activities in Indonesia are regulated by:

- Foreign Investment Government Regulation (1967) (PMD)
- Domestic Investment Government Regulation (1968) (PMDN)

As mentioned in chapter 8, few financial and fiscal “bonuses” are available at the moment; however, over the past decade the Indonesian government has created a series of incentives and deregulations aimed at attracting foreign direct investment (FDI). The following incentives have been introduced:

- June 1994. Government Regulation No. 20. The obligation to transfer all shares over 50 percent of the total shares in the business to the Indonesian side was abolished, as was the obligation to transfer shares more than 50 percent to the Indonesian side. The ownership of 100 percent of shares by FDI was approved. The minimum investment amount was abolished, as long as the amount invested is sufficient for the business activity.
- January 1996. The FDI limit on export trading was increased to 100 percent.
- July 1998. The retail sales market was opened to FDI.
- March 1998. General import trading was opened to FDI.
- June 1999. Guidance, Head of BKPM. The establishment of a holding company became available to FDI.
- July 2000. The list of types of business not available to FDI (negative list) was revised.

9.2 Privileges available to FDI

- The customs tax rate is 5 percent on imported equipment and raw materials at the time of starting business operations. At the time of investment expansion (enlargement) it is 30 percent.
- Tax payment reservation

These incentives were introduced mainly for the benefit of production in bonded zones and for temporary imports (for exhibitions, re-import of repaired equipment and machines, etc.). Note that companies that located in bonded zones are called PKBs.

Recently, the government launched the “Investment Campaign on Infrastructure” initiative, which aims to introduce drastic deregulations on investment. Note that (as of January 2005), the investment agency BKPM does not prepare any programs, policies, laws, and regulations for CDM-related investments.
9.3 Incentive policies in the energy sector

Incentive policies for the energy sector related to CDM projects in Indonesia have not yet been fully explored. There are currently only a few regulations that stipulate incentives specific to the energy sector, summarized as follows:

- **Geothermal power plants**: Minister of Finance Decree No. 866/KMK.04/1992 stipulates that imported goods and/or equipment for geothermal power plant construction are exempted from duty on imports.

- **Oil and gas facilities**: Minister of Energy and Mineral Resources Regulation No. 008/2005 provides an incentive for contractors engaged in product sharing contracts (PCSs) that develop marginal oil fields. This incentive is expected to stimulate development to increase national oil production. The incentive offers an additional operational cost recovery of 20 percent on top of the standard cost recovery activities.

- **Small-scale renewable energy projects**: Support for small and medium enterprises to utilize renewable energy resources by developing small-scale power generation is regulated under Minister of Energy and Mineral Resources Decree No. 1122 K/30/MEM/2002 on PSK Tersebar (small-scale renewable energy based projects) and No. 119.K/437/M.PE/1998 on PSKSK (distributed small-scale power plants). PLN has the obligation to purchase power generated by PSK Tersebar in regions covered by the national grid.

- **Energy efficiency in industry and fuel substitutions**: subsidies and soft loans are available under Presidential Decree No. 43/1991 (see chapter 7).

9.4 Incentive policies in the forestry sector

Specific government incentives in the forestry sector are mainly aimed at the Industrial Forest Plantation Program (Hutan Tanaman Industri [HTI]) in the form of reduction of investment loan interest rates, and at forest and land rehabilitation programs in the form of access to credit and financial support of infrastructure development.

The reduction of investment loan interest in HTI development, especially in the use of Reboisation Fund (Dana DR), can result in interest rates being reduced to 0 percent.

According to the decrees jointly issued by the Minister of Forestry and the Minister of Finance (SK Bersama Menteri Kehutanan dan Menteri Keuangan), Number 496/Kpts-II/1994 and Number 533/KMK.017/1994 (1994), the government’s share in the development of industrial forest plantations from the Reforestation Fund (Dana Reboisasi) is limited to a maximum of 65 percent of the total cost of HTI development with an interest rate of 0 percent. The share of an HTI company should be at least 35 percent of the total development cost at a normal commercial interest rate (for example, in 1994 the interest rate was 12%).

According to Government Regulation (Peraturan Pemerintah) No. 35 (2002) concerning the Reforestation Fund (Dana Reboisasi, or DR), the incentives for forest and land rehabilitation are in the form of access to credit, support/donation of seedlings, and support in the development of infrastructure through DR financing.

Other incentives that may accelerate the implementation of CDM projects in the forestry sector are in principle related to the government’s policy to remove the barriers listed in table 9.1 (MOE 2003).
Table 9.1. Potential incentives to remove barriers in the forestry sector

<table>
<thead>
<tr>
<th>Types of activity</th>
<th>Potential barriers (ranked from lowest to highest)</th>
<th>Potential initiatives to remove barriers</th>
</tr>
</thead>
</table>
| Community forests, multi-purpose tree plantations, agroforestry | Access to credit                                   | - Creation of specialized credit programs  
- Collection and dissemination of information on other potential sources of funding |
|                                                        | Competition to other land use                      | Flexibility in market arrangements                                                                     |
|                                                        | Land tenure                                        | - Assistance for project proponents in obtaining good contracts  
- Simplifying the process of land status clearance.                                                     |
|                                                        | Policies and regulations                           | - Political and social support  
- Law enforcement                                                                                     |

Source: NSS CDM Forestry (MoE 2003).
APPENDICES

I. List of Annex I and Annex B Parties

II. List of consolidated and approved methodologies

III. Simplified baseline and monitoring methodologies

IV. CDM energy projects in pipeline in Indonesia

V. Potential CDM projects in Indonesia

VI. CDM energy projects under development in Indonesia

VII. CDM forestry in Indonesia

VIII. Table summary of project pipelines for CDM-LULUCF project activities

IX. Contact list

X. Minister of Forestry Regulation No. 14/2004

XI. Letter of endorsement

XII. Negative list based on Presidential Decree 96/2000 jo.118/2000

XIII. List of business fields closed to investment

XIV. List of business fields open to investment

XV. List of business fields open to investment under certain conditions

XVI. Glossary
## Appendix I. List of Annex I and Annex B Parties*

<table>
<thead>
<tr>
<th>Party</th>
<th>Target**</th>
<th>1990 emissions (million tCO2e)</th>
<th>Party</th>
<th>Target**</th>
<th>1990 emissions (million tCO2e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portugal</td>
<td>27.0%</td>
<td>61.4</td>
<td>Russian Federation</td>
<td>0%</td>
<td>3,040.1</td>
</tr>
<tr>
<td>Greece</td>
<td>25.0%</td>
<td>104.9</td>
<td>Ukraine</td>
<td>0%</td>
<td>919.2</td>
</tr>
<tr>
<td>Spain</td>
<td>15.0%</td>
<td>287.6</td>
<td>Poland</td>
<td>-6.0%</td>
<td>564.4</td>
</tr>
<tr>
<td>Ireland</td>
<td>13.0%</td>
<td>53.2</td>
<td>Romania</td>
<td>-8.0%</td>
<td>264.3</td>
</tr>
<tr>
<td>Sweden</td>
<td>4.0%</td>
<td>72.8</td>
<td>Czech Republic</td>
<td>-8.0%</td>
<td>192.0</td>
</tr>
<tr>
<td>Finland</td>
<td>0.0%</td>
<td>77.2</td>
<td>Bulgaria</td>
<td>-8.0%</td>
<td>157.1</td>
</tr>
<tr>
<td>France</td>
<td>0.0%</td>
<td>568.2</td>
<td>Hungary</td>
<td>-6.0%</td>
<td>101.6</td>
</tr>
<tr>
<td>Netherlands</td>
<td>-6.0%</td>
<td>210.0</td>
<td>Slovakia</td>
<td>-8.0%</td>
<td>72.2</td>
</tr>
<tr>
<td>Italy</td>
<td>-6.5%</td>
<td>508.6</td>
<td>Lithuania</td>
<td>-8.0%</td>
<td>51.0</td>
</tr>
<tr>
<td>Belgium</td>
<td>-7.5%</td>
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<td>Estonia</td>
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<td>43.5</td>
</tr>
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<td>United Kingdom</td>
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<td>744.1</td>
<td>Latvia</td>
<td>-8.0%</td>
<td>29.0</td>
</tr>
<tr>
<td>Austria</td>
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<td>78.1</td>
<td>Slovenia</td>
<td>-8.0%</td>
<td>20.2</td>
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<tr>
<td>Denmark</td>
<td>-21.0%</td>
<td>69.2</td>
<td>Croatia***</td>
<td>-5.0%</td>
<td>32.0</td>
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<tr>
<td>Germany</td>
<td>-21.0%</td>
<td>1,213.5</td>
<td>Belarus***</td>
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<td>Luxembourg</td>
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<td>13.4</td>
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<tr>
<td>EU</td>
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<td>4,225.1</td>
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</tr>
<tr>
<td><strong>Other Parties</strong></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Iceland</td>
<td>10.0%</td>
<td>2.8</td>
<td>Japan</td>
<td>-6.0%</td>
<td>1,187.1</td>
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<tr>
<td>Australia***</td>
<td>8.0%</td>
<td>425.2</td>
<td>United States***</td>
<td>-7.0%</td>
<td>6,139.6</td>
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<tr>
<td>Norway</td>
<td>1.0%</td>
<td>52.0</td>
<td>Switzerland</td>
<td>-8.0%</td>
<td>53.1</td>
</tr>
<tr>
<td>New Zealand</td>
<td>0%</td>
<td>61.8</td>
<td>Liechtenstein</td>
<td>-8.0%</td>
<td>0.2</td>
</tr>
<tr>
<td>Canada</td>
<td>-6.0%</td>
<td>607.6</td>
<td>Monaco***</td>
<td>-8.0%</td>
<td>0.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Turkey***</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: MoE, Japan, and IGES 2005.

Note: * Croatia, Slovenia, Liechtenstein, and Monaco have GHG emissions reduction targets, but they are not Annex I Parties to the UNFCCC.

**The target is the percentage amount of GHG emissions to be reduced from the 1990 level.

***Countries that have not ratified the Kyoto Protocol as of March 2005.

****Some Parties of the EU’s Economies in Transition do not have their base year for GHG emissions set as 1990, such as Bulgaria (base year is 1968), Hungary (1985–87 average), Poland (1988), Romania (1987), and Slovenia (1986).
# Appendix II. List of consolidated and approved methodologies

<table>
<thead>
<tr>
<th>Methodology number</th>
<th>Methodology title (including baseline and monitoring methodologies)</th>
<th>Sectoral scope</th>
<th>Consolidated sources or approval history of methodologies</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACM0001</td>
<td>Consolidated methodology for landfill gas project activities. (The additionality of the project activity shall be demonstrated and assessed using the tool for the demonstration and assessment of additionality.)</td>
<td>13</td>
<td>AM0002 AM0003 AM0009 AM0010 AM0012</td>
</tr>
<tr>
<td>ACM0002</td>
<td>Consolidated methodology for grid-connected electricity generation from renewable sources. (The additionality of the project activity shall be demonstrated and assessed using the tool for the demonstration and assessment of additionality.)</td>
<td>1</td>
<td>NM0001-rev NM0002-rev NM0003-rev NM0004-rev NM0005-rev</td>
</tr>
<tr>
<td>ACM0003</td>
<td>Emissions reduction through partial substitution of fossil fuels with alternative fuels in cement manufacture</td>
<td>4</td>
<td>NM0004-rev NM0008-rev</td>
</tr>
<tr>
<td>AM0001</td>
<td>Incineration of HFC-23 waste streams</td>
<td>11</td>
<td>NM0007-rev</td>
</tr>
<tr>
<td>AM0002</td>
<td>Greenhouse gas emission reductions through landfill gas capture and flaring where the baseline is established by a public concession contract</td>
<td>13</td>
<td>NM0004-rev</td>
</tr>
<tr>
<td>AM0003</td>
<td>Simplified financial analysis for landfill gas capture projects</td>
<td>13</td>
<td>NM0005-rev</td>
</tr>
<tr>
<td>AM0004</td>
<td>Grid-connected biomass power generation that avoids uncontrolled burning of biomass</td>
<td>1</td>
<td>NM0007-rev</td>
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<tr>
<td>AM0005</td>
<td>Small grid-connected zero-emissions renewable electricity generation</td>
<td>1</td>
<td>NM0007-rev</td>
</tr>
<tr>
<td>AM0006</td>
<td>GHG emission reductions from manure management systems</td>
<td>13, 15</td>
<td>NM0022-rev</td>
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<tr>
<td>AM0007</td>
<td>Analysis of the least-cost fuel option for seasonally-operating</td>
<td>1, 4</td>
<td>NM0007-rev</td>
</tr>
<tr>
<td>AM0008</td>
<td>Industrial fuel switching from coal and petroleum fuels to natural gas without extension of capacity and lifetime of the facility</td>
<td>4</td>
<td>NM0016-rev</td>
</tr>
<tr>
<td>AM0009</td>
<td>Recovery and utilization of gas from oil wells that would otherwise be flared</td>
<td>10</td>
<td>NM0026-rev</td>
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<tr>
<td>AM0010</td>
<td>Landfill gas capture and electricity generation projects where landfill gas capture is not mandated by law</td>
<td>1, 13</td>
<td>NM0010-rev</td>
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<tr>
<td>AM0011</td>
<td>Landfill gas recovery with electricity generation and no capture or destruction of methane in the baseline scenario</td>
<td>13</td>
<td>NM0021-rev</td>
</tr>
<tr>
<td>AM0012</td>
<td>Biomethanation of municipal solid waste in India, using compliance with MSW rules</td>
<td>13</td>
<td>NM0032-rev</td>
</tr>
<tr>
<td>AM0013</td>
<td>Forced methane extraction from organic wastewater treatment plants for grid-connected electricity supply</td>
<td>13</td>
<td>NM0039-rev NM0045</td>
</tr>
<tr>
<td>AM0014</td>
<td>Natural gas-based package cogeneration</td>
<td>1, 4</td>
<td>NM0018-rev</td>
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<tr>
<td>Methodology number</td>
<td>Methodology title (including baseline and monitoring methodologies)</td>
<td>Sectoral scope</td>
<td>Consolidated sources or approval history of methodologies</td>
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<tr>
<td>--------------------</td>
<td>---------------------------------------------------------------------</td>
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<td>--------------------------------------------------------</td>
</tr>
<tr>
<td>AM0015</td>
<td>Bagasse-based cogeneration connected to an electricity grid. (The additionality of the project activity shall be demonstrated and assessed using the tool for the demonstration and assessment of additionality.)</td>
<td>1</td>
<td>NM0001-rev</td>
</tr>
<tr>
<td>AM0016</td>
<td>Greenhouse gas mitigation from improved animal waste management systems in confined animal feeding operations</td>
<td>13, 15</td>
<td>NM0034-rev2</td>
</tr>
<tr>
<td>AM0017</td>
<td>Steam system efficiency improvements by replacing steam traps and returning condensate</td>
<td>3</td>
<td>NM0017-rev</td>
</tr>
<tr>
<td>AM0018</td>
<td>Steam optimization systems. (The additionality of the project activity shall be demonstrated and assessed using the tool for the demonstration and assessment of additionality.)</td>
<td>3</td>
<td>NM0037-rev</td>
</tr>
<tr>
<td>AM0019</td>
<td>Renewable energy project activities replacing part of the electricity production of one single fossil-fuel-fired power plant that stands alone or supplies electricity to a grid, excluding biomass projects. (The additionality of the project activity shall be demonstrated and assessed using the tool for the demonstration and assessment of additionality.)</td>
<td>1</td>
<td>NM0053</td>
</tr>
<tr>
<td>AM0020</td>
<td>Baseline methodology for water pumping efficiency improvements. (The additionality of the project activity shall be demonstrated and assessed using the tool for the demonstration and assessment of additionality.)</td>
<td>3</td>
<td>NM0042-rev</td>
</tr>
<tr>
<td>AM0021</td>
<td>Baseline methodology for decomposition of N₂O from existing adipic acid production plants</td>
<td>5</td>
<td>NM0061</td>
</tr>
<tr>
<td>AM0022</td>
<td>Avoided wastewater and on-site energy use emissions in the industrial sector</td>
<td>13</td>
<td>NM0041-rev2</td>
</tr>
</tbody>
</table>

Source: UNFCCC 2005b.
### Appendix III. Simplified baseline and monitoring methodologies

<table>
<thead>
<tr>
<th>Type I. Renewable energy projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMS-I.A. Electricity generation by the user</td>
</tr>
<tr>
<td>AMS-I.B. Mechanical energy for the user</td>
</tr>
<tr>
<td>AMS-I.C. Thermal energy for the user</td>
</tr>
<tr>
<td>AMS-I.D. Renewable electricity generation for a grid</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type II. Energy-efficiency improvement projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMS-II.A. Supply side energy efficiency improvements - transmission and distribution</td>
</tr>
<tr>
<td>AMS-II.B. Supply side energy efficiency improvements - generation</td>
</tr>
<tr>
<td>AMS-II.C. Demand-side energy efficiency programmes for specific technologies</td>
</tr>
<tr>
<td>AMS-II.D. Energy efficiency and fuel switching measures for industrial facilities</td>
</tr>
<tr>
<td>AMS-II.E. Energy efficiency and fuel switching measures for buildings</td>
</tr>
<tr>
<td>AMS-II.F. Energy efficiency and fuel switching measures for agricultural facilities and activities</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type III. Other project activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMS-III.A. Agriculture</td>
</tr>
<tr>
<td>AMS-III.B. Switching fossil fuels</td>
</tr>
<tr>
<td>AMS-III.C. Emission reductions by low-greenhouse gas emitting vehicles</td>
</tr>
<tr>
<td>AMS-III.D. Methane recovery</td>
</tr>
<tr>
<td>AMS-III.E. Avoidance of methane production from biomass decay through controlled combustion</td>
</tr>
</tbody>
</table>

*Source: UNFCCC 2005c.*
### Appendix IV. CDM energy projects in pipeline in Indonesia

<table>
<thead>
<tr>
<th>No.</th>
<th>Project name/description</th>
<th>Location</th>
<th>Project developer</th>
<th>Potential CERs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tambali Hydropower Project, 5 x 5 MWe</td>
<td>Kolaka, South East Sulawesi</td>
<td>PT. Bukaka</td>
<td>70,000–100,000 ton/yr CO₂</td>
</tr>
<tr>
<td>2</td>
<td>Utilization of palm oil mill effluent to avoid CH₄ and CO₂ emissions</td>
<td>North Bengkulu</td>
<td>PT. Agricinal</td>
<td>31,469 tonnes/yr</td>
</tr>
<tr>
<td>3</td>
<td>Rice husk, 3 MW</td>
<td>Metro, Lampung</td>
<td>PT Lunto Bioenergi Prima</td>
<td>30,000 tCO₂/yr</td>
</tr>
<tr>
<td>4</td>
<td>Bangkinang palm oil waste to energy</td>
<td>Bangkinang, Riau</td>
<td>PT Lunto Bioenergi Prima</td>
<td>Approx. 70,000 tCO₂/yr</td>
</tr>
<tr>
<td>5</td>
<td>Wood-waste biomass to electricity for a furniture workshop (400 kW)</td>
<td>Bandung, West Java, Indonesia</td>
<td>PT Gikoko Kogyo, Indonesia</td>
<td>1,900 tCO₂/year</td>
</tr>
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</table>
## Appendix V. Potential CDM projects in Indonesia (as of September 16, 2004)

<table>
<thead>
<tr>
<th>#</th>
<th>Project name/description</th>
<th>Estimate of GHG abated/year (tonnes)</th>
<th>Name</th>
<th>Institution/company</th>
<th>Title</th>
<th>Contact information</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The Outer Islands Project</td>
<td>1,730,343</td>
<td>Andy Purnama</td>
<td>PT. PLN (Persero)</td>
<td></td>
<td>Jl. Trunojoyo Ml/135 Kebayoran Baru Jakarta Selatan 726-1875, 726-1122, 726-2234; <a href="mailto:apurnama@pln.co.id">apurnama@pln.co.id</a></td>
</tr>
<tr>
<td>2</td>
<td>Kamojang Geothermal Unit IV, 60 MWe</td>
<td>454,000</td>
<td>Bambang Sulistyo</td>
<td>PERTAMINA</td>
<td>Safety, Health and Environmental Manager</td>
<td>Gd. Kwarnas Lt. 5 Jl. Medan Merdeka Timur 6 Jakarta 10110 352-1563, 352-1549; 0811914783; <a href="mailto:bsulistyo@pertamina.co.id">bsulistyo@pertamina.co.id</a></td>
</tr>
<tr>
<td>4</td>
<td>Darajat Unit 3 Geothermal Power Project</td>
<td>552,913</td>
<td>Dwita Prihantono</td>
<td>AMOSEAS Indonesia</td>
<td>Health, Environment and Safety</td>
<td>Sarana Jaya Building, 1st Fl. Jl. Budi Kemuliaan I No. 1 Jakarta 10110; [62-21] 351-2141; <a href="mailto:dwsu@ptcpi.com">dwsu@ptcpi.com</a></td>
</tr>
<tr>
<td>5</td>
<td>Sustainable cement production</td>
<td>1,000,000</td>
<td>Gunawan Purwadi</td>
<td>PT. Indocement</td>
<td>General Manager of Operations</td>
<td>Jl. Mayor Oning Jayaatmaja Citereup Bogor 16810; [62-21] 875-5785; <a href="mailto:gunawan@indocement.co.id">gunawan@indocement.co.id</a></td>
</tr>
<tr>
<td>6</td>
<td>Combined Cycled Gas Turbine Tanjung Priok (611 MW)</td>
<td>1,092,203</td>
<td>Harjanti Kadri</td>
<td>PT. Indonesia Power</td>
<td>Senior Manager of Environment &amp; Insurance</td>
<td>Jl. Jend. Gatot Subroto Kav. 18 Jakarta 12950; [62-21] 525-666 x.2202; <a href="mailto:harjanti.kadri@indonesia.power.co.id">harjanti.kadri@indonesia.power.co.id</a></td>
</tr>
<tr>
<td>7</td>
<td>Bundling Small Hydro in Tea Estate</td>
<td>1,400</td>
<td>Iman Soeriaatmaja</td>
<td>PT. Chakra</td>
<td>Business Development Manager</td>
<td>Jl. Pasirkaliki No. 145 Bandung 40173; [62-22] 603-2070; <a href="mailto:imann@yahoo.com">imann@yahoo.com</a></td>
</tr>
<tr>
<td>8</td>
<td>3-MW Rice Husk Power Plant, Lampung, Sumatra, Indonesia</td>
<td>26,873</td>
<td>Iwan Sutanto</td>
<td>PT. Lunto BioEnergi Prima</td>
<td>Director</td>
<td>Jl. Senen Raya 135-137, Jakarta 0811 – 155647; <a href="mailto:lpm@centrin.net.id">lpm@centrin.net.id</a></td>
</tr>
<tr>
<td>9</td>
<td>Geothermal energy conversion to electricity, Dieng, Wonosobo</td>
<td>940,000</td>
<td>Samsudin Warsa</td>
<td>PT. Geo Dipa Energi</td>
<td>Presiden Direktur</td>
<td>Jl. Karawitan No. 32 Bandung 40264; 022-731-3375 ps 306</td>
</tr>
<tr>
<td></td>
<td>Description</td>
<td>Name</td>
<td>Company/Position</td>
<td>Contact Details</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>------------------------------------------------------------------------------</td>
<td>--------------</td>
<td>---------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Energy efficiency on steel making plant ladle and tundish heating</td>
<td>Satya Graha</td>
<td>PT. Krakatau Steel, Direktur Perencanaan dan Teknologi</td>
<td>Jl. Industri No. 5 PO. Box 14 Cilegon 42435 [0254] 371 685/095; 0812 997 9757 [0254] 371 625; 398 814</td>
<td></td>
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</tr>
<tr>
<td>12</td>
<td>Methane capturing from POME for generating electricity through fuel cells</td>
<td>Tony Liwang</td>
<td>PT. Smart, Group Sinar Mas, Vice President</td>
<td>Jalan Teuku Umar 19 Pekanbaru, Riau 28112 0761-32986 <a href="mailto:liwang@cbn.net.id">liwang@cbn.net.id</a></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix VI. CDM energy projects under development in Indonesia (YBUL 2003)

1. Geothermal (about 6 Mt/yr)
   a. Komajang IV, West Java, 1x60 MWe: 450,000 t/y
   b. Lahendong II, III, North Sulawesi, 2x20 MWe: 260,000 t/y
   c. Dieng II, III, Central Java, 2x60 MWe: 670,000 t/y
   d. Patuha I, II, West Java, 2x60 MWe: 850,000 MW/yr
   e. Sibayak I, North Sumatra, 1x10 Mwe: 60,000 MW/yr
   f. Ulubelu I, II, Lampung: 2x55 Mwe: 780,000 t/y
   g. Lumut Balai I, II, Lampung: 2x55 Mwe: 780,000 t/y

2. Waste to Energy (about 0.6 Mt/yr)
   a. Municipal solid waste to energy (Malang): 17,000 t/y. PT Bioenergy Surya Persada and YCBI
   b. MSW to energy (Surabaya): PT. Bioenergi Surya Persada and YCBI: 30,000 t/y
   c. MSW to Energy (Tangerang): Ministry of Public Works (Dinas Kebersihan): Tangerang
   d. MSW to Energy (Bali), PT. Navigat Organik Energi Indonesia, 2x10 MW: 500,000 t/y

3. Biomass-based (about 0.5–1 Mt/yr)
   a. Methane capture I Cassava Biothanol production: 250,000 t/y, PT Unitrada
   b. Methane capture in Tapioca Industry in Lampung: 80,000 t/y, PT Unitrada
   c. 22 MW Rice Husk Power Plant in Bali: 80,000–300,000 t/y, Byun & Co.
   d. Methane extraction from palm oil mill effluent (North Sumatra): 30,000–100,000 t/y, PT Multimas Nabati Asahan.
   e. Rice Husk Power Plant, Lampung: 3 Mwe, PT. Lunto Bioenergi Prima, 20,869–35,887 t/y

4. Holcem – Cement Production (World Bank)

5. Microhydro (less than 0.1 Mt/yr)
   a. Wlingi dam, Tulung Agung, East Java (3x0.12) MWe: 2,475 t/y
   b. Ladoyo-2, Blitar, East Java, 10 MWe: 51,480 t/y
   c. Bundling small hydroenergy in tea estate, West Java: 0.04 Mwe, KPB Chakra: 1,400 t/y

6. Gas Turbine
   a. Gas turbine power plant combined cycle Tanjung Priok, Jakarta, 720 MWe

7. Biomass (About 0.3–0.4 Mt/yr)
   a. Waste of crude palm oil power plant, Pangkalan Brandan, South Sumatra, 10.3 MWe, PT. Lunto Bioenergi Prima. 76,700–122,139 t/y
   b. Lampung Bagasse Power Plant, BPPT
   c. Solid waste power plant utilization bioeremediation, PT. Rekayasa Sumber Daya Hayati, Jakarta, 2 Mt, up to 2000 Mt.
   d. Utilization of biomass for co-generation power plant for crude palm plantation in Indragiri, Riau, PT Sinar Mas Agro Resource & Technology (SMART) Tbk., 86,640
### Appendix VII. CDM forestry in Indonesia

Brief description of project portfolios for CDM-LULUCF project activities (quoted mainly from NSS CDM Forestry [Moe 2003] and other project development capacity building activities in the region).

1. **West Sumatera (Sumbar) Province**

<table>
<thead>
<tr>
<th>Project title #1</th>
<th>Rehabilitation of grassland (<em>padang alang-alang</em>) through industrial timber plantation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project location</td>
<td>Pasaman District</td>
</tr>
<tr>
<td>Potential CDM-eligible land</td>
<td>237,000 ha</td>
</tr>
<tr>
<td>Total area proposed for the project</td>
<td>36,700 ha</td>
</tr>
<tr>
<td>Current land use</td>
<td>Grass land with total biomass of about 10–15 tonnes per ha</td>
</tr>
<tr>
<td>Land ownership</td>
<td>Mostly <em>adat</em> land (community lands)</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>Pass by Trans Sumatra Highway</td>
</tr>
<tr>
<td>Population density</td>
<td>66 people per km²</td>
</tr>
<tr>
<td>Potential species</td>
<td>Preferred species are mahogany, surian (<em>Toona sureni</em>) for hard wood production or fast growing species for pulp/paper industry</td>
</tr>
<tr>
<td>Rotation</td>
<td>10 years for fast-growing species and 20–30 years for slow-growing species</td>
</tr>
<tr>
<td>Mean annual increment</td>
<td>8–15 m³/ha/yr for fast growing species and 3–8 m³/ha/yr</td>
</tr>
<tr>
<td>Fire risks</td>
<td>Medium</td>
</tr>
<tr>
<td>Proponents of the projects</td>
<td>Local communities in collaboration with private companies</td>
</tr>
<tr>
<td>Role of local government</td>
<td>Facilitate the process of making agreement and project development</td>
</tr>
<tr>
<td>Statement of interest</td>
<td>Community is willing to participate in the program as long as the process is transparent</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project title #2</th>
<th>Reforestation of degraded lands in Singkarak Lake watershed for carbon sequestration, soil water conservation, and economic improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project location</td>
<td>Critical land surrounding the Singkarak Lake in Solok and Tanah Datar districts. Annual rainfall in surrounding Singkarak Lake is between 1,661 and 1,855 mm, with three dry-months (dry month is a month with rainfall of less than 100 mm), i.e., June, July, and August.</td>
</tr>
<tr>
<td>Potential CDM-eligible land in the two districts</td>
<td>82,000 ha</td>
</tr>
<tr>
<td>Total area proposed for the project</td>
<td>18,000 ha</td>
</tr>
<tr>
<td>Current land use</td>
<td>Grassland and bare land</td>
</tr>
<tr>
<td>Land ownership</td>
<td>Mostly community land (<em>adat</em> land)</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>Good road system</td>
</tr>
<tr>
<td>Population density</td>
<td>71 people per km²</td>
</tr>
<tr>
<td>Potential species</td>
<td>- Lowland and foothills of the northern part of the lake with relatively high precipitation. The plant species suitable are: coffee, chocolate, cinnamon, nilam, pepper, teak, mahoni, meranti, and <em>Acacia mangium</em>.</td>
</tr>
</tbody>
</table>
CDM Country Guide for India

- Foothills of the southern and eastern part with a relatively dry area. The plant species suitable are: candle nuts, jambu mente, melinjo, pinang, pepper, teak, Acacia mangium, mahoni, manggoostin, and durian.
- Foothill of the western part with relatively high precipitation. The plant species suitable are: coffee, clove, pala, melinjo, vanili, pepper, aren, teak, mahoni, meranti, cinnamon, durian, sawo, and mangga.

Rotation
- 40 years for fruit trees, 10 years for fast growing species, and 30 years for slow growing species

Mean annual increment
- 2–3 tonnes C/ha/yr for fruit-tree based agroforest, 4–7 tC/ha/yr for fast growing species, and 2–5 tC/ha/yr for slow growing species

Fire risks
- Low

Proponents of the projects
- Village government and traditional/custom institutions

Role of local government
- Facilitate the process of making agreements and project development. At present, a project called RUPES (Rewarding Upland Poor for Environmental Services) is underway. The project is to assist the community to develop local institutional system for environmental service reward distribution.

Statement of interest
- Local government, head of Nagaris, surrounding Singkarak Lake, and community leaders have signed an agreement to work together to accelerate the rehabilitation of the lake.

Local NGOs
- There are NGOs working at the site with the community in establishing a program

2. South Sumatera (Sumsel) Province

Project title #3
Reforesting abandoned “transmigrant” land through industrial timber plantation development

Project location
- Lahat District. Annual rainfall is between 1,500 and 2,500 mm with eight dry months (April–November) and four wet months (December–March). Monthly rainfalls during dry months are between 92 and 187 mm, while between 200 and 278 mm during wet months. Number of rainy days in dry months is between 6–13 days and in wet months between 10–25 days. Maximum temperature ranges between 29.2°C and 33.8°C, and minimum temperature between 22.8°C and 23.2°C. Main soil types area alluvial, latosol, and podsolic. Organic contents and permeability is low, and effective soil depth is about 60–90 cm.

Potential CDM-eligible land in the two districts
- 400,000 ha

Total area proposed for the project
- 16,000 ha

Current land use
- Grassland and abandoned land

Land ownership
- Community land (transmigrant land)

Infrastructure
- All villages within the project location are connected by gravel-soil roads.

Population density
- 86 people/km²

Potential species
- Acacia spp.

Rotation
- 6 years

Mean annual increment
- 7 tC/ha/yr

Fire risks
- Medium

Proponents of the projects
- Local community in partnership with an industrial timber company. Company has good experience in developing partnerships with local communities.
Role of local government | Facilitate the process and act as witness during the signing of the land-use agreement between the farmers (transmigrants) and the company.
---|---
Statement of interest | Local communities are willing to share their land with the company to be used for industrial timber plantation with the benefits of a sharing system.
Local NGOs | The company has developed a network with NGOs, particularly in assisting the company in implementing community development programs. The NGOs involved are Yayasan Kaffah, Hikmah Cooperative, and Pondok Pesantren Raudhatul Ulum.

3. Lampung Province

<table>
<thead>
<tr>
<th>Project title # 4</th>
<th>Reforesting degraded land using fruit-tree based agroforest system</th>
</tr>
</thead>
</table>
| Project location | West Lampung District  
- Annual rainfall ranges between 1,500–2,100 mm. Months with rainfall of less than 100 mm last between 2–5 months (between May to October) |
| Potential CDM-eligible land at district | 95,000 ha |
| Total area proposed for the project | 3,500 ha |
| Current land use | Shrubs/thickets (bush) and dry grassland with annual growth rate of less than 0.5 tC/ha/yr |
| Land ownership | Community lands |
| Infrastructure | Pass by the Trans Sumatera Highway |
| Population density | 84 people per km² |
| Potential species | Durian, nangka, cempedak, kemiri, pinang |
| Rotation | 40 years |
| Mean annual increment | 2–3 tC/ha/yr |
| Fire risks | Low |
| Proponents of the projects | Local community in collaboration with a local NGO |
| Role of local government | Facilitate the process |
| Statement of interest | — |
| Local NGO | Lampung is one of the working areas of the ICRAF. A number of agroforestry projects as an alternative to slash-and-burn have been tested. |

4. Jambi Province

<table>
<thead>
<tr>
<th>Project title # 5</th>
<th>Reforesting an abandoned wetland at Rantau Rasau</th>
</tr>
</thead>
</table>
| Project location | Tanjung Jabung Timur, Jambi Province.  
- Annual rainfall ranges between 2,200 and 3,000 mm. Months with rainfall of less than 100 mm occur for three months (July–September) |
<p>| Potential CDM-eligible land at district | 240,000 ha |
| Total area proposed for the project | 1,000 ha of abandoned wetland (organosol) since the 1970s at Rantau Rasau, Tanjung Jabung Timur |
| Current land use | Shrubs-thickets (bush) with a biomass of about 5 tC/ha. |
| Land ownership | Community lands |
| Transportation infrastructure | Jambi can be reached by air from Jakarta within one hour, while the project location can be reached by car in about two hours. |</p>
<table>
<thead>
<tr>
<th>Population density</th>
<th>35 people per km(^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential species</td>
<td>Acacia spp.</td>
</tr>
<tr>
<td>Rotation</td>
<td>10 years</td>
</tr>
<tr>
<td>Mean annual increment</td>
<td>2–4 tC/ha/yr</td>
</tr>
<tr>
<td>Fire risks</td>
<td>Low</td>
</tr>
<tr>
<td>Proponents of the projects</td>
<td>Local community in partnership with an industrial timber company. Company has good experience in developing partnerships with the local community.</td>
</tr>
<tr>
<td>Role of local government</td>
<td>Facilitate the process and act as witness during the signing of the land-use agreement between communities and the company</td>
</tr>
<tr>
<td>Statement of interest</td>
<td>Local communities are willing to share their land with the company to be used for industrial timber plantation in a benefits-sharing system.</td>
</tr>
<tr>
<td>Local NGOs</td>
<td>The company has developed a network with NGOs, particularly in assisting the company in implementing community development programs, such as training on use of a cooperative system. The NGOs involved are <em>Elang Gunung</em> (ELGUN) and PALEM.</td>
</tr>
</tbody>
</table>

### 5. South Kalimantan (Kalsel) Province

<table>
<thead>
<tr>
<th>Project title # 6</th>
<th>Reoresting degraded land with a rubber-based agroforest and timber plantation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project location</td>
<td>Banjar Baru District</td>
</tr>
<tr>
<td></td>
<td>- Annual rainfall ranges between 1,900–2,500 mm. Months with rainfall of less than 100 mm last less than four months (between July and October)</td>
</tr>
<tr>
<td>Potential CDM-eligible land in the district</td>
<td>142,000 ha</td>
</tr>
<tr>
<td>Total area proposed for the project</td>
<td>15,000 ha</td>
</tr>
<tr>
<td>Current land use</td>
<td>Dry grassland with annual growth rate of less than 0.5 tC/ha/yr.</td>
</tr>
<tr>
<td>Land ownership</td>
<td>State lands</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>Pass by the Trans Sumatera Highway</td>
</tr>
<tr>
<td>Population density</td>
<td>83 people per km(^2)</td>
</tr>
<tr>
<td>Potential species</td>
<td>50% with Meranti and 50% with rubber</td>
</tr>
<tr>
<td>Rotation</td>
<td>30–40 years</td>
</tr>
<tr>
<td>Mean annual increment</td>
<td>3–5 tC/ha/yr</td>
</tr>
<tr>
<td>Fire risks</td>
<td>High</td>
</tr>
<tr>
<td>Proponents of the projects</td>
<td>Forest office in collaboration with local NGOs and the local community</td>
</tr>
<tr>
<td>Role of local government</td>
<td>Involved in designing and implementing the A/R CDM project</td>
</tr>
<tr>
<td>Statement of interest</td>
<td>—</td>
</tr>
<tr>
<td>Local NGOs</td>
<td>—</td>
</tr>
</tbody>
</table>

### 6. South-East Sulawesi (Sultra) Province

<table>
<thead>
<tr>
<th>Project title # 7</th>
<th>Reoresting degraded land and grassland surrounding Rawa Aopa Watumohai National Park</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project location</td>
<td>Rawa Aopa Watumohai National Park, Bombana and Konawe Selatan districts</td>
</tr>
<tr>
<td></td>
<td>- Annual rainfall ranges between 1,500 and 2,000 mm</td>
</tr>
<tr>
<td>Potential CDM-eligible land at district</td>
<td>About 700,000 ha</td>
</tr>
<tr>
<td>Total area proposed for the project</td>
<td>43,000 ha</td>
</tr>
<tr>
<td>------------------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>Current land use</td>
<td>Dry farming and grassland with a biomass of about 5 tC/ha.</td>
</tr>
<tr>
<td>Land ownership</td>
<td>Community land</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>Nearby villages are connected by soil/gravel road or asphalt</td>
</tr>
<tr>
<td>Population density</td>
<td>About 50 people per km²</td>
</tr>
<tr>
<td>Potential species</td>
<td>Cashew nut base agroforest Grassland 20,000</td>
</tr>
<tr>
<td></td>
<td>Cacao-based agroforest with shade trees Dry farming 10,000</td>
</tr>
<tr>
<td></td>
<td>Fruit tree agroforest Grassland 5,000</td>
</tr>
<tr>
<td></td>
<td>Multi-purpose trees species Dry farming 8,000</td>
</tr>
<tr>
<td></td>
<td>Total 43,000</td>
</tr>
<tr>
<td>Rotation</td>
<td>30–40 years</td>
</tr>
<tr>
<td>Mean annual increment</td>
<td>3–5 tC/ha/yr</td>
</tr>
<tr>
<td>Fire risks</td>
<td>Medium</td>
</tr>
<tr>
<td>Proponents of the projects</td>
<td>Local community in partnership with NGOs</td>
</tr>
<tr>
<td>Role of local government</td>
<td>Local government will be involved in the process of preparing the project design</td>
</tr>
<tr>
<td>Statement of interest</td>
<td>Rehabilitation of degraded land has been one of the development priorities of the local government</td>
</tr>
<tr>
<td>Local NGOs</td>
<td>A good network between communities, local government, and NGOs has been established. CARE International has been working with communities for five years.</td>
</tr>
</tbody>
</table>

### 7. Kuningan (West Java) Province

<table>
<thead>
<tr>
<th>Project title # 8</th>
<th>Reforesting degraded land in Kuningan District through community participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project location</td>
<td>Village of Cileuya, Kuningan District</td>
</tr>
<tr>
<td></td>
<td>- Annual rainfall ranges between 2,000 and 4,000 mm</td>
</tr>
<tr>
<td>Potential CDM-eligible land in the district</td>
<td>About 15,721 ha consists of 5,844 ha of bare land, 2,300 ha of wild rangeland or grassland, and 7,577 ha of unproductive land</td>
</tr>
<tr>
<td>Total area proposed for the project</td>
<td>2,500 ha</td>
</tr>
<tr>
<td>Current land use</td>
<td>Bare land, unproductive agriculture land and grassland with a biomass of about 10 tC/ha.</td>
</tr>
<tr>
<td>Land ownership</td>
<td>Community land and state forest land</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>Nearby villages are connected by soil/gravel or asphalt road.</td>
</tr>
<tr>
<td>Population density</td>
<td>About 4,572 people/587.44 ha, or 7 person/ha</td>
</tr>
<tr>
<td>Potential species</td>
<td>- Teak 150 ha/yr</td>
</tr>
<tr>
<td></td>
<td>- Pine 100 ha/yr</td>
</tr>
<tr>
<td></td>
<td>- Annual crops during the first three years period</td>
</tr>
<tr>
<td>Rotation</td>
<td>10–15 years</td>
</tr>
<tr>
<td>Mean annual increment</td>
<td>3–5 tC/ha/yr</td>
</tr>
<tr>
<td>Fire risks</td>
<td>Medium</td>
</tr>
<tr>
<td>Proponents of the projects</td>
<td>Local community in partnership with NGOs</td>
</tr>
<tr>
<td>Role of local government</td>
<td>Local government will be involved in the process of preparing the project design</td>
</tr>
<tr>
<td>Statement of interest</td>
<td>Rehabilitation of degraded land has been one of the development priorities of the local government</td>
</tr>
<tr>
<td>Local NGOs</td>
<td>A good network between communities, local government, and NGOs has been established.</td>
</tr>
</tbody>
</table>
### Appendix VIII. Table summary of project pipelines for CDM-LULUCF project activities (quoted from NSS CDM Forestry [Moe 2003])

<table>
<thead>
<tr>
<th>Description</th>
<th>Tanah Datar</th>
<th>Pasaman</th>
<th>Jambi</th>
<th>Lampung</th>
<th>Bogor</th>
<th>Kuningan</th>
<th>Yogyakarta</th>
<th>South Kalimantan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project proponent</td>
<td>NGOs</td>
<td>Local gov.</td>
<td>Univ.</td>
<td>NGOs</td>
<td>Perhutani</td>
<td>NGOs</td>
<td>Forest office</td>
<td>Forest office</td>
</tr>
<tr>
<td>Project type</td>
<td>Ref (CF)</td>
<td>Ref (CF)</td>
<td>Ref. (CBFM)</td>
<td>Ref (CF)</td>
<td>Ref (CBFM)</td>
<td>Ref (CF)</td>
<td>Ref (CF)</td>
<td>Ref (CF)</td>
</tr>
<tr>
<td>Area (ha)</td>
<td>10,600</td>
<td>36,700</td>
<td>10,000</td>
<td>3,500</td>
<td>600</td>
<td>2,500</td>
<td>5,000</td>
<td>15,000</td>
</tr>
<tr>
<td>Baseline: - Description</td>
<td>Grass</td>
<td>Grass</td>
<td>Shrub-thickets</td>
<td>Grass-thickets</td>
<td>Grass-thickets</td>
<td>Grass-thickets</td>
<td>Grass</td>
<td>Grass</td>
</tr>
<tr>
<td>Stock (tC/ha)</td>
<td>15</td>
<td>15</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Growth (tC/ha/yr)</td>
<td>0.2</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Mitigation potential (tC/ha)</td>
<td>119</td>
<td>119</td>
<td>250</td>
<td>135</td>
<td>307</td>
<td>258</td>
<td>256</td>
<td>119</td>
</tr>
<tr>
<td>Total mitigation (MtC)</td>
<td>1.26</td>
<td>4.37</td>
<td>2.5</td>
<td>0.47</td>
<td>0.18</td>
<td>0.65</td>
<td>1.28</td>
<td>1.79</td>
</tr>
<tr>
<td>Life cycle cost (US$/ha)</td>
<td>265</td>
<td>265</td>
<td>118</td>
<td>338</td>
<td>679</td>
<td>626</td>
<td>373</td>
<td>307</td>
</tr>
<tr>
<td>Project finance (US$ million)</td>
<td>8.46</td>
<td>29.29</td>
<td>1.67</td>
<td>2.68</td>
<td>0.49</td>
<td>2.14</td>
<td>7.40</td>
<td>14.16</td>
</tr>
<tr>
<td>- Existing source¹³</td>
<td>0.48</td>
<td>1.22</td>
<td>0.45</td>
<td>0.79</td>
<td>—</td>
<td>0.56</td>
<td>1.13</td>
<td>3.38</td>
</tr>
<tr>
<td>- Still require</td>
<td>7.98</td>
<td>28.07</td>
<td>1.22</td>
<td>1.89</td>
<td>0.49</td>
<td>1.58</td>
<td>6.27</td>
<td>10.78</td>
</tr>
<tr>
<td>Social/Intangible benefit</td>
<td>Water quality and soil rehabilitation</td>
<td>Increase soil fertility</td>
<td>Increase biodiversity and air quality</td>
<td>Watershed function and air quality</td>
<td>Improved soil fertility</td>
<td>Maintain water quality</td>
<td>Maintain water quality</td>
<td>Water quality, improved soil fertility, air quality</td>
</tr>
</tbody>
</table>
## Appendix IX. Contact list

<table>
<thead>
<tr>
<th>Position/institution</th>
<th>Address</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Government</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deputy Minister for Natural Resources Conservation Improvement and Environmental Degradation Control, Ministry of Environment</td>
<td>Jl. DI Panjaitan Kav.24. Kebon Nanas. Jakarta Timur Ph: 6221-8517164 Fax: 6221-85902521</td>
<td>DNA Chair National Committee for CDM (Komisi Nasional Mekanisme Pembangunan Bersih)</td>
</tr>
<tr>
<td>Special Assistant in Global Environment, Ministry of Environment</td>
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Appendix X. Minister of Forestry Regulation No. 14/2004

Guideline: Validation of land status by head of a district/regency/mayor within the framework of the Clean Development Mechanism

Procedure or stepwise of work in land status validation that will be used as project location are as follows:

1. **Determination of land status.** Determination of land status based on legal documents (Certificate, Girik, HGB/HGU, Business Permit / Ijin usaha, SKT, Customary Right/ hak ulayat dll). The approval should be completed with map of the project location with scale 1:10,000. The information provided should include boundary of candidate site/land and its surrounding situation.

2. **Land cover status.** Information about land cover status is needed to classify the activity into an afforestation or Reforestation project. The land status is determined based on accountable and reliable information that can be in the form of written or verbal stated in legal paper (Berita Acara).

3. **Stakeholder support.** Stakeholder support to the proposed project is given in the form of written, which can be representative from community or related institution.

Based on the verification as given in point form the head of district/mayor/regency may issue the recommendation letter of land validation using the form in appendix VIII.
LETTERHEAD OF HEAD OF DISTRICT/MAYOR/REGENT

Letter of Endorsement

No. ....................

Head of District/Municipality/Regency ......................... declare that land of ...... ha located in village................................................., County/Regency ............................................,..., District............................ that applied on the name of: ............ ......................... (identity of the project developer) is eligible/not eligible to be used as areal for Afforestation/Reforestation in the framework of CDM projects. The boundaries of lands is provided in the attached map.

This letter may be used for the said purpose only.

Town, date, month, year Head of District/Municipal/Regency ......

Signature

(name)
Appendix XII. Negative list based on Presidential Decree 96/2000 jo.118/2000

List of sectors absolutely closed to investment

- **AGRICULTURAL SECTOR**
  1. Cultivation and processing of marijuana and the like
- **MARINE AND FISHERY SECTOR**
  1. Collection and utilization of sponges
- **INDUSTRIAL AND TRADING SECTOR**
  1. Industries producing chemicals harmful to the environment, such as penta chlorophenol, dichloro trichloro ethane (DDT), dieldrin, chlordane, carbon tetra chloride, chlorofluorocarbon (CFC), methyl bromide, methyl chloroform, halon etc.
  2. Industries producing chemicals stipulated in Schedule 1 of the Chemical Weapon Convention (sarin, soman, tabun, mustard, levisite, ricine and saxitoxin)
  3. Industries producing weapons and related components
  4. Industries producing cyclamate and saccharine
  5. Industries producing alcoholic drinks (liquor, wine and drinks containing malt)
  6. Casino and gambling facilities
- **COMMUNICATIONS SECTOR**
  1. Air traffic system providers (ATS providers), ship certification and classification inspections
- **MINING AND ENERGY SECTOR**
  1. Mining of radioactive minerals
Appendix XIII. List of business fields closed to investment in which a part of the share are owned by foreign citizen and/or foreign business entities

- Forestry and plantation sector
  1. Germ plasm cultivation
  2. Concession for natural forests
  3. Contractors in the field of lumbering
- Communication sector
  1. Taxi or bus transportation services
  2. Small-scale sailing
- Trading sector
  1. Trading and trading supporting services, except: Large-scale retailers (malls, supermarkets, department stores, shopping centers), wholesale trading (distributors/wholesalers, exporters and importers), exhibition/convention service providers, quality certification service providers, market research service providers, warehousing services outside seaports, and after-sale services.
- Information sector
  1. Radio and television broadcasting services providers, radio and closed circuit television broadcasting services, and multimedia and printed media.
  2. Motion picture production industry (film production, film technical services, export and import film business, film distributors and motion picture theatre operation).
Appendix XIV. List of business fields open to investment under condition of a joint venture between foreign and domestic capital

1. Building and operation of seaports
2. Electricity production, transmission, and distribution
3. Shipping
4. Processing and provision of potable water for public use
5. Atomic power plants
6. Medical services, including the building and operation of hospitals, medical checkups, clinical laboratories, mental rehabilitation service, public health maintenance security, rent of medical equipment, assistance services for health aid and evacuation of patients under emergency conditions, hospital management services and services for testing, maintenance and repair of medical equipment.
7. Telecommunications
8. Regular/non-regular commercial airliners.
### Appendix XV. List of business fields open to investment under certain conditions

- **Marine and fishery sectors**
  1. Cultivation of fish in fresh waters
     a. Open to foreign investments for freshwater turtles, nila gift, sidat, kodok lembu, fresh water giant shrimps and thillapya sp;
     b. In cooperation with small-scale fishery business
  2. Fishing of demersal fish (big fish, grouper and other sea fish, except ZEEI areas of the Malacca Strait and Arafura sea

- **Industrial sector**
  1. Industries producing wood pulp
     a. raw material obtained from imported chips or guarantee of raw material supplied from industrial timber estates (HTI)
     b. other than sulfonating and/or chlorination (C 12)
  2. Industries producing pulp made of other cellulose fibres or other materials other that sulfonating and chlorination (C 12)
  3. Industries producing chloro-alkali other than those using mercury
  4. Processing of finished/semi-finished goods made from mangrove wood raw material coming from mangrove cultivation
  5. Money printing industry—operational licenses from BOTASUPAL-BAKIN and approval from Bank Indonesia required
  6. Special printing industries (postal stamps, duty stamps, Bank Indonesia negotiable papers, passports, and stamped postal matter—operational licenses from BOTASUPAL-BAKIN required
  7. Milk processing industry (powder and sweetened condensed milk processing (not only repackaging)
  8. Plywood and rotary veneer industries only for Irian Jaya (Papua)
  9. Sawn timber industries
     a. only for the Irian Jaya (Papua)
     b. outside the Irian Jaya (Papua), only using logs from non natural forests
  10. Ethyl alcohol industries—technical grade, being only used as raw materials and auxiliary materials of other industries.
  11. Industries producing raw materials for explosives (ammonium nitrate). Only in cooperation with business entities which have secured a recommendation from the Ministry of Defense
  12. Industries producing explosives and components for industrial (commercial) use
     a. Only in cooperation with business entities which have secured a recommendation from the Ministry of Defense.
     b. Only manufacturing activities, while storage and distribution are executed by companies appointed by the government.
  13. Electricity planning and supervision consulting services—open to foreign investments with the provision that:
    a. PLTA (Hydro power plant) with a capacity above 50 MW
    b. PLTU (steam power plat) with a capacity above 55 MW
    c. PLTP (geothermal power plant) with a capacity above 55 MW
    d. Main electrical relay station with a voltage above 500 kV
    e. Transmission networks with a voltage above 500 kV
  14. Electricity equipment construction, maintenance, installation services, development of technology supporting the supply of electricity and testing of electricity installations. Open to foreign investments with the provision that:
    a. Main electrical relay stations with a voltage above 500 kV
    b. Transmissions networks with a voltage above 500 kV
  15. Petroleum and natural gas drilling services open to foreign investments with the provisions that:
    a. only for offshore drilling.
b. especially for locations outside the Eastern Indonesia Region, must cooperate with national partners operating in a similar business field.

16. Power plant businesses
   a. open to locations outside Java, Bali and Madura
   • Trading sector
     1. Restaurants open to foreign investments with the special provision that they must be located in tourism areas/zones and/or integrated with hotels.
     2. Game services.
     3. Open to foreign investments with the special provision that they must be located in tourism areas/zones and/or integrated with hotels.
Appendix XVI. Glossary

**afforestation.** regreening (*penghijauan*). Planting trees in degraded community lands (critical lands and grasslands), mainly for wood production and energy, while maintaining the environmental benefits of the forest, i.e., soil and water conservation. According to CDM terminology, afforestation is planting trees on land that has not been forested for 50 years or more.

**agroforestry.** community forest. Planting trees in degraded state forest lands carried out by state companies in collaboration with the local community for wood production. Before the trees grow, the community normally uses the land for annual crops.

**AMDAL (analisis mengenai dampak lingkungan).** environmental impact assessment (EIA). The purpose of the EIA report is to identify and assess the environmental impacts associated with its proposed project so that government decision-makers may determine whether the project is acceptable and in the public’s best interest.

**APHI (Asosiasi Pengusaha Hutan Indonesia).** Forestry Association of Indonesia. Represents various forest-based industries.

**APKAS (Asosiasi Pimpinan Kabupaten Seluruh Indonesia).** Association of District Heads of Indonesia.

**A/R CDM.** afforestation/reforestation under the CDM.

**BAPPEDA (badan perencanaan pembangunan daerah).** regional development planning agency (provincial or district offices).

**BAPEDALDA (Badan Pengendalian Dampak Lingkungan Daerah).** Regional Environmental Impact Protection Agency. Relates to the permit and coordination of environmental services project activities.

**BAPPENAS (Badan Perencanaan Pembangunan Nasional).** Ministry of National Development Planning.

**BKPM (Badan Koordinasi Penanaman Modal).** Investment Coordinating Board.

**BPN (Badan Pertanahan Nasional).** National Land Agency.

**Clean Development Mechanism (CDM).** The CDM provides for industrialized countries to implement project activities that reduce emissions in developing countries for certified emission reductions (CERs). The CERs generated by such project activities can assist industrialized countries to meet their emissions targets under the Kyoto Protocol. Such projects are to assist the developing country host parties in achieving sustainable development. The CDM is expected to generate investment in developing countries,
especially from the private sector, and promote the transfer of environmentally friendly technologies.

certified emission reduction (CER). Unit of measurement used towards meeting the reduction of greenhouse gas (GHG) emissions as conducted by a CDM project.

conversion of agriculture land to forest. Agriculture land previously cultivated for annual crops, and at a later point in time converted to perennial crops (rubber, fruit trees).


DEPERINDAG (Departemen Perdagangan dan Industri). Ministry of Trade and Industry.

DEPHUT (Departemen Kehutanan). Ministry of Forestry (MoF).

DEPKEU (Departemen Keuangan). Ministry of Finance.

DEPLU (Departemen Luar Negri). Ministry of Foreign Affairs (MoFA).

DEPTAN (Departemen Pertanian). Ministry of Agriculture.


DKP (Departemen Kelautan dan Perikanan). Ministry of Oceans and Fisheries.

designated national authority (DNA). The national authority that will officially issue the host country approval of a CDM project. Depending on the country’s policy, each country is given the flexibility to develop its own DNA structure and operational procedures, as well as the sustainability development criteria applied to screen CDM projects. Indonesia's DNA is called the National Committee for the Clean Development Mechanism (NCCDM).

DPR (Dewan Perwakilan Rakyat). The House of Representatives. The role of the House is to control and consult in government policy, plans, and budget.

DPRD (Dewan Perwakilan Rakyat Daerah). Regional House of Representatives as a part of regional government element.

DR (dana reboisasi). reforestation fund. Charged to "timber concession holders" and used to finance reforestation, rehabilitation, and its supporting activities. Rehabilitation projects to be financed by DR include reforestation, afforestation, plantation management, enrichment planting, application of conservation techniques through planting and civil engineering techniques in degraded lands and non-productive areas. Rehabilitation supporting activities include forest protection, forest fire management, forest mapping, management of DR, seed development, research and development, education and training, extension, and community development.
enhanced natural regeneration or enrichment planting (ENR). Planting a number of trees species (commercial) in logged-over forests or in highly degraded forests. By regulation, enrichment planting is carried out if the number of seedling is less than 400 per hectare (ha) or the number of saplings is less than 200/ha or the number of poles is less than 75/ha, or if seedlings, saplings, or poles are not evenly distributed. If the number of seedlings is more or equal to 400/ha but not evenly distributed, then the form of enrichment activities will aim at reallocating seedlings. Under this condition it is most likely that in following land definitions under the Kyoto Protocol, many open spots in the area are considered as non-forested.


fluid catalytic cracker (FCC). A key process in refining to increase energy efficiency.

FPK (forum pertemuan khusus). FPK is a specific meeting of Komnas MPB dedicated to discuss the public complaints in a special meeting forum.

GHG. greenhouse gas. Any atmospheric gas responsible for causing global warming and climate change.

HGU (hak guna usaha). building or business permit.

HPH (hak pengusahaan hutan). forest concession holder.

HPHA (hak pengelolaan hutan adat). The right for local community to manage the forest area.

HTI (hutan tanaman industri). forest plantation or timber plantation estate (TPE). Planting trees (normally fast-growing species) in degraded lands (critical lands and grasslands) or depleted forest in state forest lands for wood production.

Integrated Capacity Strengthening for Clean Development Mechanism/Joint Implementation (ICS-CDM/JI). The ICS-CDM/JI programme was launched in October 2003 as one of the several CDM/JI promotion initiatives by the Ministry of the Environment of Japan. The program disseminates information, contributes to the establishment of networks in Japan and the partner countries, and builds capacity to initiate, develop, and implement CDM projects.

IIUPH (iuran ijin usaha pemanfaatan hutan). IIUPH is a levy that a "concession holder" pays to the government when a permit is granted.

IUPHHK-HA (ijin usaha pemanfaatan hasil hutan kayu pada hutan alam). Levy that “forestry concession holder / company” has to pay to the government when the permit to use the timber forest product from natural forest is granted.

IUPHHK-HT (ijin usaha pemanfaatan hasil hutan kayu pada hutan tanaman). Levy that “forestry concession holder / company” has to pay to the government when the permit to use the timber forest product from forest plantation is granted.
IUPJL (Ijin usaha pemanfaatan jasa lingkungan). Under this regulation, “carbon trading” falls under the category of environmental services and is regulated through the issuance of a permit for an environmental service concession.

KADIN (Kamar Dagang dan Industri Indonesia). Indonesian Chambers of Commerce and Industry.

KIMPRASWIL (Permukiman dan Prasarana Wilayah). Ministry of Settlement and Spatial Planning.

Komnas MPB (Komisi Nasional Mekanisme Pembangunan Bersih). In English, this is the National Committee for the Clean Development Mechanism (NCCDM), a government organization established to function as Indonesia’s designated national authority that is responsible for CDM activities, including inter-organizational linkages within Indonesia.

MMER. Ministry of Mineral and Energy Resources.

MoA. Ministry of Agriculture.

MoE. Ministry of Environment.

MoF. Ministry of Finance.

MoFr. Ministry of Forestry.

MPI (Masyarakat Perhutanan Indonesia). Indonesian Forestry Association. An association that represents various forest-based businesses (e.g., HPH and HTI, owned by private and state-owned enterprises).

MPR (Majelis Permusyawaratan Rakyat). People’s Advisory Assembly. It meets every five years in the year following the elections to the House of Representatives (DPR). The principal legislative task of the MPR is to approve a document that establishes policy guidelines for the next five years.

P3TEK (Pusat Penelitian dan Pengembangan Teknologi Energi dan Ketenagalistrikan). Center for Energy and Electricity Technology. P3TEK has defined the sustainable development criteria for energy-related CDM projects in the energy sector.

project design document (PDD). CDM project design document which is necessary to get approval by the national authority (DNA).


private forestry. planting trees in community lands mainly for wood production.
PSDH (provisi sumber daya hutan). A levy that a concession holder pays to the government as compensation for the intrinsic value of forest products taken from state forests. It is charged per cubic meter, with the amount depending on the commercial value of species or species groups. The government periodically updates the tariff for PSDH.

reforestation (reboisasi). planting trees. Planting trees in degraded lands (critical lands and grasslands) of state forest lands, mainly for conservation purposes (e.g., fast or slow growing species without rotation). According to the definition under the CDM, reforestation is planting trees on land that has not been forested since December 31, 1989, or it may be classified as reforestation as long as the land was already degraded (not forested) before January 1, 1990.

reduced impact logging (RIL). Improved silviculture techniques to reduce tree damage during logging. Types of RIL in Indonesia are TPTI and TPTJ.

RTRW (rencana tata ruang wilayah). spatial planning and management of the partial urban area plans (RBWK).

SK MENINVES (surat keputusan menteri investasi). A ministerial decree of the Ministry of Investment.

SKT (surat keterangan tanah). letter of land ownership.

social forestry. agroforestry and multi-purpose tree species plantation. Planting trees (mainly fruit trees) in buffer zones (between state forest lands and community lands). Commonly practiced by local people and further practiced and specialized in transmigration.

substitution of fossil fuel-based energy with biomass energy. Planting trees in degraded lands, gardens, or unproductive lands for fuel wood production or other wood energies such as charcoal, bioelectricity, etc.

TAP MPR (ketetapan majelis permusyawaratan rakyat). The people’s national assembly decision.

TPTI (tebang pilih tanam Indonesia). selective cutting and planting.

TPTJ (tebang pilih tanam jalur). selective cutting and line planting.

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CDM Country Guide for INDONESIA
A series of manuals for CDM project development in Asia

The Kyoto Protocol introduced the Clean Development Mechanism (CDM) to assist Annex I countries from the developed world to meet their committed targets to reduce greenhouse gas emissions, while contributing to the development of climate-friendly projects in non-Annex I countries in the developing world.

*The CDM Country Guide for Indonesia* contains essential information to develop CDM projects in Indonesia, including information on potential CDM project types, project approval procedures, legal issues, financing, and government incentives. In addition, the guide includes many appendices with useful information, such as a contact list, requirements by the host country designated national authority (DNA) and CDM project pipelines. The guidebook aims at facilitating CDM project developments in developing countries in Asia by providing necessary information to both project developers and potential investors.

This is part of a series of the guidebooks prepared by the IGES Integrated Capacity Strengthening for the Clean Development Mechanism/Joint Implementation (ICS-CDM/JI) under Ministry of the Environment, Japan's CDM/JI promotion initiatives.