National Economic, Environment and Development Study (NEEDS) for Climate Change

Indonesia Country Study

FINAL REPORT

December 2009

This final report is produced as a result of National Economic, Environment and Development Study (NEEDS) for Climate Change carried out for Indonesia from January until September 2009. The study involves individual and group consultation with key stakeholders on climate change and a review on the national green house gases abatement cost curve and institutional and financial regulatory frameworks. The National Council on Climate Change (NCCC) of the Republic of Indonesia hosts this study and receives financial support from the Secretariat of United Nations Framework Convention on Climate Change (UNFCCC).

The NEEDS study report was prepared by a team of consultants supervised by Ismid Hadad, as the Chair of Working Group on Financial Mechanism of the NCCC. The team members for the study are: Agus Sari (team leader), Suzanty Sitorus (NCCC), Bowo W. Suhardjo, Martha Maulidia, Fathurrahman and Melany Tedja.

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Foreword

Despite the fact that Indonesia is not an Annex I country under the UNFCCC and Kyoto Protocol, the country is taking climate change mitigation seriously. The country has a large area of peat land and forest from which greenhouse gases might emit if managed unsustainably. Furthermore, the use of renewable energy remains very low compared to the enormous potential of new and renewable energy the country could explore.

Against these backgrounds, I welcome the results of the National Economic, Environment and Development Study (NEEDS) for Climate Change presented in this report. The report affirms there are many 'low-hanging fruits' waiting to be harvested to assist Indonesia in reducing its greenhouse gases emissions while promoting green, low carbon development. These are cost-effective and low-risk mitigation actions in the five biggest emitter sectors: peat, forest, power generation, industry and transport. The report also underscores that Indonesia should not lose sight of medium- to long-term strategies of creating a resilient, low carbon economy. This should be done through a visionary and thorough development planning which takes into account strategic mitigation actions and outlines innovative financing approaches for those actions.

This study was made possible through solid collaboration between the Secretariat of Indonesia National Council on Climate Change and the Secretariat of UNFCCC as well as valuable contribution from national consultants and inputs from key stakeholders. I extend my highest appreciation to all of them and hope for similar—or even better—collaboration in the future especially in looking at financing needs of adaptation actions on a national scale.

Executive Chairman
National Council on Climate Change
Republic of Indonesia

Rachmat Witoelar

Content

List of Figures

List of Tables

Acronyms and Abbreviations

A
ACEF: Asian Clean Energy Fund
ACP: African, Caribbean and Pacific countries
ADB: Asian Development Bank
ADF: Asian Development Fund
AFD: Agence Française de Développement
AMG: Aid Management Guidelines
APBN: Anggaran Pendapatan dan Belanja Negara, national government budget
APCF: Asia Pacific Carbon Fund
AWG-LCA: Ad Hoc Working Group on Long-Term Cooperative Action

B
Bappenas: Badan Perencanaan Pembangunan Nasional, National Development Planning Agency
Bapepam-LK: Badan Pengawas Pasar Modal – Lembaga Keuangan, Indonesia Capital Market and Financial Institution Supervisory Agency
BAU: Business as usual
BI: Bank Indonesia, Indonesian Central Bank
BPHTB: Duty on land and building acquisition
BPJT: Indonesian Toll Road Authority
BPK: Badan Pengawas Keuangan, Indonesia State Audit Board
BPPT: Badan Pengkajian dan Penerapan Teknologi, Technology Assessment and Application Agency

C
CAD: Canadian Dollar
CCDF: Canada Climate Change Development Fund
CCPL: Climate Change Program Loan
CDM: Clean Development Mechanism
CEF: Clean Energy Financing
CEFPF: Clean Energy Financing Partnership Facility
CERPA: Certified Emission Reduction purchase Agreement
CERs: Certified Emission Reductions
CFL: Compact Fluorescent Lightbulb
CH_4: Methane
CIDA: Canadian International Development Agency
CIF: Climate Investment Fund
CMI: Carbon Market Initiative
COBP: Country/Regional Operation Business Plan
CO_2: Carbon Dioxide
COP: Conference of Parties
CSR: Corporate Social Responsibility
CTF: Clean Technology Fund

D
DAFF: Australian Department of Agriculture, Fisheries and Forestry
DANIDA: Danish International Development Agency

DEW: Australian Department of the Environment and Water Resources
DFID: UK Department for International Development
DMCs: Developing Member Countries
DOE: Designated Operational Entity

E
EC: European Commission
ENTRP: Environment and Natural Resources Thematic Programme
ERPA: Emission Reduction Purchasing Agreement
ETF-ITW: Environmental Transformation Fund – International Window
EU-ETS: European Union Emission Trading Scheme

F
FAO: Food and Agricultural Organization
FCPF: Forest Carbon Partnership Facility
FGD: Focus Group Discussion
FDI: Foreign Direct Investment
FIP: Forest Investment Program
FLEG-T: Forest Law Enforcement, Governance and Trade

G
GBP: Great Britain Pounds
GCC: Global Climate Change
GCCA: Global Climate Change Alliance
GDP: Gross Domestic Product
GEF: Global Environmental Framework
GHGs: Green house gases
GIFC: Global Initiative on Forests and Climate
GNI: Gross National Income
GNP: Gross National Product
GOI: Government of Indonesia
GtZ: Deutsche Gesselschaft fuer technische Zusammenarbeit

H
HLECC: High Level Event on Climate Change

I
IBRD: International Bank for Reconstruction and Development
ICCTF: Indonesia Climate Change Trust Fund
ICI: International Climate Initiative
IDA: International Development Association
IDR: Interest During Construction
IEA-ETSAP: Energy Technology System Analysis Project of the International Energy Agency
IFC: International Finance Corporation
IFCI: International Forest Carbon Initiative
IFCA: Indonesian Forest Carbon Alliance
IFI: International Financial Institution
IPCC: Inter-governmental Panel of Climate Change

IPF: Indicative Planning Figure
IPO: Initial Public Offering
IRR: Internal Rate of Return

J
JICA/JBIC: Japan International Cooperation Agency /Japan Bank for International Cooperation

K
KIK: Collective Investment Contract
KLH: Kementerian Lingkungan Hidup, Indonesia Ministry of Environment

L
LDC: Least Developed Country
LEDFF: Low Emission Development Financing Facility
LTSF: Long-Term Strategic Framework

M
MDB: Multilateral Development Bank
MoF: Ministry of Finance
$MtCO_2$: Mega ton carbon dioxide

N
NAPA: National Adaptation Plans of Action
NCCC: Indonesia's National Council on Climate Change
NEEDS: National Economic, Environment and Development Study
NSS: Indonesia National Clean Development Mechanism Strategy Study
NOK: Norwegian Krone
NORAD: Norwegian Agency for Development Cooperation
NRM: Natural Resource Management

O
OCR: Ordinary Capital Resources
ODA: Official Development Assistance
OECD/DAC: Organization for Economic Cooperation and Development/Development Assistance Committee

P
PATA: Policy and Advisory Technical Assistance
PEACE: PT Pelangi Energi Abadi Citra Enviro
PE: Private Equity
PES: Payment for Environmental Services
PIP: Centre for Government's Investments
PNBP: State Income Non-tax
PPCR: Pilot Programme for Climate Resilience
PPh: Income tax
PPN: Value Added Tax
PPTA: Project Preparatory Technical Assistance

Q
QIA: Qatar Investment Authority

R
R-PIN: Readiness Plan Idea Note
RAN MAPI: National Action Plan for Mitigation and Adaptation to Climate Change
REDD: Reduced Emissions from Deforestation and Forest Degradation
RKP: Annual Government Work Plan
RPJM: Medium-term Development Plan
RPJMN: Medium-Term National Development Planning
RPJPN: Long-Term Development Planning

S
SBLC: Stand By Letter of Credit
SCF: Strategic Climate Fund
SIDS: Small Islands Development States
SFM: Sustainable Forest Management
SMI: (PT) Sarana Multi Infrastruktur
SOE: State-owned Entity
SREP: Scaling Up Renewable Energy in Low Income Countries Program

T
TA: Technical Assistance
TFCA: Tropical Forest Conservation Act
TNA: Technology Needs Assessment

U
UN-REDD: United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries
UNAIDS: United Nations Joint Programme on HIV/AIDS
UNDP: United Nations for Development Programme
UNEP: United Nations Environmental Programme
UNFCCC: United Nations Framework Convention on Climate Change
USAID: United States Agency for International Development

V
VAT: Value Added Tax
VC: Venture Capital

W
WB: World Bank
WBG: World Bank Group

Executive Summary

Indonesia recognizes climate change as critical development issue. Indonesia is aware that it is very vulnerable to climate change impacts. The most recent RPJM 2009-2014 includes climate change as a cross-cutting issue embedded in at least three out of eleven national development priorities: food resilience, energy and environment and disaster management. Indonesia's international active role and solid national leadership are expected to raise awareness and enhance understanding of the integration of climate change into local and national development plans. A National Council on Climate Change (NCCC or Dewan Nasional Perubahan Iklim) chaired by the President was established in 2008 to act as national focal point on climate change policy, strategy and programmes formulation and to play coordinative role among sectoral agencies.

Indonesia emits significant amount of greenhouse gases and is projected to produce more in the future. The Second National Communication (2009, draft) prepared by the Ministry of Environment in collaboration with the UNFCCC estimates Indonesia's annual green house gases (GHG) emissions to be around 1.72 Gt CO_2e in 2000 and 2.12 Gt CO_2e in 2005. The study confirms that forestry, peatland and energy sectors are the main sources of CO_2 in the country. Land use change and forestry (LUCF) makes up about 48% of total emission, followed by energy sector (21%), peat fire (12%), waste (11%), agriculture (5%) and industry (3%). Combined together, emissions from land use change forestry and peat make up about 60% of the total emissions or about 1.19 Gt CO_2e. Total GHG emissions in 2000 without LUCF and peat fires reached 0.53 Gt CO_2e. The SNC made the calculations of GHG emissions for five out of six categories defined by the IPCC: Energy, Industrial Processes, Agriculture, Land Use Change and Forestry and Waste (except Solvents).

Projection of emission under business-as-usual (BAU) scenarios has been developed for all sectors and is reported in the SNC. Indonesia's GHG emission in 2000 is estimated to be around 1.72 Gt CO_2e and in 2005 around 2.12 Gt CO_2e. It is projected that the emission will grow to reach 2.95 Gt CO_2e in 2020.

The NCCC GHG abatement cost study (2009, draft) also estimates Indonesia's annual GHG emissions and it has been adjusted to use the same figures as SNC's. The abatement cost study concentrates on emissions contributed by the six sectors: buildings, cement, agriculture, transport, power, forestry and peat. Those sectors are considered to cover majority of emissions and reduction potential.

Indonesia is expected to reduce significant amount of its GHG emissions by applying abatement scenarios aggressively.

Each appointed sector has come up with mitigation plans, which are then compiled and formed a national mitigation strategy. From the analysis, it was shown that with Mitigation Scenario 1, Indonesia could reduce its emission by 31% from BAU by 2020. With Mitigation Scenario 2, Indonesia could reduce its emission up to 48%.

Based on the NCCC Cost Curve, more than 80% of the abatement potential is expected from forestry and peat and agriculture sectors. Priorities for emission reductions should be placed on forestry, peat, energy, industry and transport sectors.

The Government of Indonesia has made a non-binding commitment to reduce its GHG emissions by 26% and further up to 41% from Indonesia's Business As Usual (BAU) emission in 2020. Total net emission under BAU in 2020 is projected to be around 2.95 Gt CO_2e. Hence, the first emission reduction scenario (26%) will result in net emission of 2.183 Gt CO_2e or reduction of 0.767 Gt CO_2e. The second emission reduction scenario (41%) will result in net emission of 1.761 Gt CO_2e or reduction of 0.442 Gt CO_2e.

Having determined the share of each sector, the Government of Indonesia (GoI) has allocated budget for meeting the non-binding emission reduction target. For the first abatement scenario, the GoI has committed to allocate IDR 83.3 trillion to meet the 26% emission reduction target. The GoI has also calculated the fund it would need to finance more mitigation efforts to reduce emission further up to 41%, which is IDR 168.3 trillion. The average annual abatement cost of all sectors until 2020 is about EUR 5.95 billion for the first mitigation scenario and about EUR 12.02 billion for the second mitigation scenario. These figures are about 1.4% and 2.8% of Indonesia's projected GDP in 2010. The abatement cost figures for both mitigation scenarios only contribute to 0.72% and 1.45% of Indonesia's projected GDP in 2020.

If all potential abatement measures are to be applied, the average annual abatement cost until 2030 for all sectors is EUR 12.84 billion. Each measure has an average abatement cost of around EUR 6 per ton CO_2 avoided. The total amount makes up about 5.6% of Indonesia's GDP in 2005. It only makes up of 0.9% of GDP in 2030.

The green house gas abatement cost curve shows that in Indonesia, there remains ample opportunities for low- or no-cost emission reduction options. Some even have negative costs. Energy efficiency in buildings, steel or pulp and paper industry provides among the largest and more profitable compared to other options. Hydro power plants provide low-cost options. Reducing emissions from deforestation and forest degradation (REDD) from small holders provides not only among the lowest-cost options, but also among the most voluminous, as water management and rewetting of degraded peatland as well as reforestation.

The NEEDS study shows that there are a number of existing and potential sources for climate change mitigation financing, which include public and private. The public sources may come from the Indonesian government, bilateral and multilateral development agencies, specialized financial assistance for climate change from bilateral and multilateral sources and from civil society and philanthropic organizations. The private sources include domestic and foreign private entities/initiatives as well as market-based mechanism such as CDM (Clean Development Mechanism), voluntary carbon offsets and PES (Payment for Environmental Services).

The NEEDS study shows possible recipients of financial sources for climate change mitigation. The recipients of the financial in-flows include project developers, be it private entities or public-private partnership. Financial in-flows that are derived from civil society financing sources and philanthropic organizations can theoretically be accessed by civil

society initiated projects or public-private partnership. The recipients of market-based funds include project developers, retailers and resellers of carbon credits.

The NEEDS study shows possible mechanisms of climate change mitigation financing and how they link between sources and recipients. The mechanisms to channel public sources include through annual government budget, grants, loans, investments, export credits, debt swaps and the likes. While the mechanisms to deliver private sources include direct investments, commercial bank loans, asset financing (lease), forward contracts, initial public offerings (IPOs), CDM and other carbon credit mechanisms and payment for environmental services.

Strong recommendations are given to the structure that takes the most advantage of existing regulations and minimizes the need for establishing new institutions and new regulations. The NEEDS study looks at existing and possible options on how the Government of Indonesia (GOI) manage various financing opportunities for climate change mitigation in Indonesia to channel them to proper programs and projects. This study supports the establishment of Low-Emission Development Financing Facility (LEDFF) and further development of Indonesia Climate Change Trust Fund (ICCTF) and its evolution to house the Revolving Fund.

The Indonesian Climate Change Trust Fund (ICCTF) established in late 2009 is indeed a breakthrough as there are limited regulations on trust fund in Indonesia. The ICCTF supports access to finance from international sources for both adaptation and mitigation expenditures. It also supports investments for most vulnerable communities. In a later stage, the ICCTF plans to invest in revenue-generating activities, which is also the intention of the proposed LEDFF.

The NEEDS study proposed the establishment of Low-Emission Development Financing Facility (LEDFF) under the Ministry of Finance and run as a private entity. To a certain extent, this has been materialized with the establishment of the Indonesia Green Investment Fund (IGIF) by the Ministry of Finance under its Government Investment Unit, just after this report had been launched. The main purpose of LEDFF/IGIF is to leverage private and market-based sources of funding for low-emission development programs/projects. The LEDFF is designed to provide coordination to private funding to match the large-scale capital. Endorsement from government and some initial token will increase the confidence in government commitment to long-term climate change mitigation efforts.

The LEDFF is designed to target the public-private partnership sources, with strong emphasis on the private part. As the Ministry of Finance has established the Indonesian Infrastructure Financing Facility (IIFF), it is recommended that the LEDFF be established as a sister company of the IIFF to allow for better mainstreaming of low-emission development into one of the largest infrastructure development efforts in Indonesia.

There is a great opportunity for the LEDFF and the ICCTF to be merged, or at least to be closely coordinated, as the functionality of the LEDFF is strikingly similar with the Revolving Fund of the ICCTF.

Currently in Indonesia, there is no specific tax policy instruments have been applied to carbon finance related products. However, several specific tax exemption facilities for certain investment areas already exist. The main examples are Government Regulations

which provide tax incentives for several industries. Another example is the zero tax for CDM – an incentive for investors. Ministry of Finance has also provided facilities to promote clean energy initiatives, which includes geothermal. Meanwhile, the Ministry of Industry has formulated a road map and strategy for greenhouse gas emission reductions for four key industries: Cement, Pulp and Paper, Steel and Textiles.

Mainstreaming of climate change as development issues remains a major challenge. The concept of economics of climate change is yet to be a popular notion in Indonesia. Climate change and economy is still perceived as two different courses, especially by the capital market and the banking community. That is why, the progress of implementation of low emission development as well as the financial instruments to support it is relatively slow.

Effective coordination and harmonization in managing government multilateral and bilateral funding is imperative. Without a clear coordination policy, there is a high risk of overlap in climate change measures. Furthermore, the funding needs to be coordinated to achieve Indonesian mitigation and adaptation priorities. Addressing this challenge, Indonesia has had a mechanism of Indonesian Climate Change Trust Fund (ICCTF). There is a need to ensure that this mechanism is run professionally and can work in an efficient, effective and accountable manner and could generate more funds for climate programs.

There is an urgent need to generate alternative funding through private sources and market mechanism. Mitigation effort requires a large funding that it is not sufficient to solely relies on Government funding and foreign assistance. Low emission development requires private investment and increased involvement in market-based mechanism. Unfortunately, huge start-up cost of low-carbon infrastructure often deters the private sectors to take part in mitigation effort. Especially in the financial crisis context, companies often prefer short-term rather than long-term investment such as low emission development. Addressing this challenge, the Indonesian Green Investment Fund that has been set up to encourage private investment needs to develop more innovative ways to leverage private funding.

There is an urgent need to develop policy instruments and regulatory framework that support low carbon development. Currently there are still limited tax policy instruments that have been applied to carbon finance related products and services. The Ministry of Finance has been examining several options of fiscal approach and produced a Green Paper to serve as the policy basis to address climate financing issues.

1. Introduction

1.1 Background: Relevance of Climate Change in Indonesia

As an archipelago, Indonesia is most vulnerable to the impacts of climate change and can expect to experience changes in water availability, increased frequency and intensity of tropical storms, sea level rise and storm surges, changes in agricultural productivity, and disruption of coastal livelihoods for millions of people.

Indonesia also emits significant levels of green house gases (GHGs). The largest share of current emissions comes from land use and land use changes (forest fires, illegal logging, peat-land and forest degradation and deforestation), but Indonesia's fossil fuel emissions are growing rapidly, faster than the growth in the Gross Domestic Product (GDP) and energy consumption. It also represents a larger concern for the long term.

Climate change and global warming will certainly create serious threats to Indonesia's socio-economic growth, but it also poses opportunities for the country to change its development policies into a more integrated approach in pursuing a more sustainable development pattern. It also offers opportunities in terms of incentives, financing, efficiency, and competitiveness, along with more environmentally friendly and low carbon economic growth.

Indonesia was among the first countries to ratify the United Nations Framework Convention on Climate Change (UNFCCC) and to adopt the Kyoto Protocol, in order to address climate change issues effectively. President of Indonesia has expressed commitment to climate change actions, forestry measures, and low carbon development planning at international venues in 2007 and 2008. Hosting the 13th session of the Conference of the Parties of the UNFCCC (COP13) in Bali 2007 gave the country a chance to leap forward. Indonesia has achieved global visibility as President of COP13 process in 2007, as a leader in the *troika* countries in the negotiating process up to 2012, as founder of Forest-11 group, and as a leader in the global Finance Ministers' dialogue process to address the economic costs and financial impacts of climate change.

The current global climate context is creating a national impetus and strategic opportunity for the Indonesian government to integrate environmental and climate issues in the national development policies without compromising economic growth and poverty alleviation objectives.

1.2 Strategic Context

Indonesia stands at a critical juncture. The country has accumulated a wealth of knowledge and expertise in climate domain. Through various initiatives the government has attained a clear assessment of the challenges posed by climate change and has also identified the measures needed to address these challenges. However, implementation has been lagging partly due to lack of in-depth estimation of specific financial needs of each mitigation and adaptation measures taking into account local economic environment, practical strategy of how to deliver by international and national financial instruments and linkages with national development plans and international financial instruments. The NEEDS for Climate Change study is aimed at estimating financial needs for each prioritized mitigation measure, identifying possible financial instruments to deliver including the way to leverage private

sector, and contributing to integrating climate change measures into national development by providing these practical information. Now the government has formulated the Mid-term Development Plan 2010-2014 that corresponds to the second phase of the National Long-term Development Plan (2005-2025). The NEEDS provides this on-going process with this critical information above and adds substantive value to it.

Indonesia has been actively engaging in the international climate negotiations since COP1 and will continue to do so. Through the support of this project Indonesia hopes to take a leadership role in demonstrating how to integrate climate change concerns in its country development plan. The government intends to present the findings of this study at the side event of) COP15 in Copenhagen, December 2009. This can serve as an opportunity to shape the Ad Hoc Working Group on Long-Term Cooperative Action under the Convention (AWG-LCA) discussions and offer a framework that can help developing countries move more actively towards meeting their climate change needs.

1.2.1 Evolving Regulatory Framework

In 1992, the UN Framework Convention on Climate Change confirmed the need for country actions to address climate change with "common but differentiated responsibilities" between developed and developing countries. In 2005, the Kyoto Protocol came into force, setting emission targets for developed countries and creating flexible mechanisms that allow payments for GHG emissions reductions to developing countries, among others. Now, the post-2012 framework is being negotiated and designed, hence the Copenhagen COP at the end of 2009 is a critical milestone event for the future framework. Indonesia has an important strategic role in the negotiations as a large developing country with a significant stake in the future framework outcomes. This study is intended to help the Government of the Indonesia refine its position clearly outlining priorities and areas of interest.

1.2.2 Expanding Global Carbon Market

The Kyoto Protocol, through flexible mechanisms and emission trading, helped establish a global market for 'carbon credits.' Developing countries have been able to participate in generating 'carbon credits' through the Clean Development Mechanism (CDM). The CDM market provides an important strategic opportunity to leverage funding and improve the financial viability of projects promoting sustainable development. As of August 2008, 16 CDM projects registered and a number of others in pipeline, not adequately tapped given that Indonesia has a huge potential of renewable energy such as hydro, geothermal and biomass. Globally in 2007, the CDM saw transactions valued at over 7.4 billion dollars with analysts predicting continued growth of the market, be it at a more gradual pace. Perhaps more importantly, some experts estimate that in 2007 the CDM leveraged 33 billion USD in additional investment for clean energy[1]. Development of a carbon finance program that goes beyond the project-by-project transactions, in specific sectors, can provide the needed incentives for transitioning to a low-carbon economy by linking country actions to global carbon markets. Positive incentives to reduce emissions from deforestation and forest degradation (REDD) has been in the international negotiation agenda and is an important issue to the Government of Indonesia. This study is intended to help in identifying specific approaches that can be used within priority sectors to access carbon markets.

[1] State and Trends of the Carbon Market 2008

1.2.3 Low Carbon Financing Opportunities

There are increasing resources that are being channeled towards supporting developing countries to reduce GHG emissions. Several global and regional initiatives can prove to be an important source of financing for projects contributing to sustainable development. The Climate Investment Fund, Strategic Climate Fund and Clean Technology Fund of the World Bank and the Climate Change Fund of the Asian Development Bank are examples of potential sources for such financing. Accessing this kind of innovative financing is a strategic opportunity for Indonesia.

Furthermore, private financial institutions in Indonesia offer equally valuable financing potentials to support small- and medium-scale projects of GHG emissions reduction although these can be realised only after the country makes effective banking, tax and other financial incentives. This study is intended to help identifying the financing gaps for priority projects and to be used to guide the dialogue with development partner agencies in accessing innovative financing instruments.

1.3 About NEEDS

Based on SBI 28 mandate (FCCC/SBI/2008/8, paragraph 30), the Government of Indonesia (GOI) had requested the UNFCCC Secretariat to provide assistance to carry out a study to assess financing needs to implement mitigation and adaptation measures in the country. To this effect the UNFCCC secretariat leveraged internal and external resources to help develop the National Economic, Environment and Development Study (NEEDS) for Climate Change. The study aims to develop an in-depth analysis on specific financial needs and instruments for priority measures already identified, then contribute to the process of integrating climate change into national development strategy by providing these practical information.

In fact, NEEDS has also been carried out in other developing countries including Philippines, Egypt and Gambia. In Indonesia, NEEDS focuses on mitigation taking into consideration limited resources and time as well as methodological issues which potentially arise from studying adaptation and mitigation with one analytical framework. It has been built on results of a study on low carbon development financing opportunities conducted by Peace (national consulting company) supported by the UK Department for international development (DFID) and Indonesia's National Council on Climate Change (NCCC).

The main purposes of the study are to support the Government of Indonesia to:

1. Assess financing needs required to implement priority mitigation measures and identify appropriate financial and regulatory instruments to implement them;
2. Identify financing mechanisms to leverage public fund and private investment;
3. Raise awareness and facilitate informed consensus among government agencies on policy actions required to mobilise finance and investment.

The key output of this work is a working paper on financial strategy to address climate change that includes estimation of potential cost of priority mitigation measures based on priority of national development plan(s), identification of international and national financial instruments to deliver, and thus bridges the gap between the priorities identified in the climate domain and the national development agenda. In the later stage, this work will also produce a business plan for the pilot activities.

Key activities that have been carried out in order to generate the aforementioned output are:

1) Taking stock of information on priority mitigation measures including relating national and international investment and financial flows, potential cost, financial needs and financial instruments to deliver;
2) Conducting an assessment of specific financial needs tailored for each measure and financial instruments needed on the national and international levels to deliver, taking into account the necessity to promote private sector investment;
3) Taking stock of the work being done on updating projections for the baseline study of greenhouse gas emissions and scenarios under the preparation of Indonesia's second national communication to the UNFCCC.

The work has been driven by the Government of Indonesia, represented by the National Council on Climate Change (NCCC), with the support of PT Pelangi Energi Abadi Citra Enviro (PEACE) and the secretariat of the UNFCCC and expert local consultants. The study has been conducted through close collaboration with international development agencies, non-government organizations and other institutions within Indonesia (such as think-tanks and academia) as part of a process aimed at capturing the knowledge from other initiatives and building a consensus towards a development strategy that incorporates climate change concerns.

1.3.1 Methodology and Approach

As a matter of principle, the NEEDS for Climate Change study has been developed through a country-driven process. In the scope of this work the process is as important as the outputs. Through a collaborative and inclusive dialogue, with national stakeholders and experts, the goal is to build on consensus on insights obtained through studies and share the momentum to integrate into national development strategy.

1.3.1.1 Linkages with on-going efforts and taking stock of existing knowledge

This study builds on existing knowledge and on-going efforts in the climate domain. This includes completed studies, such as the Technology Needs Assessment and the Initial National Communication, and on-going work, such as the Second National Communication. This study uses data from and adds value to existing studies such as National Strategy Study on Climate Change, National Action Plan for Mitigation and Adaptation to Climate Change and National Development Planning Response to Climate Change, and Low Carbon Development Fund. The value that NEEDS adds to the Climate Change study in Indonesia is the identification of priorities in the climate domain that are linked to the national development agenda and assessment of financial resources and instruments that can be used to support implementation of these priorities.

1.3.1.2 Defining the relationship between the NCCC and UNFCCC

The government of Indonesia represented by the National Council on Climate Change (NCCC) takes the lead in the development of the NEEDS for Climate Change work, with support from PEACE and the UNFCCC Secretariat. The role of the NCCC is to engage with key stakeholders and host relevant discussions. The role of the expert consultants is to facilitate and steer the discussion in a structured format to ensure progress towards outlined objectives. Appropriate government agency representatives review and provide guidance on the work program and outputs developed by the expert consultants.

1.3.1.3 Ensuring ownership through collaborative approach

The NCCC has full ownership and recognizes the strategic importance of this study. Retaining and strengthening this ownership is of critical importance. Structuring this work in a collaborative format is aimed at ensuring two vital features:

1. Ensuring that the government has ownership of not only the process but also the conclusions of the NEEDS for Climate Change work.
2. Broadening the base of national stakeholders[2] that take ownership of the priorities identified by the NEEDS for Climate Change work.

The collaborative approach, which allows bottom-up process, provided a framework that ensures ownership. This approach was refined through detailed consultations with local experts. In order to ensure ownership the study also used two-leveled approach, which included high-level and sector-level (technical) stakeholders.

At the time the study was conducted, there was a deep commitment among members of the government at high-level on the strategic importance of carrying out the NEEDS for Climate Change work. This commitment was leveraged to initiate the technical dialogue needed to build consensus on sectoral priorities, financial needs and appropriate financial instruments. A visible and clear commitment at the high-level had paved the way for productive discussions at the technical/sectoral level.

Scoping Meeting

In light of restriction of time, the data collection was conducted through expert meeting, twice in January 2009, to identify the mitigation measures to be focused in this project, based on national development plan(s) and existing studies on climate change. The outcome of this scoping meeting is endorsed by the Working Group on Financing Mechanism of the NCCC which acts for high-level cross-sectoral and multistakeholders.

Initial high-level national cross-sectoral workshop

The NEEDS for Climate Change study was launched by the NCCC on January 27, 2009, where experts in charge of facilitating the study were introduced. This initial launch also included multilateral and international organizations engaged in supporting the government on climate change issues (such as World Bank, UNDP, ADB) and other critical stakeholders. The discussion was led by high-level representatives from the NCCC working groups; but the workshop also included representatives that will be taking a leadership role in the sectoral discussions.

The aim of this workshop was to share the goal and the process of this work, take stock of studies on climate change and establish a consensus on the mitigation measures.

Initial sectoral workshop/working group meeting:

- Presented objectives of the NEEDS for Climate Change work as they relate to the sector
- Took stock of information on mitigation measures including relating national and international investment flow, potential cost, financial needs and financial instruments to deliver
- Discussed financial needs and financial and regulatory instruments to implement those measures

[2] Particularly the Ministry of Finance, Ministry of Energy and Mineral Resources, Ministry of Forestry, Ministry of Agriculture, Ministry of Trade, Ministry of Industry, and the State Ministry of Environment; but also non-government stakeholders.

Refining sectoral workshop/working group meeting:

- Firmed-up clear priorities for the sector
- Discussion on specific financial needs tailored for each measure and possible financial instruments to deliver.

Final sectoral workshop/working group meeting:

- Based on discussion, compiled a working paper on financial strategy to address climate change which consists of estimation of cost, financial needs and instruments, and the process to integrate into national development strategy

Final high-level national cross-sectoral workshop:

The closing workshop to socialize and consult the draft of NEEDS final report took place on October 29, 2009. Opened by the Executive Chairman of the NCCC, the NEEDS team reported the findings and recommendations to high-level audience from key government agencies and development partners as well as think-thank, NGOs and the mass media. Inputs and comments from this workshop were incorporated into the full report.

2. Overview

2.1 National Climate Policy Development Framework

This study began with a review of existing policy frameworks which have been issued and adopted by the Government of Indonesia to address climate change challenges. Table 1 below presents the summary of such overview.

Table 1. List of Indonesian Climate Change Studies

No.	Title of the Study	Purpose	Key Features
1	Roadmap of Mainstreaming Climate Change Issue into National Development Planning, 2009 BAPPENAS and GTZ	To identify priorities of mitigation and adaptation measures in Energy; Forestry; Industry; Coastal, Marine and Fisheries; Transportation; Waste; Health; Agriculture and Water Resources. Status: Final Draft – in translation into English (to be completed July-August 2009)	The mandate of the Long-Term Development Planning (RPJPN) 2005-2025 on Climate Change shall be integrated into national planning in all sectors, by Central Government and by Regional Government, in short-term, mid-term and long-term. To do so, a "roadmap" to mainstream Climate Change into National Planning is needed. The Roadmap of Climate Change contains direction of 5-year policies and programmes from the Medium-Term National Planning (RPJMN) relating to Climate Change, which is set up for the next 20 years.
2	NCCC Abatement Cost Curve (Draft), September 2009	NCCC has developed a global cost curve to determine the most cost-effective measures in mitigating GHG emissions. This study was executed specifically for Indonesia. Status: Phase 1 is completed, Phase 2 is on-going.	This study focuses on 5 sectors including Energy (Power), Forestry, Peat, Transportation, Industry (Cement). The study also analyses mitigation options in two other sectors: agriculture and buildings but with less coverage. It estimates emissions reduction by applying mitigation options in various sectors from 2005 to 2025. The most cost-effective measures according to this study include energy efficiency measures in industry, avoided deforestation (REDD for smallholders), water management in pulpwood and palm oil plantations, rewetting of non-used lands, small hydro, geothermal and biomass power plants.
3	Technology Needs Assessment (TNA), 2009 Technology Assessment and Application Agency (BPPT), Ministry of Environment and Deutsche Gesselschaft fuer technische Zusammenarbeit (GTZ)	To develop a list of priorities (in the context of technology transfer) in several key sectors. The study identified options in the following 7 sectors: energy, forestry, ocean, industry, agriculture, waste management and transportation for technology transfer under the UNFCCC scheme to mitigate and adapt to climate change.	The TNA produces several technology recommendations in particular in energy sector (power), forestry (avoided deforestation) and manufacturing. It estimates the investment cost of applying low-carbon technologies and selects a few options based on the criteria in the following aspects: socio-economic, cost-effectiveness, environmental, technological efficiency, human and institutional aspect and conformity with regulation.

No.	Title of the Study	Purpose	Key Features
4	Low-Carbon Development Study, 2009 World Bank	To develop a strategy for low-carbon development; identify opportunities for climate change mitigation and adaptation and increase awareness and institutional capacity to address climate change. Status: Phase 1 is completed, Phase 2 is on-going	The study is divided into two phases: the first phase focused on consultation and engagement with the government, greenhouse gases emissions assessment and current policy analysis. Based on the findings of the phase 1, the second phase seeks to portray the country' s case study by doing a more detailed analysis at the sub-sectoral level. Effort in phase 2 focuses on a few selected sectors. The first stage of phase 2 looks at manufacturing sector. To select manufacturing sub-sectors, it is tested against economic, socio-economic and environmental criteria. Screening criteria include GHG emissions, natural gas use, GDP contribution, growth, output multiplier, linkage index, energy inefficiency, potential for improvement and high-energy cost.
5	Second National Communication under the United Nations Framework Convention on Climate Change, 2009 Ministry of Environment (KLH)	Update data and information provided in the First National Communication.	The study is elaborated further in Chapter II of the NEED study.
6	National Development Planning Response to Climate Change, 2007 National Development Planning Agency (BAPPENAS)	The project's objective is to prepare climate change programs and factor climate change concerns into the process of national development planning.	Document of analytical work on various key issues including i) adaptation and disaster risk reduction, ii) renewable energy, iii) Reduced Emissions from Deforestation and Degradation (REDD), iv) financing of addressing climate change. The criteria used to select prioritized sectors in climate change adaptation and mitigation are: generation of added value of investment; synergy between climate change and the Millennium Development Goal (MDG). This study divided key sectors into primary and secondary priorities. Primary sectors include: Mitigation (Energy, Mining and Forestry); Adaptation (Agriculture and Coastal areas, small islands, marine life and fisheries) The secondary sectors include: infrastructure, water, health, waste management, transportation and industry.
7	National Action Plan for Mitigation and Adaptation to Climate Change (RAN MAPI), 2007 Ministry of Environment (KLH)	To develop guidelines for government agencies to execute coordinated and integrated mitigation and adaptation actions.	The National Action Plan focuses on the following sector: Energy Sector (Power: clean coal technology and hybrid system, bio-energy, other renewable energy sources: solar, wind, tidal; energy-saving technologies for buildings and industries), Transportation Sector (Hybrid vehicles, fuel switching, mass and rapid transportation development), Industry and Manufacturing Sector (Heavy-energy consuming and agro-industry), Agriculture and Livestock, Forestry, Solid and Gas Waste and Marine. The study recommends those sectors to be focused on in the Technology Needs Assessment. The National Action Plan on Energy Sector based its mix-energy target on the Presidential Regulation No. 5/2006
8	The Indonesia National Clean Development Mechanism Strategy Study (NSS), 2001 Ministry of	Develop priorities of technology as options for CDM projects.	NSS CDM in Energy Sector recommended technological options in the following economic sub-sectors: energy demand, industrial processes, forestry and land-use change and agriculture. The study used marginal abatement cost curve to select the most cost-effective options to be prioritized in the Clean

No.	Title of the Study	Purpose	Key Features
	Environment (KLH)		Development Mechanism. The project-based abatement cost deliberately selected a few technologies to be assessed using two baseline scenarios: coal and average energy mix 2000. They include: co-generation, electric motors, solar thermal, efficient light bulbs, hydro power plants (large and small), gas combined cycle and gas turbines, geothermal power plants, biomass power plants, new coal power plants and refrigerators.
9	Identification of Less Greenhouse Gases Emission Technologies in Indonesia, 2001 Ministry of Environment (KLH)	Report of the project "Indonesia: Climate Change Enabling Activity Phase II". To identify national technology needs, capacity building to assess international technology availability and modalities to acquire and absorb the appropriate technology.	The study takes stocks of existing less GHGs emission technologies in energy, agriculture and forestry sector. It then compares with the existing technology on various sectors in Indonesia. The study recommends modalities of technology transfer including institutional establishment, regulation development and financial arrangement.
10	Indonesia: The First National Communication under the United Nations Framework Convention on Climate Change, 1999 Ministry of Environment (KLH)	Inventory GHG emissions from sectors: energy, transportation, agriculture, forestry, public health, marine and waste.	The study used IPCC Guidelines 1994. The study made projection of CO_2, CH_4 and N_2O emissions from various sectors. For energy sector, the projection used Reference Approach and Tier1. Final energy supply from 1995-2005 was calculated using MARKAL model.
11	Technology Assessment for Energy-Related CO_2 Reduction Strategies for Indonesia, 1995 BPPT and GTZ	Review inventories of GHG emission sources and sinks, estimate the status and future projection of CO_2 emission from energy sector and provide recommendations on mitigation for energy sector.	The study used IPCC Guidelines 1994 and the methodology developed by the Energy Technology System Analysis Project of the International Energy Agency (IEA-ETSAP) to analyse mitigation of GHG emissions from energy sector. To estimate the CO_2 abatement cost of technology, the study used UNEP-RISO GHG Abatement Costing Studies. Energy database was developed using MARKAL model.

2.2. National Development Plans and Priorities in the Context of Climate Change

Improved understanding of the Government of Indonesia of the climate change impacts on the nation's development is highlighted by the significant change in the formulation of medium-term development planning. In the Medium-term Development Plan (RPJM) 2004-2009, mitigation of climate change was not listed as one of the nine national development priorities. However, Chapter 32 of this document on the Improvement of Natural Resource Management and Preservation of Environmental Function, points at the lack of policy addressing climate change and global warming as one of national issues in need of urgent

attention.[3] The chapter also acknowledges vulnerability of Indonesia, as an archipelagic country, to adverse impacts of climate change.[4]

In contrast, the recent RPJM, covering the period of 2009-2014, includes climate change as a cross-cutting issue and instructs an internalization of climate change considerations into development planning and implementation. To address climate challenges, three priorities are set: 1) mitigation in the sectors of forestry; peat; energy including transport; industry; and waste, 2) adaptation in the sectors of agriculture; ocean fisheries; coastal; infrastructure; and health, and 3) supporting activities which include development of data, information and communication; institutional and capacity strengthening; and science and technology..[5]

2.3 Institutional Framework on Climate Change

After COP13 in Bali, the GOI is already prepared not only with a national plan and strategic policy reform program, but also institutional set up to serve as the ultimate body for policy coordination among key stakeholders of climate change programs. In July 2008, the President issued a Presidential Decree No. 48/2008 for the establishment of a National Council on Climate Change (NCCC) chaired by the President himself, Coordinating Ministers for Economic Affairs and for People's Welfare both as vice-chairs, and 16 cabinet ministers plus the Head of Meteorology, Climatology and Geophysics as council members. The Council has an Operating Secretariat and 7 Executive Working Groups of (1) Mitigation, (2) Adaptation, (3) Technology Transfer, (4) Financial Mechanism, (5) Land-use and Land-use Change and Forestry (LULUCF), (6) Post 2012 Program, and (7) Science Basis and Climate Data Inventory.

The National Council (NCCC) is now Indonesia's national focal point on climate change that has the primary responsibility of formulating national policy, strategy and programs as well as coordinating all policy implementations related to climate change control, covering mitigation, adaptation, technology transfer and financing activities. The Council's Working Groups consist of multi-stakeholder members of key officials and professionals from sectoral ministries, academia, NGOs, private sector and other communities related to the Group's tasks. Each Working Group has the tasks of collecting and screening data and information, provide analysis and policy inputs, preparing draft guidelines and regulatory framework on climate change policy issues, as well as monitor policy and program implementation related to the scope of the Working Group to be reported to and decided by the Council. Administrative, technical and operational support for the Working Group and for the Council are provided by the Secretariat that has four support management units, including one on communication, public awareness and outreach to key stakeholders and to the public.

The establishment of NCCC is not to replace the role of sectoral/line ministries in the implementation of government programs under their authority. The Ministry of Finance is a key agency in the alignment of climate change into the budget formulation which is pro-poor, pro-growth and pro-environment, in addition to setting up economic and fiscal policy frameworks both for mitigation and adaptation. The National Development Planning Agency holds important responsibility in ensuring the overall approach to development pathways is climate proof both at the country and regional levels.

[3] RPJM Chapter IV-32 page 6
[4] *Ibid*
[5] RPJMN 2010-2014

2.4 GHG Status, Projection and Mitigation Scenarios

2.4.1 Current Status of GHG Emissions

The Indonesia's Second National Communication (SNC) recently launched in 2009 confirms that forestry, peatland and energy sectors are the main sources of CO_2 in the country. The National Greenhouse Gases Inventory (NGHGI) was estimated using Tier 1 and Tier 2 methods of the 2006 IPCC Reporting Guidelines. The calculations of GHG emissions reported in SNC were made for the following six emissions categories defined by the Intergovernmental Panel on Climate Change (IPCC): Energy, Industrial Processes, Solvents, Agriculture, Land Use Change and Forestry and Waste. Emission from Solvents (Non-Methane Volatile Organic Compounds) was not estimated in the SNC study.

Indonesia's net GHG emission in 2000 was 1.37 Gt CO_2e. The main source of the emissions was from land use change and forestry/ LUCF (48%) and followed by energy sector (21%), peat fire (12%), waste (11%), agriculture (5%) and industry (3%). Combined together, emissions from land use change forestry and peat make up about 60% of the total emissions or about 0.821 Gt CO_2e. Total GHG emissions in 2000 without LUCF and peat fires reached 0.556 Gt CO_2e.

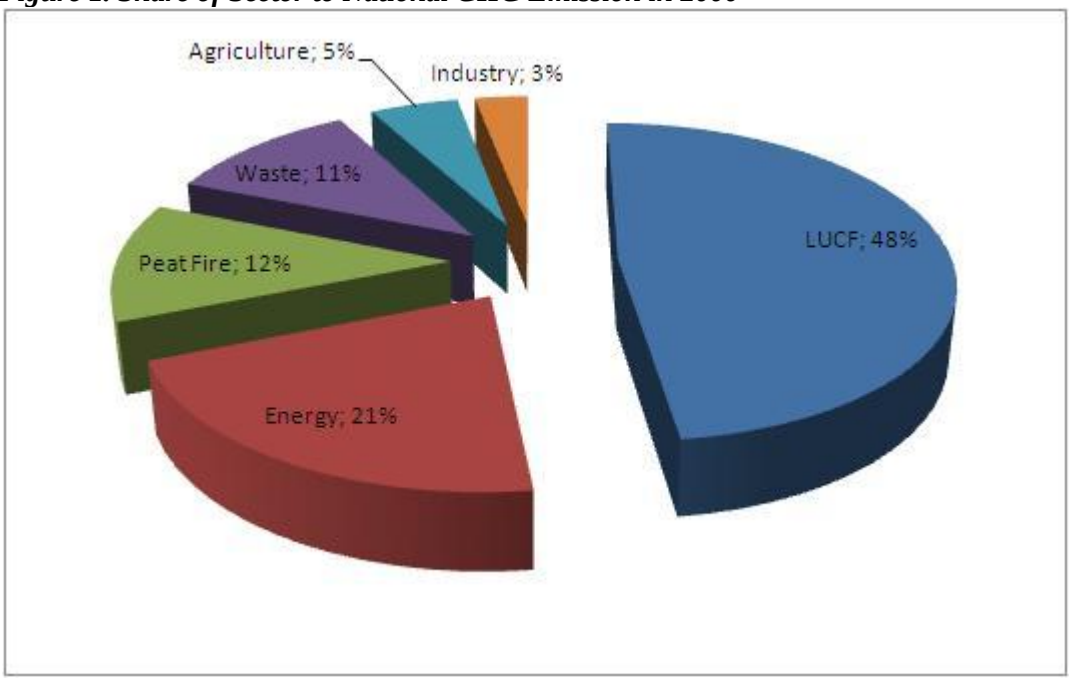
The following table summarizes Indonesia's GHG emission and removal in 2000.

Table 2. Summary of GHG Emission and Removal in 2000 (in Gg).

Sector	CO_2 emission	CO_2 removal	CH_4	N_2O	PFC	CO_2e
Energy	247,522		1,437	10		280,938
Industry	40,342		104	0.43	0.02	42,814
Agriculture	2,178		2,419	72		75,420
LUCF	1,060,766	411,593	3	0.08		649,254
Peat Fire	172,00					172,000
Waste	1,662		7,294	8		157,328
TOTAL	1,524,472	411,593	236,388	28,341		1,377,754

Source: Second National Communication (Ministry of Environment, 2009)

Figure 1. Share of Sector to National GHG Emission in 2000



Source: Ministry of Environment, 2009

In the period of 2000-2006, without emission from LUCF, the emission of 5 other sectors grew at an average rate of about 3.2% per year. Energy sector had the highest annual growth rate of 5.7% and followed by industry (2.6%), waste (1.2%) and agriculture (1.1%). Emissions from LUCF and peat fire fluctuated considerably from year to year.

The following table summarizes the GHG emissions from 2000-2005 from all sectors as described in the Second National Communication, 2009.

Table 3. Summary of GHG emissions from 2000-2005 from all sectors (in Gg CO_2e)

Sector	2000	2001	2002	2003	2004	2005	Growth (% per year)
Energy	280,938	306,774	327,911	333,950	372,123	369,800	5.7
Industry	42,814	49,810	43,716	46,118	47,971	48,733	2.6
Agriculture	75,420	77,501	77,030	79,829	77,683	80,179	1.1
Waste	157,328	160,818	162,800	164,074	165,799	166,831	1.2
LUCF	649,254	560,546	1,287,495	345,489	617,423	674,828*	Fluctuated
Peat Fire**	172,000	194,000	678,000	246,000	440,000		Fluctuated
Total with LUCF	1,377,753	1,349,449	2,576,952	1,215,460	1,721,179	1,991,371	Fluctuated
Total without LUCF	556,499	594,903	611,457	623,971	663,756	665,544	3.2

* Estimated based from Ministry of Forestry (2009) and Bappenas (2009)
**Emission from peat fire was taken from van der Warf et al (2008).
Source: Second National Communication (SNC) (Ministry of Environment, November 2009)

Total emission from energy sector in 2005 was 369,800 Gg CO_2e and in 2000 was 280,938 Gg CO_2e. From this figure, 90.3% of it was from fuel combustion and the rest is fugitives from flaring and venting in oil and gas productions. About 33.2% of the emission from fuel

combustion is derived from energy production, 25% is from manufacturing sector, 22.4% is from transportation sector, 15% is from residential and commercial sectors and 4.3% is from unspecified sectors (agriculture, mining and construction (AMC) and others). From 2000 to 2005 the emissions from energy sector have increased about 32% or average growth of 5.65% per annum.

The main source of CO_2 emissions in industrial processes is cement production, which makes up about 58.3% of the total industrial emissions, followed by ammonia production (18.9%) and lime production (8.6%). In the period of 2000-2005, CO_2 emissions from this sector grew at an average rate of 2.6%.

The main GHG from agriculture sector is methane (CH_4), which accounts for about 67% of the sector's total emission. Total GHG emission in 2000 was about 75,420 Gg CO_2e. Between 2000 and 2005, the emission increased at an average annual rate of 6.3%. The main sources of methane emission are paddy fields (69%) and livestock (28%).

In 2000, the rate of CO_2 emissions from forestry and peatland sector was higher than its removal rate. The total CO_2 emission was 1,232,766 Gg CO_2e, while the rate of removal was 411,593 Gg CO_2e, resulting in the net emission of 821,173 Gg.

The NGHGI adopted the study of the Van der Werf et.al (2008), which estimated emissions from peat fires to be around 172,000 Gg CO_2e and the average emissions of peat fires from 2000 to 2006 to be around 466,000 Gg CO_2e.

The main sources of CO_2 emission in LULUCF sector are deforestation (59%), soil including peat oxidation (18%), peat fire (14%) and wood harvesting (9%). In the period of 2000-2005, the rate of LULUCF emissions fluctuated and the contribution of each emission source also shifted.

The main GHG from waste sector is methane (CH_4), which accounts for about 97.4% of the sector's total emission. Most of this methane is from industrial wastewater treatment and discharge (81%), followed by unmanaged solid waste disposal (8.4%) and domestic wastewater treatment and discharge (6.3%). Total GHG emission from this sector in 2000 was about 15,328 Gg and increased slightly to 166,831 Gg in 2005 or grew at an average rate of 1.2% per annum.

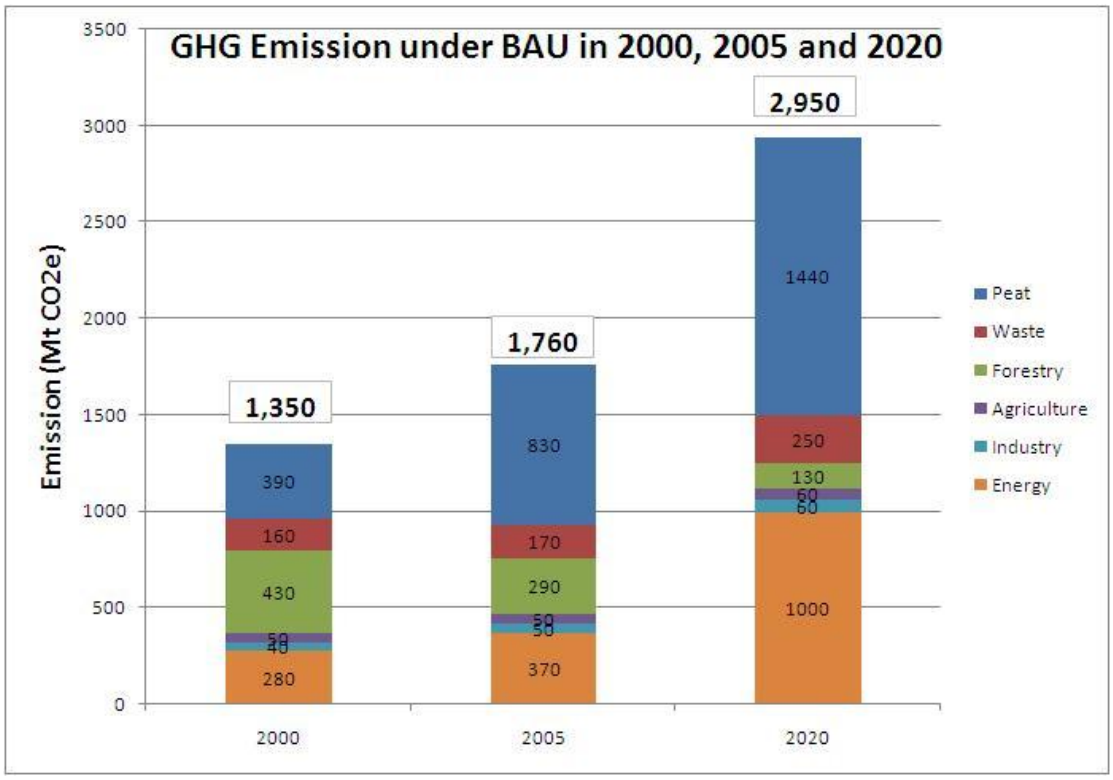
The NEED Study, which was conducted between January to September 2009 uses the GHG emission status, projection and mitigation scenarios as described in the NCCC GHG Abatement Cost Study (interim version, September 2009). The NCCC GHG study estimates Indonesia's annual GHG emissions to be around 2.2 Gt CO_2e in 2005. This difference, however, resulted from different methodology used in estimating the emissions. Emissions from peatland in 2005 were estimated to be around 1.03 GtCO_2e, roughly 45% of total emissions. The second largest source of emissions is forestry sector, which contributed to about 0.85 GtCO_2e. The power and transportation sectors are expected to emit more CO_2 in the future, if current trends continue. Power and transportation sectors in 2005 contributed to 110 MtCO_2e and 70 MtCO_2, respectively. These are expected to rise seven-fold until 2030.

2.4.2 Projections of GHG Emissions

Projection of emission under BAU scenarios have been developed for all sectors and is reported in the SNC. Indonesia's GHG emission in 2000 is estimated to be around 1.35 Gt CO_2e and in 2005 around 1.76 Gt CO_2e. It is projected that the emission will grow to reach

2.95 Gt CO_2e in 2020. The graph below shows comparison between Indonesia's historical GHG emissions in 2000 and 2005 and projection of business as usual scenario in 2020.

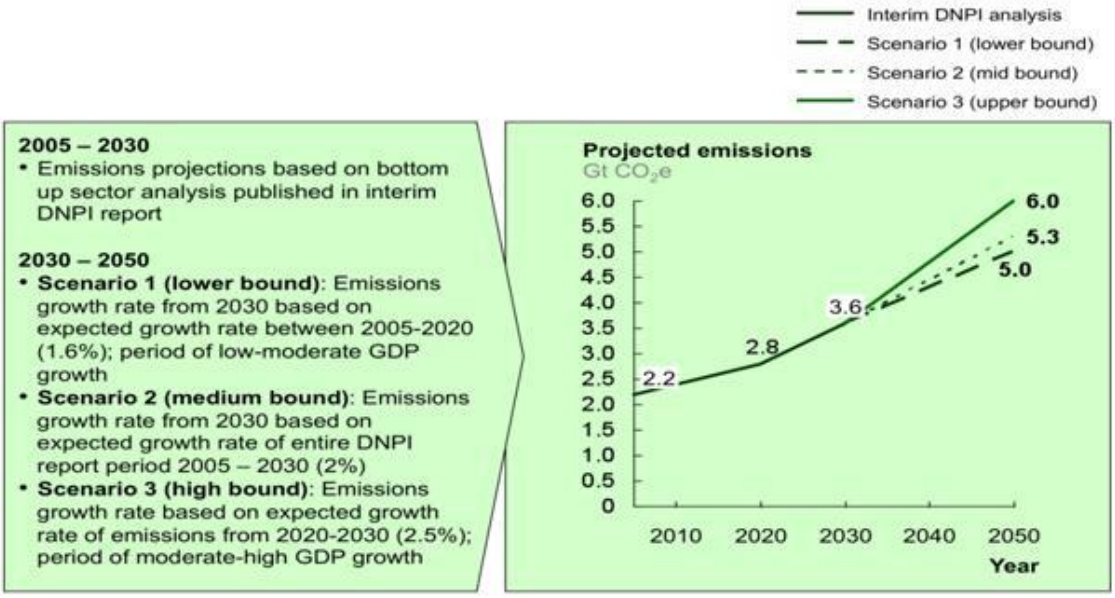
Figure 2. Indonesia's GHG Emission under BAU in 2000, 2005 and 2020



Source: Second National Communication (Ministry of Environment, 2009)

The NCCC study projected Indonesia's GHG emissions to grow to 3.6 Gt by 2030. Using the same data and estimates, the study predicts Indonesia's emission in 2050. The lower bound scenario estimates Indonesia's GHG emissions to rise to 5 Gt CO_2e by 2050. The medium bound scenario projects Indonesia's emissions to grow to 5.5 Gt CO_2e, while the higher bound scenario predicts the emissions to be around 6 Gt CO_2e by 2050.

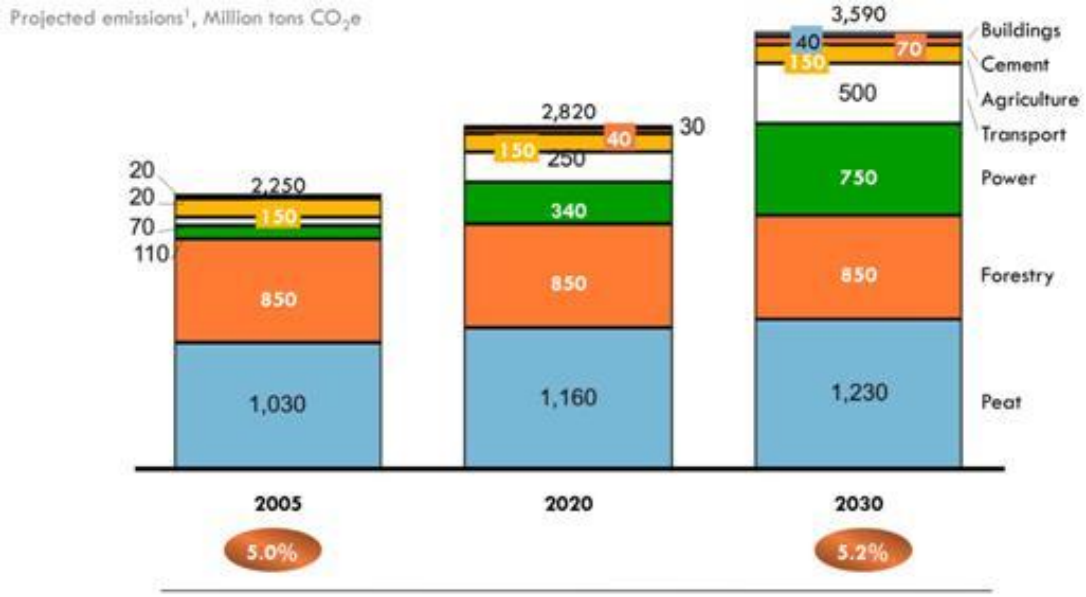
Figure 3. Projected Emissions 2020, 2030 and 2050



Source: Indonesian GHG Abatement Cost Curve, interim version September 2009

The increase in projected emissions in 2030 is mainly contributed by the six sectors: buildings, cement, agriculture, transport, power, forestry and peat. The aforementioned six sectors are considered to cover majority of emissions and reduction potential. This assumption is thoroughly tested through interactions with over 150 government, NGOs, donor and private sector institutions. Below is the graph indicating the projected emissions increase for each sector:

Figure 4. Sectoral Emissions Projection



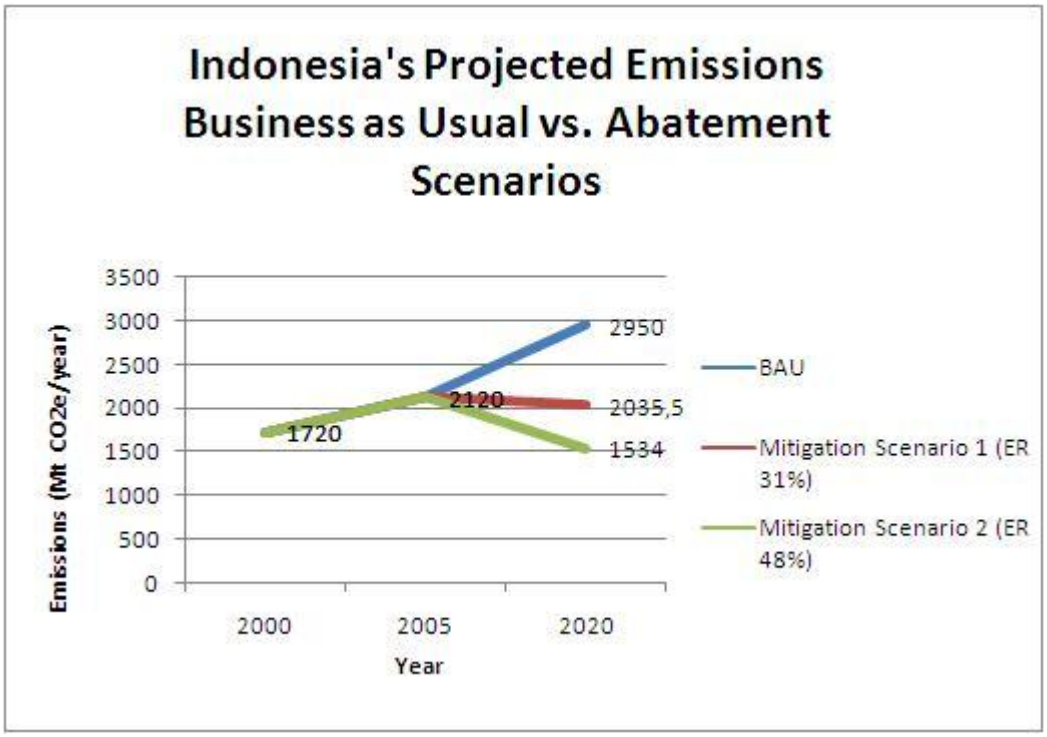
Source: Indonesian GHG Abatement Cost Curve, interim version, September 2009

The graph above indicates that while forestry contributes significantly to Indonesian emission, it will not experience significant increase in amount between 2005 and 2030. Meanwhile the power sector is projected to experience massive increase, more than six-folds from 2005 to 2030.

2.4.3 Abatement Scenario

Based on the SNC as at 10 December 2009, each appointed sector has come up with mitigation plans, which are then compiled and formed a national mitigation strategy. From the analysis, it was shown that with Mitigation Scenario 1, Indonesia could reduce its emission by 31% from BAU by 2020. With Mitigation Scenario 2, Indonesia could reduce its emission up to 48%. More detailed plans from each sector are elaborated below.

Figure 5. Indonesia's Projected Emissions Business as Usual vs. Abatement Scenarios

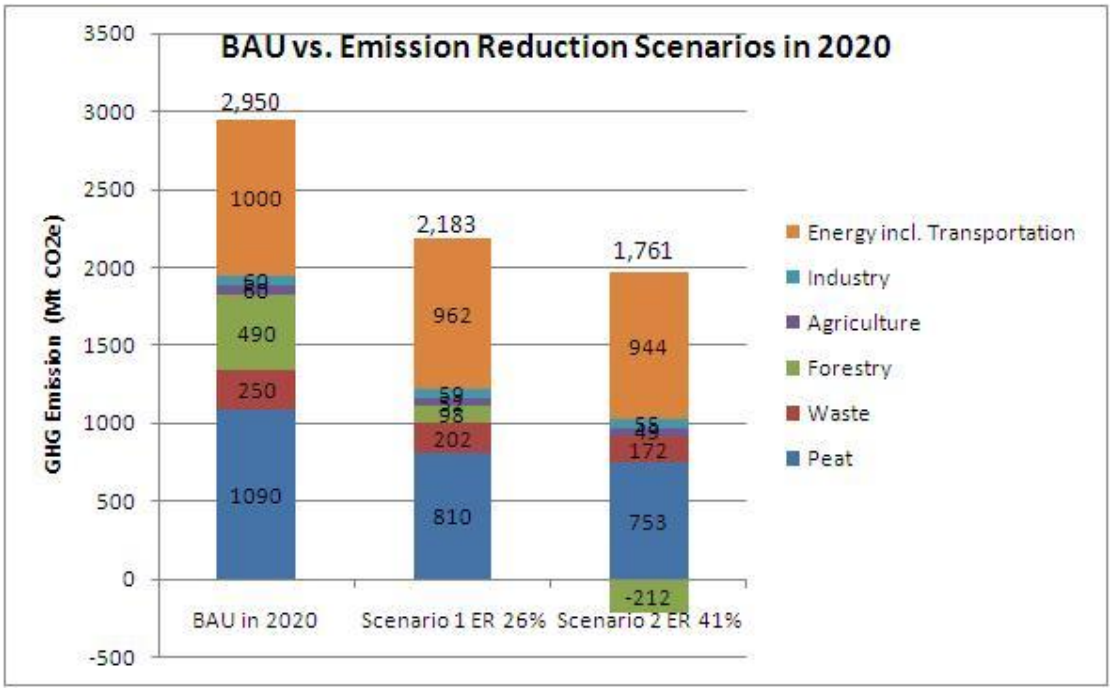


Source: own illustration based on SNC (Ministry of Environment, 2009)

The Government of Indonesia has made a non-binding commitment to reduce its GHG emissions by 26% and further up to 41% from Indonesia's Business As Usual (BAU) emission in 2020. Total net emission under BAU scenario in 2020 is projected to be around 2.95 Gt CO_2e. Hence, the first emission reduction scenario (26%) will result in net emission of 2.183 Gt CO_2e or reduction of 0.767 Gt CO_2e. The second emission reduction scenario (41%) will result in net emission of 1.761 Gt CO_2e or reduction of 0.442 Gt CO_2e.

The figure below shows the comparison between projected BAU and the two abatement scenarios based on the government's emission reduction target in 2020.

Figure 6. Projection of GHG Emission under BAU and Abatement Scenarios



Source: own illustration based on SNC (Ministry of Environment, 2009)

The two tables below depict program activity of each sector for 26% and 41% reduction scenario, respectively.

Table 4. Program Activity of Each Sector for 26% Reduction Scenario

SECTOR/ ACTIVITY	ER Target (Gt CO_2e)	Remark
Energy	0.030	Equivalent to 40 TWh or 4,651 MW capacity
Energy Conservation Program in Demand Side Management (DSM): - Development of standard - Development of regulation/ policy - Labeling program - Energy manager training - Energy audit (pilot), - R&D, - Dissemination of activities in all sectors.		All energy conservation programs will be implemented by GOI together with private sector and households sector to achieve energy conservation through housekeeping, routine maintenance and repair and small investment.
Transportation	0.008	Equivalent to 24 MMBOE

Standardization to achieve more energy efficient vehicles (higher fuel economy), i.e. passenger and freight transportation - Enhance public transport infrastructure such as bus rapid transit or city train system - Improvement of transport management and planning - Improvement of traffic demand management - Integration of transport and land use plan		All programs will be implemented by GOI together with private sector and community. Key actors include: - Ministry of Transportation - Ministry of Energy - City planning agency - Public transport operators - Private sector - Community
Industry	0.001	
Process improvement - Operation system improvement - Technology change - Raw material substitution - Dissemination/ promotion program		All programs will be implemented by GOI together with private sector and community.
Agriculture	0.008	
Improvement of water management (increase water use efficiency such as SRI, PTT) - Introduction of new rice varieties with less methane emission - Feeding quality improvement and food supplement for ruminants - Biogas energy		All programs will be implemented by the GOI and private sector (through Corporate Social Responsibility/ CSR).
Forestry	0.392	
Rehabilitation of land and forests in watershed - Development of community forest and village forest - Establishment of timber plantation and private forest - Restoration of production forest ecosystem - Development of partnership forest - Fire management and combating illegal logging - Avoided deforestation - Community empowerment		All programs will be implemented by government, private and community. Private sectors will dominate the efforts for establishing timber plantation; community and CSR dominate the efforts for establishing partnership forests, while government will dominate land and forest rehabilitation programs.
Waste	0.048	

Implementation of MSW management law - Improvement of existing landfill - Domestic liquid waste management - Industrial liquid waste management - Capacity building for waste collection and transportation - Program to enhance 3R (reuse, recycle, recovery) activities - Encourage private sector's involvement in MSW treatment		All programs will be implemented by GOI with private sector and community. Key actors: - Ministry of Environment - Ministry of Public Works - Local Government - Private Sector - Community
Peat	0.280	
Development of fire early warning system - Strengthening of community-based fire fighting team - Improvement of peatland management - Mapping of peat characteristics - Community empowerment - Law enforcement for policy compliance - Generation of more economic activities of communities such as fishery management in peat water		All programs will be implemented by GOI, national and international NGO, private sector (CSR) and community.

Source: Second National Communication (Ministry of Environment, 2009)

On top of the proposed emission reduction activities explained above, more activities will be done by Indonesia voluntarily with support from international funds. The following table summarizes the programs of each sector for additional 15 percent emission reduction target.

Table 5. Program Activity of each Sector for the Additional 15% Emission Reduction Target

SECTOR/ ACTIVITY	**Additional ER Target (Gt CO_2e)**	**Remark**
Energy	0.010	Equivalent to 13 TWh or 1,550 MW capacity
Energy Conservation Program in Demand Side Management (DSM): - Energy conservation for minor investment		Energy efficiency will be achieved through minor investment in industry, building/ commercial sector, etc.

- Overhaul for maintenance and repair		
Deployment of clean coal technology		Supercritical or fluidized bed coal power plant (350 MW)
Accelerated geothermal (1000 MW)		Additional 1000 MW capacity to the existing government's plan
Biofuel		Additional to achieve the mandatory government's plan
Transportation	0.008	Equivalent to 24 MMBOE
Further improvement in transport sector - Enhance public transport infrastructure such as bus rapid transit or city train system - Integration of transport and land use plan		The programs will further improve public transport infrastructure (road, pedestrian, public transport vehicle, information system for public transport management)
Industry	0.004	
Further improvement of industrial processes		More investment
Agriculture	0.008	
Up-scaling and expanding the improved water management programs (SRI, PTT), introduction of new rice varieties with less methane emissions, feeding quality improvement and food supplement and biogas energy.		More investment is needed for conducting long-term breeding program for livestock and introduction of technology for reducing methane and nitrous oxide emission from rice cultivation.
Forestry	0.310	
Up-scaling and expanding the land and forest rehabilitation, timber plantation and community empowerment.		REDD+ implementation, establishment of MRV system
Waste	0.030	
Wider coverage of the waste management improvement		More investment for new landfill and other waste management infrastructure
Peat	0.057	
Further improvement of peat land management and enhancement of institutional and community capacity in managing peat fire.		International support required to improve peat land management and monitoring system.

Source: SNC (Ministry of Environment, 2009)

Mitigation Scenario based on the Indonesian GHG Abatement Cost Curve Study

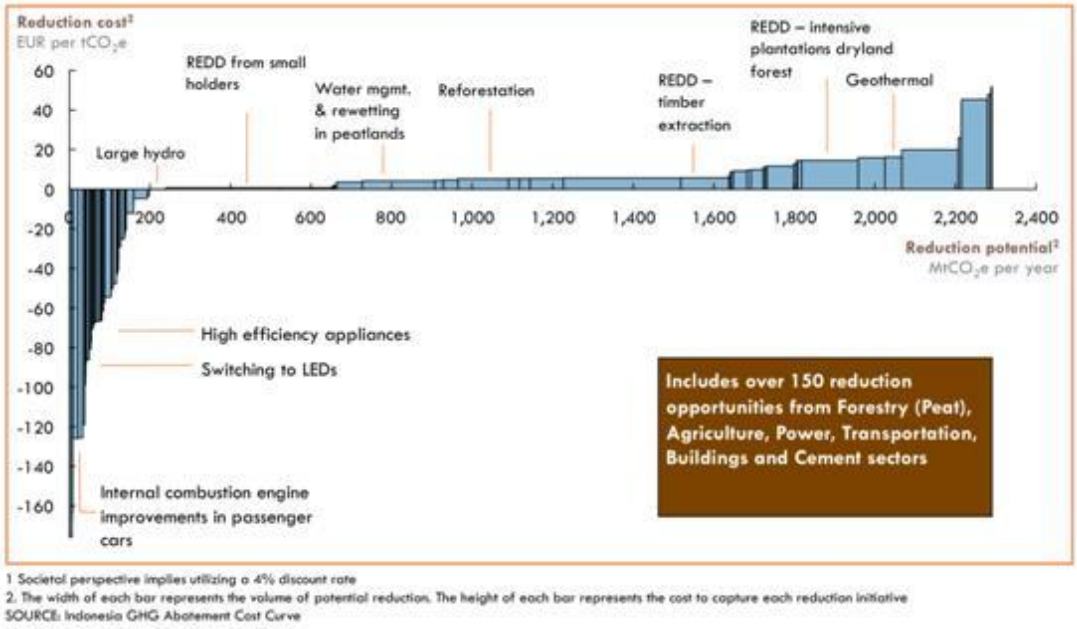
Based on the evaluation of existing studies and guidelines and emission share, this study is focused on the following sectors:

- Energy: Power
- Industry: Cement, Steel, Pulp and paper
- Energy Efficiency in Commercial and Residential Buildings
- Forestry
- Agriculture and Livestock
- Transportation

The Technology Needs Assessment released in 2009 has recommended several technological options. This has been a valuable input for this study, however there are differences in the methodology of selecting technological options. Marine sector is also considered important but it has to be left out in this study because of lack of data and information.

From the 6 selected sectors, the average annual abatement cost curve is shown in the graph below:

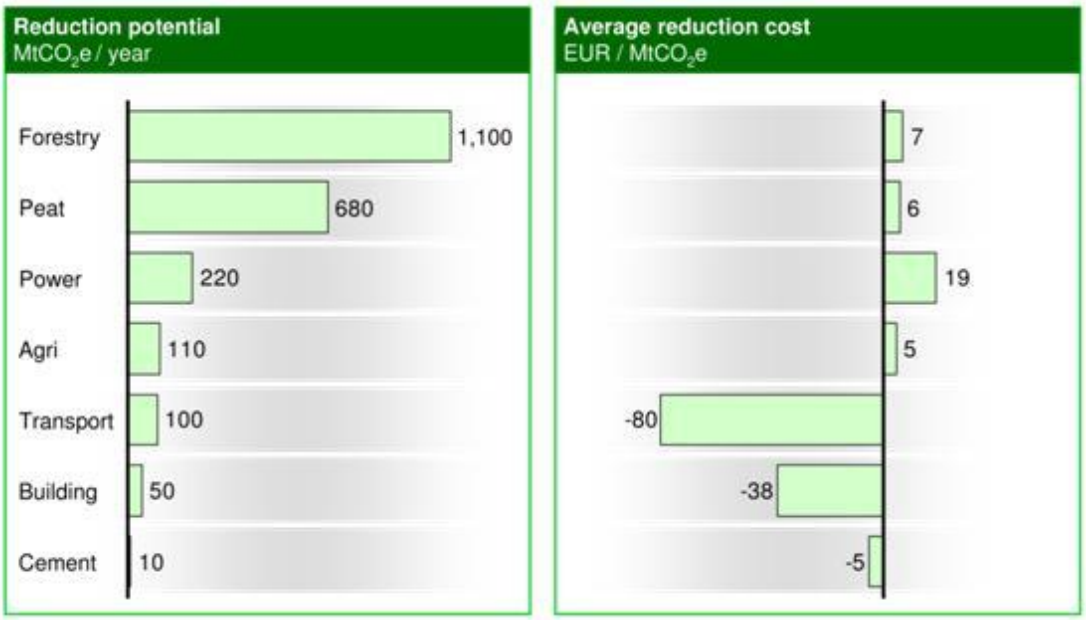
Figure 7. Indonesia GHG Abatement Cost Curve



Source: Indonesian GHG Abatement Cost Curve (NCCC, interim version, September 2009)

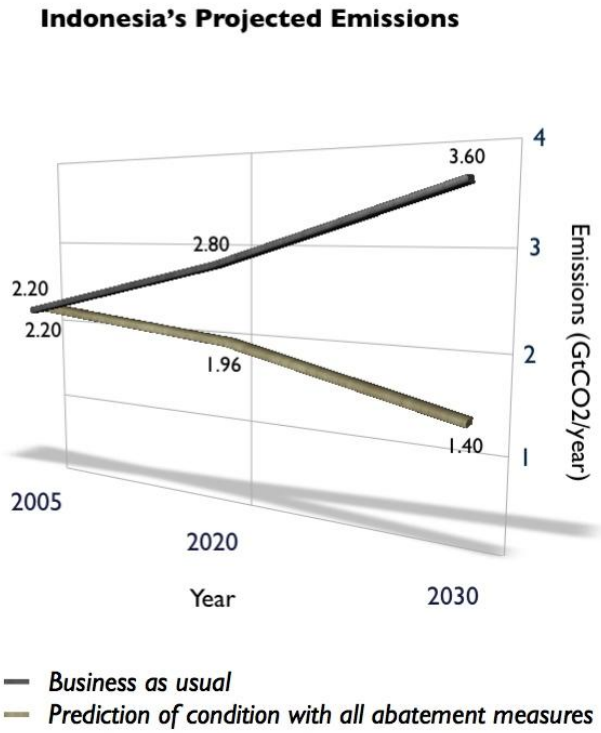
Based on the calculation and analysis of the cost curve of each sector, Indonesia is expected to reduce around 2.2 $GtCO_2e$, from 3.6 $GtCO_2e$ to 1.4 $GtCO_2e$ in 2030. The curves indicating the projected emission reduction, should Indonesia apply the abatement scenarios, is shown below. More than 80% of the abatement potential is expected from forestry and peatland sector.

Figure 8. Abatement scenario per sector



Source: Indonesia GHG Abatement Cost Curve (NCCC, interim version, September 2009)

Figure 9. Indonesia's Projected Emissions



Source: own calculation and illustration based on NCCC, 2009

3. Key Findings on Costs of Implementing Priority Mitigation Measures

3.1 Mitigation Cost Estimates for Abatement Scenarios

Having determined the share of each sector, the Government of Indonesia (GoI) has allocated budget for meeting the non-binding emission reduction target. Until the report is written, the following table should give description on the cost estimates for the two different abatement scenarios in 2020.

Table 6. Share of Sector and Allocated Budget for Meeting the Non-Binding Emission Reduction Target

Sector	Emission Reduction Target (26%)	Cost (Trillion IDR)	Additional Emission Reduction (15%)	Cost (Trillion IDR)
Energy	1.0	0.10	0.36	75.00
Transportation	0.3	10.00	0.28	10.00
Industrial Processes	0.06	0.60	0.14	2.32
Agriculture	0.3	3.60	0.11	4.00
Forestry	13.3	46.40	11.02	36.93
Waste	1.6	6.10	1.07	5.00
Peat	9.5	16.50	2.03	35.00
TOTAL	26.0	83.30	15.0	168.30

Source: Ministry of Finance, 2009 as quoted in SNC (Ministry of Environment, 2009)

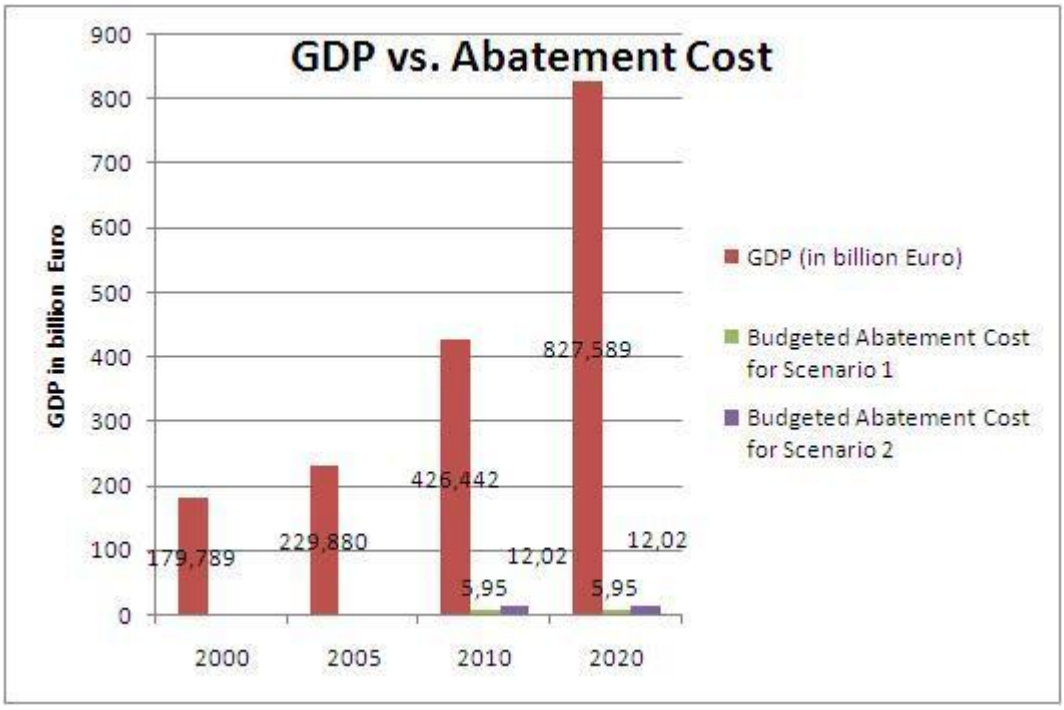
For the first abatement scenario, the GoI has committed to allocate IDR 83.3 trillion to meet the 26% emission reduction target. The GoI has also calculated the fund it would need to finance more mitigation efforts to reduce emission further up to 41%, which is IDR 168.3 trillion.

The average annual abatement cost of all sectors until 2020 is about EUR 5.95 billion for the first mitigation scenario and about EUR 12.02 billion for the second mitigation scenario.[6] These figures are about 1.4 percent and 2.8 percent of Indonesia's projected GDP in 2010.[7] The abatement cost figures for both mitigation scenarios only contribute to 0.72 percent and 1.45 percent of Indonesia's projected GDP in 2020. Indonesia's GDP growth is projected at 6 percent after 2014.

[6] converted from IDR at an exchange rate of 1 EUR = IDR 14,000

[7] The GDP data (current value in USD, converted to EUR using historical value) real and projected values are taken from IMF World Economic Outlook: Sustaining the Recovery, October 2009.

Figure 10. Indonesia's GDP vs. Abatement Cost for Two Mitigation Scenarios

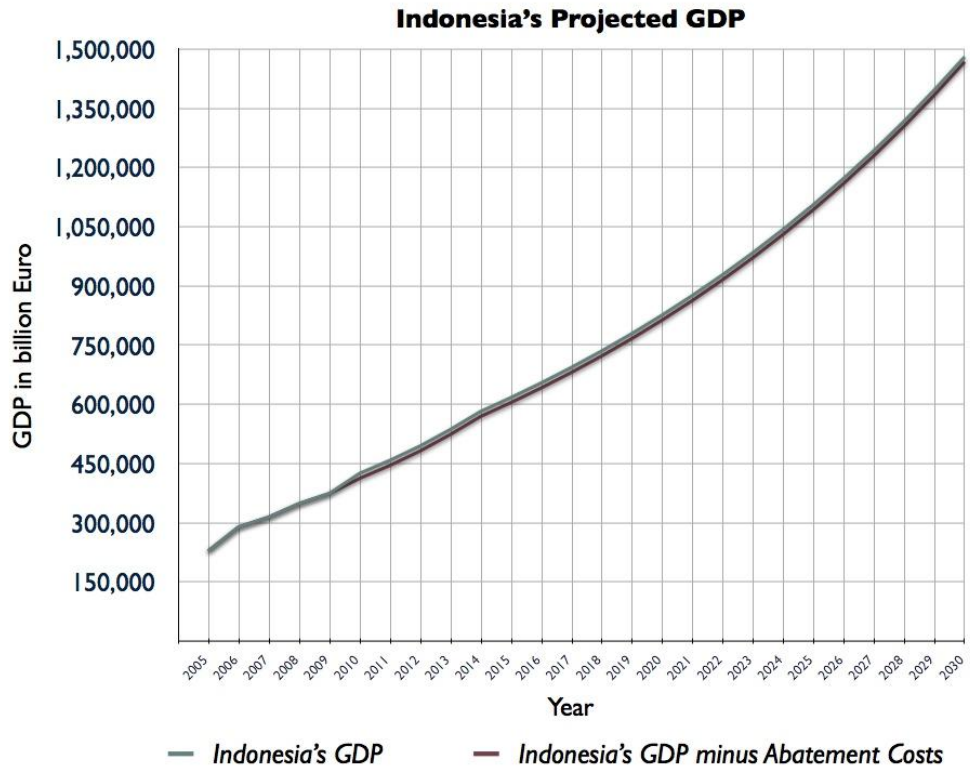


Source: own illustration based on SNC (Ministry of Environment, 2009)

From the NCCC abatement cost curve, the average annual abatement cost of all potential measures until 2030 for all sectors, is EUR 12.84 billion. In other word, each measure has an average abatement cost of around EUR 6 per ton CO_2e avoided. The total amount makes up about 5.6 percent of Indonesia's GDP in 2005[8]. The graph below shows projected Indonesia's GDP until 2030 and the GDP subtracted with annual abatement cost.

[8] The GDP data (current value in USD, converted to EUR using historical value) real and projected values are taken from IMF World Economic Outlook: Sustaining the Recovery, October 2009.

Figure 11. Indonesia's Projected GDP



Source: World Economic Outlook: Sustaining the Recovery (IMF, October 2009)

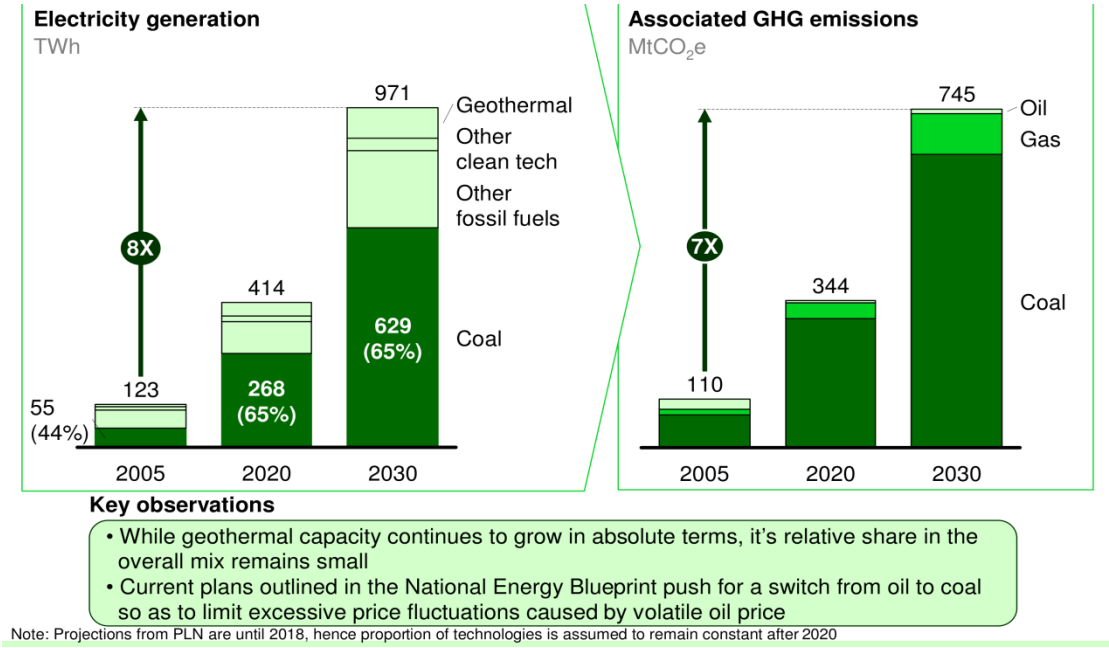
The graph above does not indicate significant margin between the Indonesia's GDP curve and Indonesia's GDP minus abatement cost curve from 2010 onwards. This is because the constant cost of average EUR 12.84 billion becomes increasingly pale in comparison to the Indonesia's ever increasing GDP. While the cost makes up to 5.6 percent of 2005 GDP, it only makes up of 0.9 percent of 2030 GDP.

3.1.1 Power

Emissions from power sector are projected based on the projected increase of power demand by the State Power Company (PLN) as outlined in the Electricity Procurement General Plan (RUPTL). With the same share of technologies, the electricity generation will grow from 123 TWh in 2005 to 971 TWh in 2030. Respective GHG emissions from the electricity generation are 110 $MtCO_2e$ in 2005 and 745 $MtCO_2e$ in 2030, rising about 7 times in 25 years[9]. Such a dramatic increase is mainly due to the increase use of coal in Indonesian energy mix, as seen in the graph below:

[9] NCCC (2009), Indonesia's GHG Abatement Cost Curve

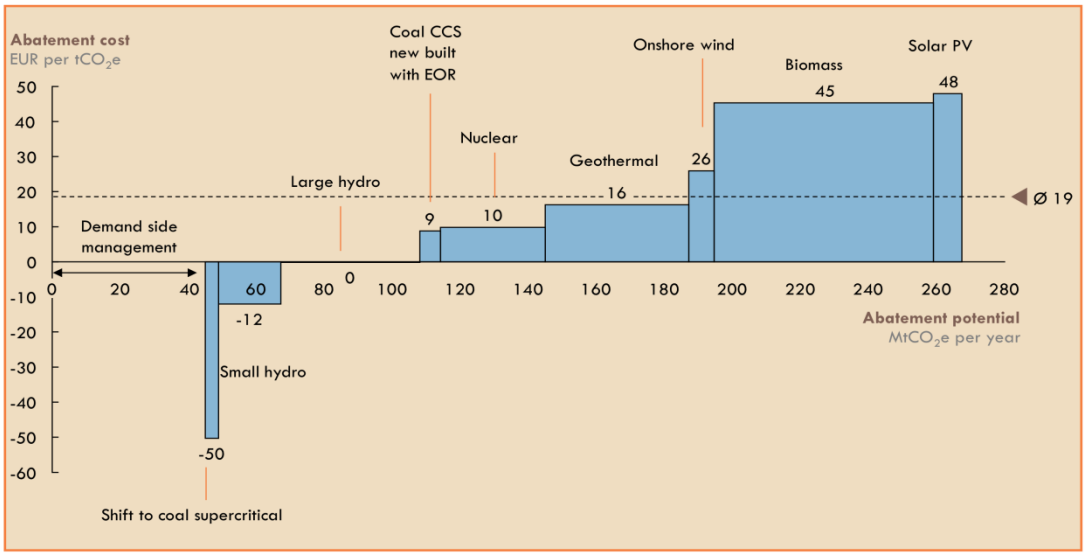
Figure 12. Increased emissions through electricity generation



Source: Indonesia GHG Abatement Cost Curve

To address the above-mentioned issue, the abatement scenario for power sector is as shown in Figure 13 below.

Figure 13. Power sector abatement scenario



Source: Indonesia GHG Abatement Cost Curve (NCCC, 2009)

Indonesia may potentially reduce more than 260 $MtCO_2e$ per year. The cost curve indicates mini and micro as well as large hydro power plants as the most cost-effective options. Those types of power plants are good alternatives to diesel and coal power plants at negative abatement costs. Geothermal offers promisingly high emission reduction. The shift to supercritical coal power plant can be done at only -50 EUR per ton CO_2e. The latest version of the cost curve suggests an abatement cost of EUR 16 per ton CO_2e for geothermal power plant. Potential emission reduction is projected to be around $50MtCO_2e$/ year for additional capacity of 6 GW (47 TWh). This potential is expected to be higher if supporting regulations are in place and other stumbling blocks are removed.

Demand side management can contribute to 43 $MtCO_2e$ per year of net emission reduction.

3.1.2 Energy Efficiency in Pulp and Paper Industry

Pulp and paper belongs to energy intensive industry. Data from the Technology Needs Assessment report (BPPT, 2009) shows that there are 81 pulp and paper plants in Indonesia with total production of 17 million tons product in 2005. The TNA report projects that the production of pulp and paper will increase 3.24 times in 2025 and the GHG emission intensity in ton CO_2 per ton product will increase from 5.57 to 6.29 under business as usual scenario. However, if energy efficient measures are to be applied, GHG emissions will be reduced to 5.19 ton CO_2 per ton product.

According to the Ministry of Industry data, among the 81 plants, only a few have implemented energy efficiency measures. In the TNA report, the analysis of energy efficiency opportunities for pulp and paper industry is based on the data provided by PT Pindo Deli, one of major pulp and paper companies in Indonesia. The company has monthly production capacity of 107,856 tonnes of paper. The emission reduction measures implemented in the company includes energy diversification, cogeneration and technology efficiency improvement. The following table describes the GHG emission reduction and cost savings of implementation of several technological options.

Table 7. Energy Efficiency Measures, GHG Emission Reduction and Cost Savings in Pulp and Paper Industry

No	Technology	GHG Emission Reduction (tonnes CO_2/year)	Cost Savings (US$/ year)	Other Savings/ year	Investment Cost (US$)	Other Costs (US$/ year)
1	Fuel switching in HRSG plant from Industrial Diesel Oil to Natural Gas	144,852	460,000		153,000	
2	Process Water Recovery System			318,240 T Water, 1,591 T Pulp Fibre		
3	Poly Disc Filter	1,401	69,000	449 MWh electricity	114,000	
4	Use of Chemical in pulp refinery system	4,100	324,480	-	-	Chemical cost: 539,280
5	Steam Traps Treatment	153,287	366,142	1,220,680 M3 Natural Gas	200,000	-
6	Condensate Heat Recovery	229,030	237,000	-	200,000	-
7	Refiner Blade Replacement	1,576	124,800	2,160 MWH electricity	-	-
8	Use of Shoe press machine	416,613	3,420,000	Increase prod capacity 10%, Reduce steam consumption 10%	10,000,000	-
9	Change of Paper Press Surface from Groove to Drill and Groove Type	400,000	450,000	-	-	-
10	Use of Solid Waste as Coal Substitution in CFB System	27,108	2,610,000	87,000 ton Coal	-	-

Source: reproduced from TNA Report (BBPT, 2009)

Table 7 above shows that the use of shoe press machine gives the highest cost saving since it can increase production capacity by 10 percent and reduce consumption of 10 percent. An investment cost of USD10 million will be paid off in a relatively short time, since the estimated cost saving is around USD3.42 million per year. It also gives high emission reduction of around 400 kT CO_2/ year. Use of solid waste as coal substitution is also a good alternative that will save cost of coal of around USD2.6 million per year.

The Technology Needs Assessment Study has screened the technology options and selected a few technologies that will be given first priority in the context of technology transfer. This study uses seven priority technology options to be evaluated using cost curve analysis as listed in the table below.

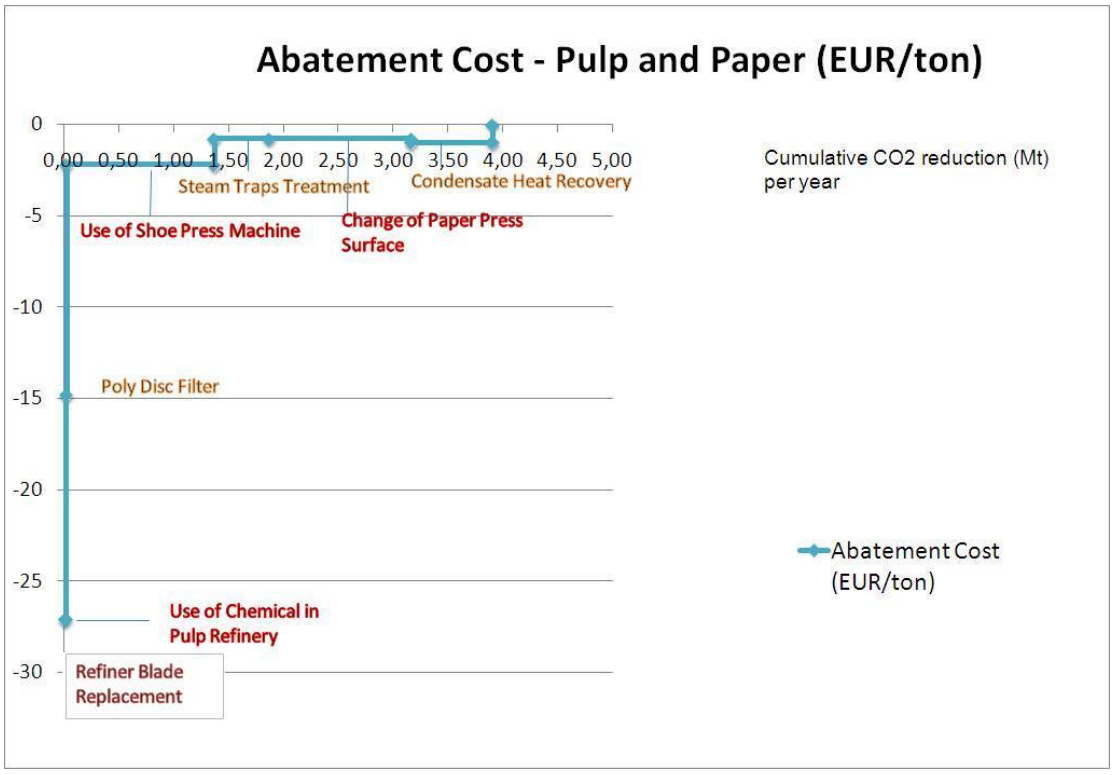
Table 8. Abatement Cost of Mitigation Technology in Pulp and Paper Sub-Sector

No.	Technology Options	Abatement Cost (EUR/ton)	CO_2 savings (MtCO2) per year
1.	Refiner Blade Replacement	-27	0.005
2.	Use of chemical in pulp refinery system	-27	0.013
3.	Poly Disc Filter	-15	0.005
4.	Use of Shoe press machine	-2	1.348
5.	Steam Traps Treatment	-1	0.496
6.	Change of Paper Press Surface from Groove to Drill and Groove Type	-1	1.294
7.	Condensate Heat Recovery	-1	0.741
	Cumulative GHG emissions reduction (MtCO2) per year		3.90

Source: Technological Needs Assessment (BPPT, 2009)

Based on the data of abatement cost in Table 8, Figure 14 below is the illustration of the marginal cost of implementing various mitigation technology options as abatement strategy.

Figure 14. Pulp and Paper Sub-Sector Abatement Cost Curve



Source: own illustration

Based on the projection that the production of pulp and paper industry will increase to 55 million ton products in 2025, or about 3.24 times the production in 2007, if the 7 technology options are applied, the GHG emissions will be reduced by 3.9 $MtCO_2$ per year until 2030.

Table 8 also indicates that replacement of refiner blade and the use of chemical in pulp refinery will give the lowest abatement cost, which is EUR -27/ ton CO_2. This means that the investment will be paid off and will, in turn, result in cost saving over the project lifetime. However technology measures that will give high emission reduction are the use of shoe press machine (1.348 Mt CO_2/ year) and change of paper press surface from groove to drill and groove type (1.294 Mt CO_2/ year).

3.1.3 Energy Efficiency in Steel Industry

Steel is also an energy intensive industry. There are 71 iron and steel plants in Indonesia with total production of 15.4 million tons product in 2007 (BPPT, 2009). The TNA report projects an increase in steel production from 15.4 million tons product in 2005 to 77 million tons product in 2025 or 5 times increase.

In the TNA report, the analysis of energy efficiency opportunities for pulp and paper industry is based on the data provided by PT Krakatau Steel. PT Krakatau Steel is the largest steel industry in Indonesia and the 37th largest in the world, producing 3.8 million ton steel per year. The following table describes the GHG emission reduction and cost savings of implementation of several technology options.

Table 9. Technology Options in Steel Sub-Sector

No.	Technology Options	Energy Savings (kWh/ year)	Cost Savings (USD/ year)	GHG Emissions Reduction (tonnes CO_2/ year)
1	Slabs / Billets Hot Charging (Steelmaking-Hot rolling)	146,678,400	150,326	32,884 tCO_2
2	Thin Slab Mill Technology (Steelmaking-Hot rolling)	222,240,000	15,979,056	90,000 tCO_2
3	Optimization in Ladle Preheating (Steelmaking)	12,198,400	70,734	2,500 tCO_2
4	Oxygen Lancing at Electric Arc Furnace (Steelmaking)	90,000,000	6,471,000	20,000 tCO_2
5	Scrap Preheater (Steelmaking)	55,560,000	3,994,764	10,000 tCO_2
6	Power Demand Control (Steelmaking)	18,600,000	2,021,739	13,466 tCO_2
7	Fuel Substitution (Hot Rolling Mill)		8,695,652	84,450 tCO_2

Source: Technological Needs Assessment (BPPT, 2009)

Table 9 above illustrates that 6 out of 7 measures will result in significant savings in energy consumption, hence in substantial cost savings. The application of thin slab mill technology in steelmaking – hot rolling process will give the highest cost saving. However, since it also has high investment cost, its average abatement cost, EUR – 60 / ton CO_2 is not the lowest among the other alternatives.

The Technology Needs Assessment Study has screened the technology options and selected a few technologies in Steel Sub-sector that will be given first priority in the context of technology transfer. This study uses the following seven technology options to be evaluated using cost curve analysis as listed in the table below:

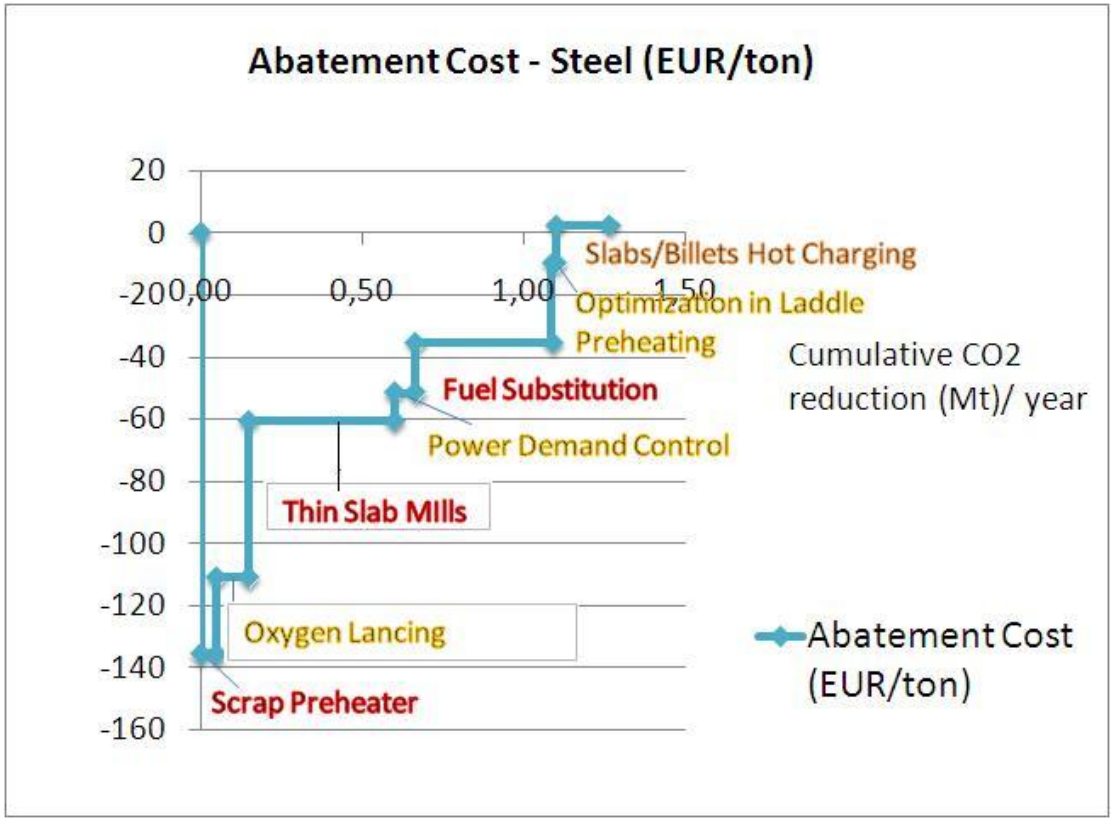
Table 10. Abatement Cost of Mitigation Technology in Steel Sub-Sector

No.	Technology Options	GHG Abatement Cost (EUR/ton)	CO_2 savings of each option ($MtCO_2$) per year
1.	Scrap Preheater (Steelmaking)	-135	0.05
2.	Oxygen Lancing at Electric Arc Furnace (Steelmaking)	-111	0.10
3.	Thin Slab Mills Technology (Hot Rolling)	-60	0.45
4.	Power Demand Control	-51	0.067
5.	Fuel Substitution	-35	0.422
6.	Optimization in Ladle Preheating	-10	0.013
7.	Slabs/ Billets Hot Charging	3	0.164
	Cumulative GHG Emissions Reduction ($MtCO_2$) per year		1.27

Source: Reproduced from TNA (BPPT, 2009)

Based on the data of abatement cost in the table above, below is the illustration of the marginal cost of implementing various mitigation technology options as abatement strategy:

Figure 15. Steel Sub-Sector Abatement Cost Curve



Source: own illustration

The GHG emissions of steel sub-sector can be reduced by 1.27 $MtCO_2$ per year until 2030, in the case that all of the seven technology options are applied. As shown in Figure 15, the application of scrap preheater in steelmaking process will result in the lowest abatement cost,

which is EUR -135/ ton CO2. Oxygen lancing at electric arc furnace is also a proven technology that has been promoted in steel industry and its abatement cost is also relatively low, EUR -111/ ton CO_2. Fuel substitution in hot rolling mill will give the highest emission reduction of 0.422 Mt CO_2/ year. Almost all technology options can be applied at negative abatement cost. However, billets hot charging also costs relatively low, EUR 3/ ton CO_2. All seven technologies will result in emission reduction of 1.27 Mt CO_2/ year.

3.1.4 Cement

Current production capacity of cement industry is 47.47 million tons (2008). Cement industry uses high amount of energy that is mostly derived from oil, gas and coal. According to the Ministry of Industry in Roadmap of Industrial Sector (2009), cement industry has saving potential of 15-22%. Roadmap of cement industry is described in the table as follows:

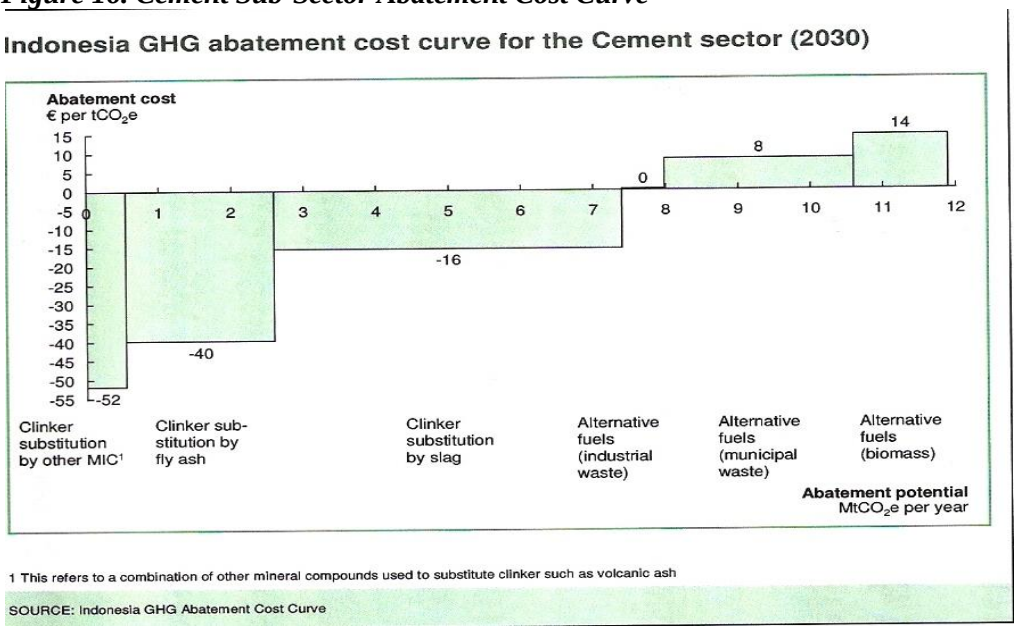
Table 11. Roadmap of Energy Efficiency in Cement Industry

Measures	2005	2010	2015	2020
Energy Efficiency and Fuel Switching	Blending Material after combustion in kiln	Blending Material after combustion in kiln	Use of Geo Polymers	
	Reduction of oil and gas of 20%		Reduction of coal of 15%/year	
Alternative fuel	Diversification of energy using Empty Fruit Brunches of oilpalm	Utilization of EFB, fibre, shell of oil palm	Utilization of biomass 20% / year	
		Utilization of municipal solid waste	Utilization of municipal solid waste	
			Hazardous waste for alternative energy – pilot stage	Permitted hazardous waste for alternative energy – commercial scale)
		Utilization of biogas	Utilization of biogas 20%/ year	

Source: Roadmap of Mainstreaming Climate Change Issue into National Planning – Industrial Sector (Bappenas, 2009)

The total investment cost for the abovementioned measures is about USD 101.6 million. NCCC has developed a cost-curve for cement industry in Indonesia. The result is shown in Figure 16 below.

Figure 16. Cement Sub-Sector Abatement Cost Curve



Source: Indonesia GHG Abatement Cost Curve (NCCC, 2009)

The low-hanging fruit options that give negative abatement cost include clinker subsititution by other MIC[10], by fly ash and by slag. Clinker substitution by slag gives the largest potential for emission reduction, about 5 $MtCO_2e$ per year. Use of alternative fuel from industrial and municipal waste and other biomass is also considered a cost-effective option ranging from EUR 0 to 14 per ton CO_2e reduced. The most expensive option is waste heat recovery, which costs EUR 67 per ton CO_2e reduced. High initial cost impedes the application of this option, thus the potential emission reduction is also trivial.

Emissions from cement sub-sector are expected to increase from 26 $MtCO_2e$ in 2005 to 86 $MtCO_2e$ in 2030. These figures are based on the projection of production increase from 31 million tons in 2005 to 125 million tons in 2030. With the application of existing technologies, the emissions reduction from cement sub-sector are expected to reach around 12 $MtCO_2e$ by 2030.

3.1.5 Buildings

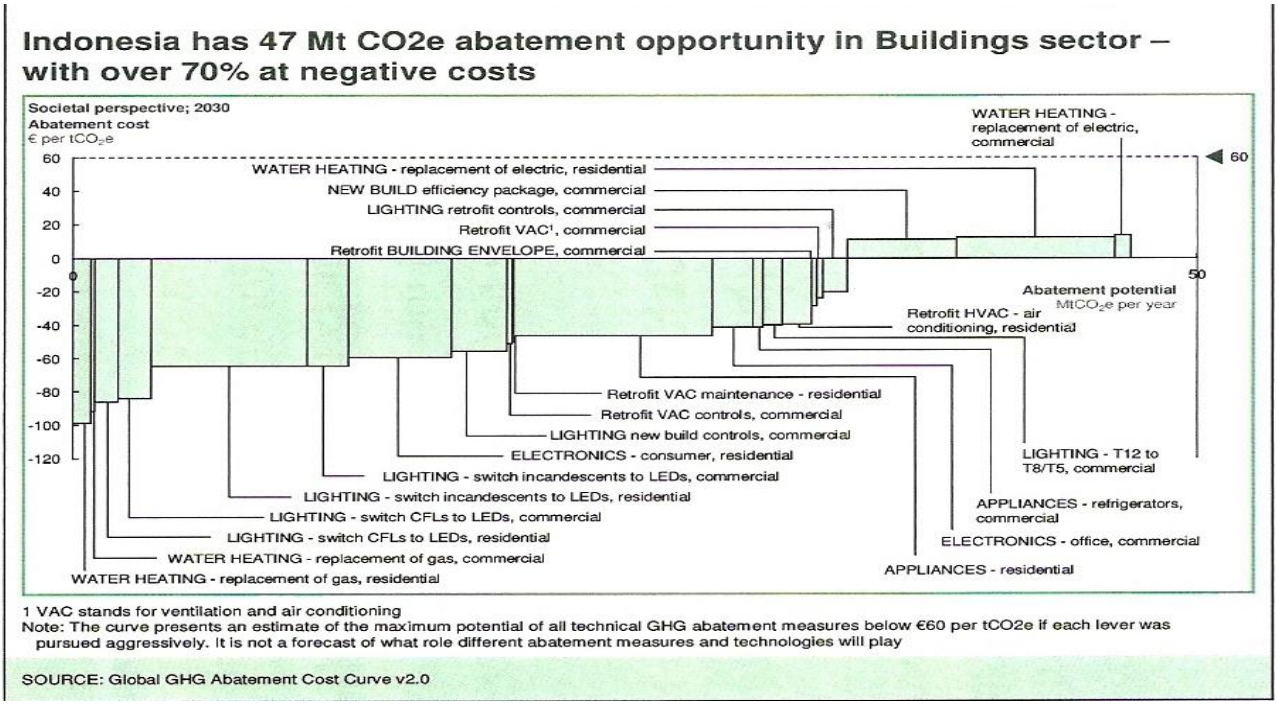
Emissions from the buildings sector are projected to increase from 75 $MtCO_2e$ in 2005 to 218 $MtCO_2e$ in 2030. The growth of energy consumption in both residential and commercial sectors is estimated to be around 5-7 percent per year. Measures in reducing GHG emissions in this sector can be categorized into six areas:

- Alternative water heating replacements (abatement potential of 8.8 $MtCO_2e$/ year)
- More efficient lighting replacements (11.3 $MtCO_2e$/year)
- More efficient electronics replacements (6.4 $MtCO_2e$/year)
- More efficient appliances replacement (9.3 $MtCO_2e$/year)
- Retrofit building packages (3.2 $MtCO_2e$/year)
- New building packages (8.2 $MtCO_2e$/year).

The abatement cost curve of the buildings sector is illustrated in Figure 17.

[10] Mineral components used to produce portland and blended cements

Figure 17. ***Building Sector Abatement Scenario***



Source: Global GHG Abatement Cost Curve (McKinsey, v2.0)

If all potential measures are to be applied, the total emission reduction is 47 $MtCO_2$ per year until 2030. More than seventy percent of these options can be pursued at negative costs. The biggest potential to reduce emission is by improving efficiency of household appliances in residential, replacement of residential water heating from electric to solar, switching light bulbs to CFLs in residential and improving efficiency of consumer electronics in residential. Government tax refunds for consumers who purchase energy efficient electronics and appliances may be effective to give incentives then lower the emission. There should also be incentives for manufacturers to conduct buy-back or trade-in program for old appliances in exchange with energy efficient goods.[11]

3.1.6 Forestry and Peat

Indonesia is the second largest home to the world's remaining natural rain forests and peatland. For that reason, Indonesia is prone to forest and land fires, illegal logging, deforestation and land degradation, which altogether increase Indonesia's GHG emissions.

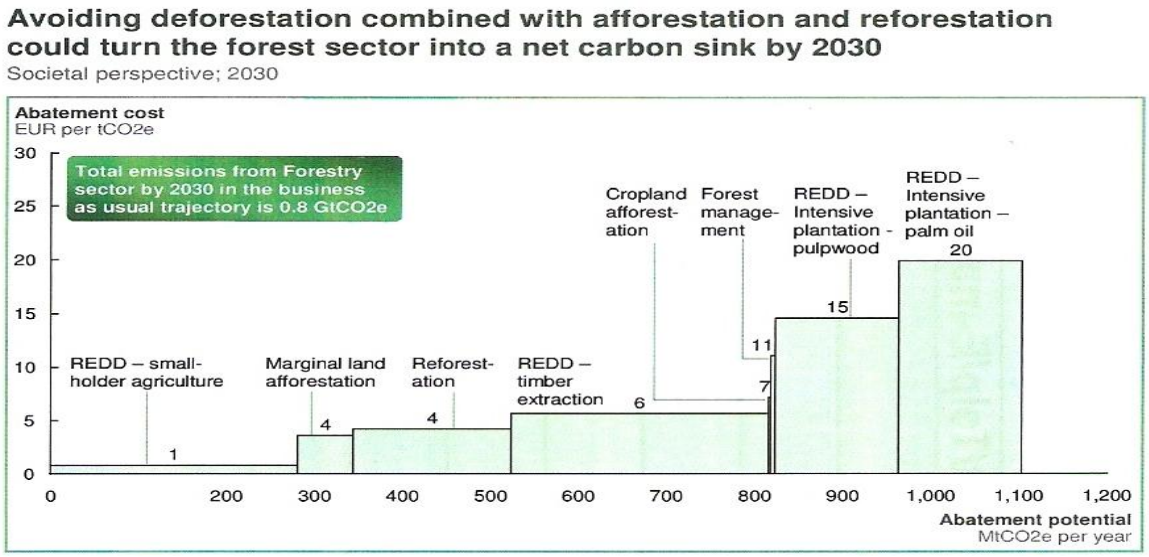
According to PEACE, 2007, Indonesia's total GHG emissions in 2005 reached 3.014 Gt CO_2e. Eighty three percent of this figure or about 2.6 Gt CO_2e is emission from deforestation and land conversion, including forest and land fires. According to IFCA Report (2007), deforestation rate in Indonesia is 1.1 million hectares per year. This shows how important the sector is to Indonesia.

Emissions from forestry sector are still subject to debate among relevant stakeholders in Indonesia. Ministry of Forestry estimated the emissions from dryland forest to be 768

[11] NCCC (2009), Indonesia's GHG Abatement Cost Curve

$MtCO_2e$ in 2005. PEACE report estimated the emissions from forestry sector excluding peatland to be 538 $MtCO_2e$ in 2005. NCCC's estimate gives a figure of 852 $MtCO_2e$ in 2005 and it is expected to remain constant until 2030. The total abatement potential from the forestry sector is 1,100 $MtCO_2e$ by 2030. Avoided deforestation and forest degradation account for 850 MtCO2e per year and afforestation and reforestation account for 250 $MtCO_2e$ per year. Below is the abatement scenario for forestry sector:

Figure 18. ***Forest Sector Abatement Scenario***



Source: Indonesia GHG Abatement Cost Curve (NCCC, 2009)

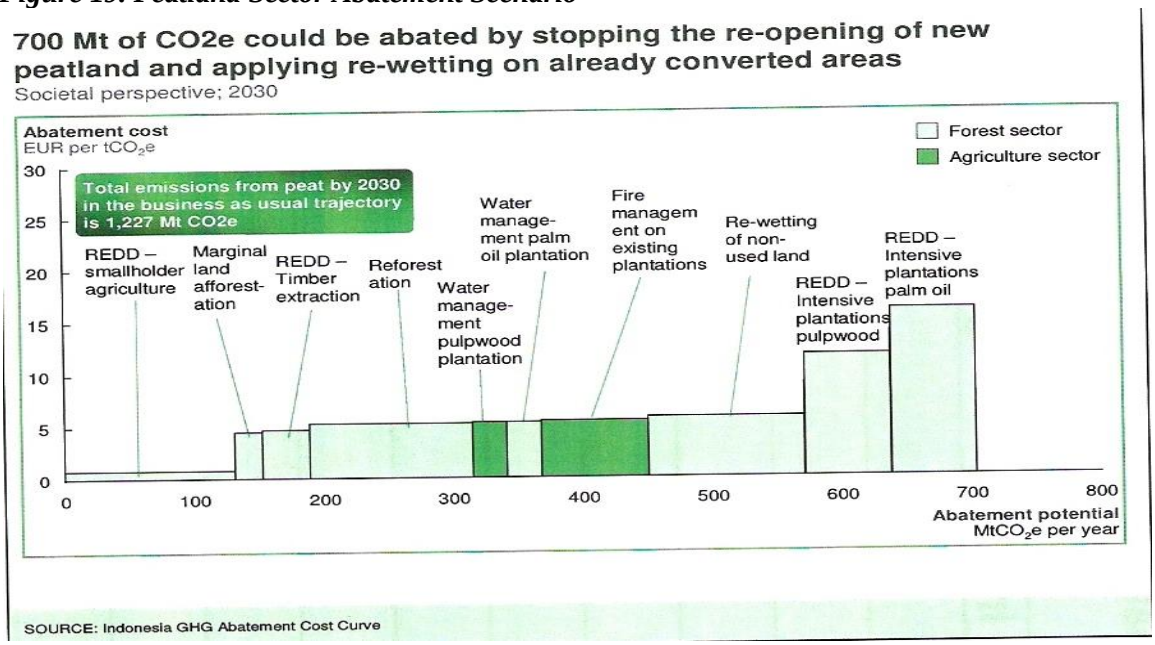
To reduce emissions in forestry sector, Indonesia can start doing cost-effective measures (at below EUR 5 per tonCO_2 avoided), which according to the NCCC Cost-Curve Study, include avoided deforestation and forest degradation from smallholder agriculture, marginal land afforestation and reforestation. Avoided deforestation and degradation from timber extraction can be achieved at quite a fair cost of EUR 6 per tonCO_2 avoided and gives relatively high emissions reduction potential of around 300 $MtCO_2e$ per year. Cropland afforestation and sustainable forest management (SFM) can be done at fair costs (between EUR 5 to 10 per tonCO_2 avoided) but the potential of emission reduction is small. Much higher costs (between EUR 15 to 20 per tonCO_2 avoided) must be paid if Indonesia would like to avoid deforestation and degradation that would otherwise be used for intensive pulpwood and oil palm plantation.

Peatland is also considered very important sector for Indonesia. Fifty percent of tropical peatland is located in Indonesia. Indonesia's share of emission is 58% of the global emissions from peatland decomposition (Hooijer et al, 2006 in NCCC, 2009).

NCCC has calculated emissions from peatland in 2005 that gives moderate angle comparing to other sources such as the PEACE report (2007) and Hooijer, et.al (2006). For the cost curve in peatland sector, NCCC estimates emissions from peatland to be 1,030 $MtCO_2e$ in 2005. Under the business-as-usual scenario, the emissions are projected to grow by 20 percent

to 1,230 $MtCO_2e$ in 2030.[12] Total abatement potential from peatland is estimated to be around 700 $MtCO_2e$ per year. Avoided deforestation and peatland degradation account for 250$MtCO_2e$. Abatement scenario for peatland is shown in Figure 19 below.

Figure 19. Peatland Sector Abatement Scenario



Source: Indonesia GHG Abatement Cost Curve (NCCC, 2009)

The NCCC's cost curve for peatland sector shows that several measures including avoided peatland degradation from smallholder agriculture, marginal land afforestation, avoided peatland degradation from timber extraction, reforestation, water management in pulpwood plantation, water management in oilpalm plantation, fire management on existing plantations and re-wetting of non-used land give abatement potential at below EUR 5 per tonCO_2 avoided. Much higher costs (between EUR 10 to 15 per tonCO_2 avoided) must be paid for avoided deforestation and degradation that would otherwise be used for intensive pulpwood and palm oil plantation.

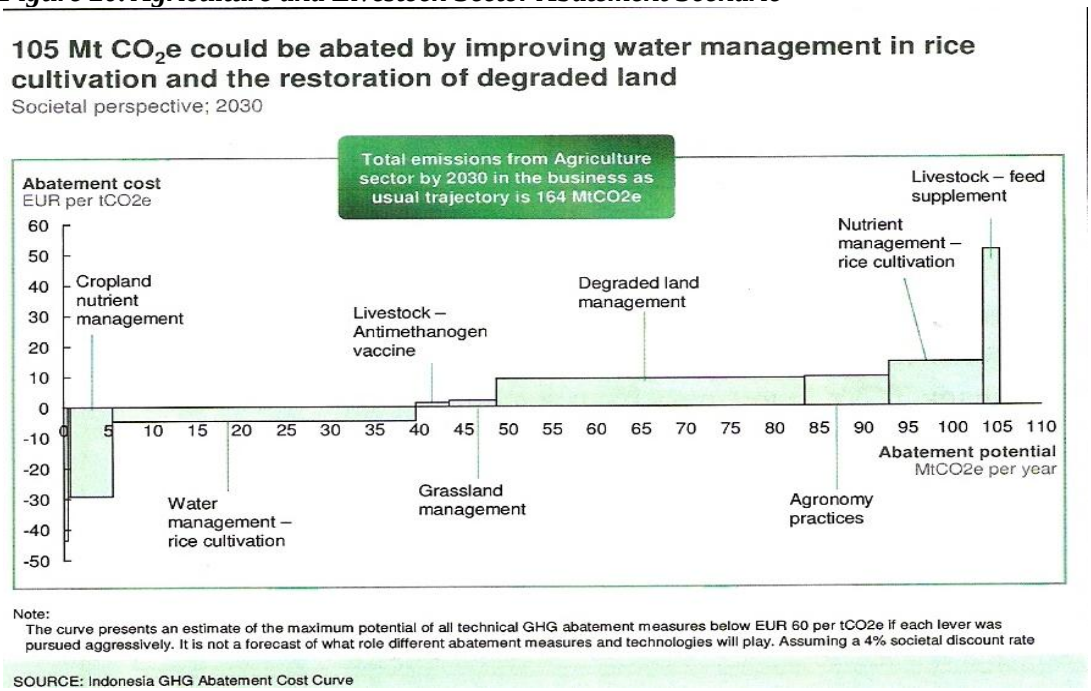
3.1.7 Agriculture and Livestock

Greenhouse gas emission from agriculture and livestock sector is potentially high because this sector emits a high amount of methane (CH_4), which has global warming potential 21 times higher than carbondioxide (CO_2). This sector emitted 141 MtCO2e in 2005, or 5% of Indonesia's total emissions in that year, 3.014 $GtCO_2e$ (MEMR, 2007 in PEACE, 2007). It has the third largest share of emissions below forestry (85%) and energy (9%).

The figure used in NCCC study is 132 $MtCO_2$ in 2005, which also made agriculture and livestock the third-highest emitting sector behind forestry and peat. Emissions from this sector are expected to rise by 25 percent to 164 $MtCO_2e$ in 2030. The abatement potential for this sector is estimated to be around 105 $MtCO_2e$ per year by 2030.[13]

[12] NCCC (2009), Indonesia's GHG Abatement Cost Curve
[13] NCCC (2009), Indonesia's GHG Abatement Cost Curve

Figure 20. Agriculture and Livestock Sector Abatement Scenario

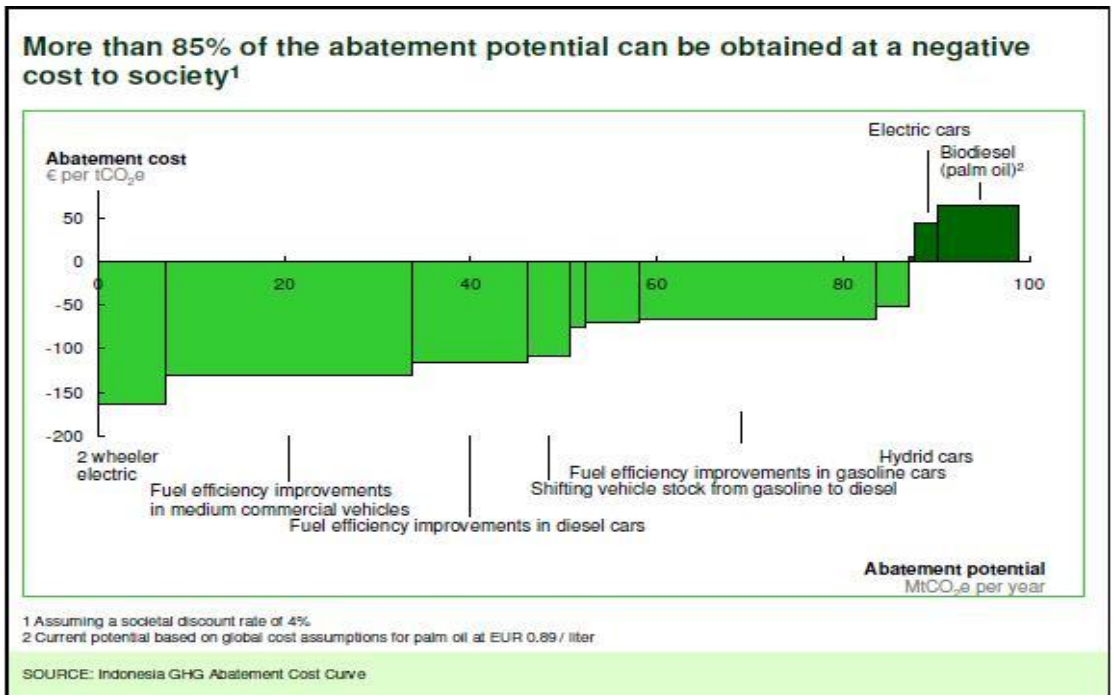


Source: Indonesia GHG Abatement Cost Curve (NCCC, 2009)

3.1.8 Transportation

Mitigation measures in transportation sector may potentially reach almost 100 MtCO2e/ year until 2030. About 75 MtCO2e lies in fuel efficiency standards improvement across all vehicle classes. Hybrid and electric vehicles replacing gasoline is expected to reduce another 15 MtCO2e. Most of these options can be achieved at negative cost. Shifting to electric motorcycles is an attractive option at a cost of -162 EUR/ tCO2e abated. However, high cost of battery and recharging facilities is still a hindrance for Indonesia to move further with this technology.

Figure 21. Transportation Sector Abatement Scenario



Source: Indonesia GHG Abatement Cost Curve (NCCC, 2009)

Biofuel has become the main attention of renewable energy in Indonesia. However, biofuel is also controversial alternative, since it may jeopardize food security related to sources of biofuel such as palm oil, corn, cassava and molasses. There is a prerequisite before promoting the use of biofuel for alternative fuel that biofuel from palm oil must not cause further deforestation and compete with avoided deforestation efforts. So far, *jatropha* is the only potential non-edible source of biofuel in Indonesia. However, the economic viability is still questioned. DNPI estimated the abatement cost of biodiesel from palm oil to be slightly above EUR 50 per tonCO_2 avoided. The potential of emission reduction is about 10 MtCO_2 per year.

3.2 Methodologies to Determine Emissions Projections and Cost Estimates

The cost-effectiveness value or abatement cost of a technology is calculated by dividing the deduction of initial cost of technology to net present value of technology by emission reduction over average technology lifetime.

$$CE = \frac{I - NPV}{ER}$$

Where:

CE	= cost-effectiveness value or abatement cost of a technology (in $/ tonne)
I	= initial cost of technology
NPV	= net present value of technology
ER	= GHG emission reduction over average technology lifetime

Net present value is calculated using the following formula:

$$NPV = \sum_{t=o}^{L} \frac{B_t - C_t}{(1+d)^t}$$

Where:

NPV	= net present value of technology option
L	= average lifetime of the technology
t	= time of the technology being evaluated (in years)
B_t	= benefit of the technology in year t
C_t	= cost of the technology in year t
d	= discount rate

Alternative mitigation measures are plotted in the cost curve from the lowest cost option to the highest. The lowest is deemed the most cost-effective measure.

Theoretically, policy makers would implement lowest cost measures first. However, it is not always the case that the most cost-effective measures are those should be prioritised to be implemented. Measures can be chosen regardless of cost-effectiveness value. The readiness and capacity which encompass policy and regulatory framework as well as technical capabilities for certain measures/ technologies should be in place. For instance, in this study, it is found that the measures in forestry and peat sector give relatively low value of abatement costs. REDD small holder agriculture in forested areas costs only EUR 1 per tonCO_2e avoided. However, simultaneous implementation in several regions in Indonesia is unlikely. Energy sector is considered more ready for immediate action, but some technologies in energy sector (e.g. power plants) have relatively longer timeline to be able to deliver the actual emission reductions.

The use of cost-curve analysis methodology has some limitations. There is a potential of double-counting, when there are at least two or more measures calculated for reducing the same emissions. Another important potential loophole of this method is the so-called "rebound-effect" or "leakage", whereby a household after equipped with energy-saving appliances consumes more energy and thus releases more emissions. The cost-curve method does not always consider the full life-cycle of a technology. It is susceptible to incomplete estimation, if the embodied energy of particular technologies is not taken into account. For example, if the embodied energy used in the production of photovoltaic solar panels is not addressed well in the calculation, it would overestimate their benefits.

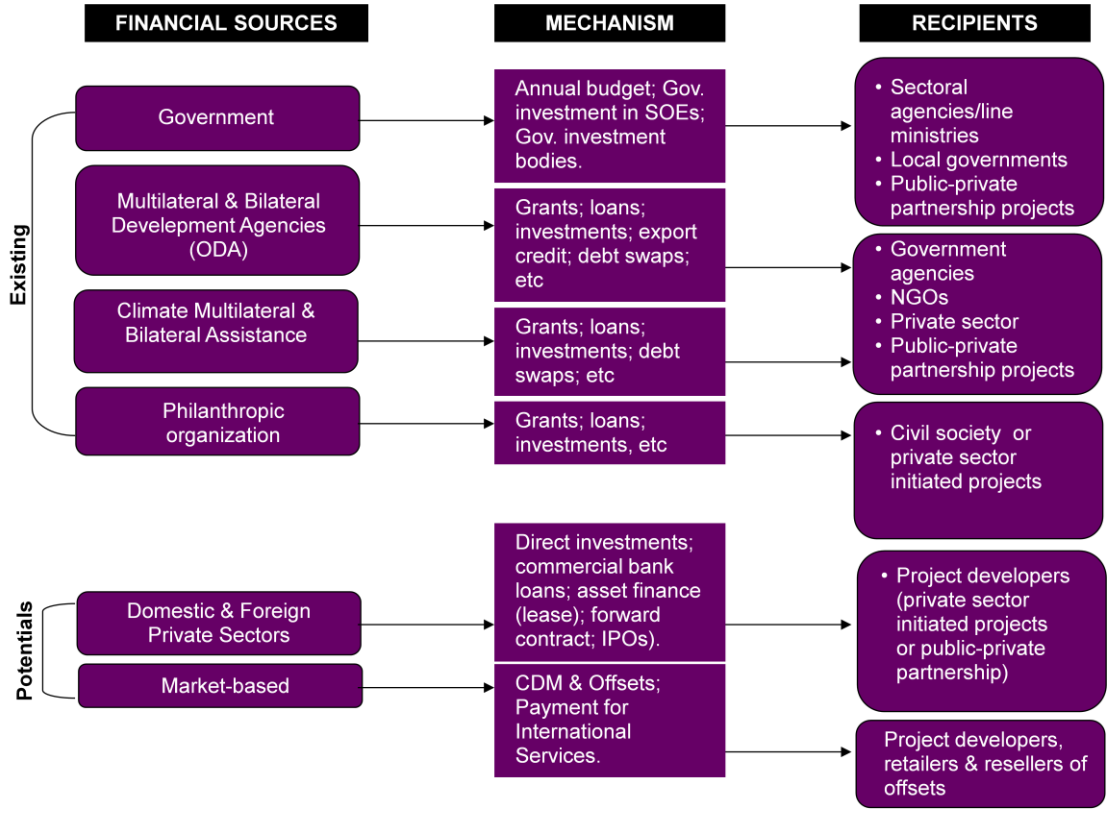
The abatement cost is calculated from a societal perspective. The cost excludes taxes, subsidies and with a capital cost similar to government bond rates. This allows comparisons of opportunities and costs across countries, sectors and individual opportunities. It also means that the costs are different from the actual costs a company has to pay, therefore the cost-curve cannot be used for investment switching and nor for estimating CO_2 prices.

4. Key Findings on Financial Flows and Availability and Policy Instruments

4.1 Financial Flows and Availability

In the Bali Action Plan, financing is mentioned as one of pillars in advancing climate change measures. This study has reviewed possible sources of financing for mitigation actions in Indonesia including their possible mechanism of delivery. The result is summarised in Figure 22. Some of the sources and mechanisms identified have already supported mitigation efforts in the last few years while the rest is still potential. Table 13 identifies in detail the sources of mitigation finance and potential/existing schemes.

Figure 22. Financial Flows and Availability



Source: own illustration

Table 12. Existing and Potential Indonesian Climate Change Mitigation Funding

Public Fund	Government	Government Budget (APBN)	An earmarked Rp 2 trillion in 2009 budget for climate change	Existing
		SOEs & Government Investment Bodies	State-Owned Entities (SOEs), Centre for Government's Investment (PIP)	Existing
	Multilateral and Bilateral Development Agencies (ODA)	World Bank	The World Bank Country Partnership Strategy 2009-2012 for Indonesia	Existing
		ADB	Country Operation Business Plan 2009-2011 for Indonesia	Existing
			Clean Energy Financing Partnership Facility	Potential
			Climate Change Fund	Potential
			Asia-Pacific Carbon Fund	Potential
			Future Carbon Fund	Potential
		UNDP	The UNDP Country Programme for Indonesia 2006 – 2010	Existing
		JBIC/JICA	Loans, Grants, Technical Assistance	Existing
		AUSAID	Ausaid Country Programme 2009-2010	Existing
		USAID	Global Climate Change Program	Potential
			Tropical Forest Conservation Act (Debt-to-Nature Swap)	Existing
		GTZ	Climate Protection Grants	Existing
		DFID	Loans, Grants, Technical Assistance	Existing
		EC	Loans, Grants, Technical Assistance	Existing
		AFD	Loans, Grants, Technical Assistance	Existing
		DANIDA	Climate and Development Action Program	Existing
		NORAD	Norwegian International Climate and Forest Initiative	Existing
		CIDA	CIDA Climate Change Development Fund	Existing
		SIDA	Loans, Grants, Technical Assistance	Existing
	Climate Multilateral and Bilateral Assistance	ICCTF	Government initiatives to mobilise grants from bilateral and multilateral development partners on climate change	Existing
		Specific Trust Fund	Clean Investments Fund	Potential
			Forest Carbon Partnership Facility	Potential
			Global Environmental Facility (GEF) Trust Fund	Potential
			UN-REDD Programme Fund	Existing
			Cool Earth Partnership (Japan)	Existing
			Environmental Transformation Fund - International Window (UK)	Potential
			International Forest Carbon Initiatives (Australia)	Existing
			International Climate Initiative (Germany)	Potential
			Global Climate Change Alliance (EC)	Potential
	Philanthropic Organizations	Domestic	Kehati mutual fund - in the form of collective investment contract amounting Rp 3 billion	Existing
		International	e.g.: The Energy Foundation, Oxfam GB, Conservation International, The Rockefeller Foundation, The Doris Duke Charitable Foundation	Existing & Potential

Private Fund	Private (Domestic & Foreign)	Commercial banks	provide finance through commercial lending.;	Potential
		Private equity investors	Through investment at start-up firms;	Potential
		Pension funds and Insurance companies	Through direct investment and portfolio investment;	Potential
		Public Capital Market	Through securities issuance (stocks, bonds, commercial papers, etc);	Potential
	Market-based (Voluntary Carbon Finance)	CDM & Offsets	Indonesia has only gained less than 1.2 percent of projects with issued CERs compared to the world's total	Existing & Potential
		Payment for Environmental Services	Four type of ES: Carbon sequestration, Biodiversity protection, Watershed protection, Eco-tourism	Potential

Source: own illustration

4.1.1 Public Financial Sources and Mechanisms

This study categorises the sources of mitigation financing from public sector into four types: government budget, multilateral and bilateral financial assistance, specific climate change trust funds, and philanthropic organizations.

1. Government

1.a. Government budget (APBN)

State budget is a fiscal instrument by which the Government shapes the future development path of the country. Mainstreaming climate finance through state budget is of utmost importance, since it will give signals to the private sector in what directions the Government is heading. Prioritizing climate finance through state budget means giving enough support and comfort to economic actors in the country who need to calculate the risk and return profile of their anticipated projects.

The Government has a strong commitment to the millennium development goals (MDGs) and has incorporated them in the Five Year Development Plan. Actions on climate change contribute to goal 7, which is to ensure environmental sustainability, and specifically to target 9, which is to integrate principles of sustainable development into country policies and programs and reverse the loss of environmental resources. One of indicators for target 9 is per capita emission of carbon dioxide equivalent. The Government has included climate change issues into its Long-Term Development Plan (RPJP 2005-2025), Medium Term Development Plan (RPJM 2004-2009) and Annual Government Workplan (RKP). The Government of Indonesia has realized the severe impacts of climate change and is considering it a priority for the next national medium-term development plan (RPJM) for 2010-2014 and beyond.

The Government has earmarked Rp 2 trillion ($213 million equivalent) in the 2009 budget to improve public awareness and inter-agency cooperation in dealing with the impacts of climate change. The proposed 2009 budget for climate change mitigation and adaptation programs is about five times the Rp376.4 billion earmarked for the State Ministry of Environment which should send positive signals to the international community that Indonesia is indeed taking climate change seriously. The funds will be channeled through the National Climate Change Council, which has been tasked to formulate national policies, strategies and projects to deal

with climate change, and to strengthen Indonesia's position in lobbying wealthy nations to take responsibility for controlling climate change.

Table 13. Comparative Budget - State Budget 2009

1	Allocated Budget for Ministry of Environment	Rp. 376.4 billion
2	Allocated Budget for improving capacity of handling climate change mitigation & adaptation.	**Rp. 2,000 billion**
3	Total Allocated Budget for environment development	Rp. 7,000 billion
4	Central Government Budget Expenditure.	Rp. 716.4 trillion
5	Total Indonesia's Budget Expenditure 2009.	Rp. 1,037.1 trillion

Source: Financial Note & State Budget 2009

The President has issued further instructions that funding for climate change must be generated from new sources, rather than by cutting allocated budgets of related ministries or agencies. There have been also climate finance initiatives in key ministries. For instance, Ministry of Environment introduced Environment Soft Loan Schemes (see Table 16).

Table 14. Environment Soft Loan Schemes

	JBIC-PAE	IEPC-KfW 1	IEPC-KfW 2	DNS
Source	Soft loan	Grants	Soft loans	Debt swap
Started since	1992	1997	2005	2006
Allocated fund (Rp billion)	313	95	110	80
Status	Revolving in executing banks	Revolving in executing banks and RIDLB	Still using loan finance up to 2009	Still using loan finance up to 2010
Available fund (Rp billion)	15	42	70	35
Credit type	Investment	Investment	Investment & Working Capital	Investment & Working Capital
Target	All scales	SMEs	SMEs	Micro & Small
Delivery mechanism	Banks	Banks	APEX banks	Banks
Technical assistance	-	Technical consultants in each bank	Central & regional consultants	Team of consultants

Source: Ministry of Environment (brochure, n.d)

1.b. SOEs and Government's investment bodies

State-owned Enterprises

State-owned enterprises (SOEs) play a very strategic role in Indonesia's economy due to their asset size and sector coverage: in agriculture, mining, industry, trade, infrastructure, and other services. By definition (Law No 19/2003 on SOEs), SOEs are legal entities in which the Government has a full or majority ownership in their capital structure. The Government's budget may be allocated to SOEs by way of direct ownership and/or lending. Channeling foreign grants and loans to SOEs are also made possible by Government Regulation No 2/2006. Beside running commercial activities, SOEs are also obliged to provide public services to the country.

Total SOEs asset are around Rp 2,000 trillion (US$ 200 billion) in 2008. The Government's majority ownership in SOEs means that it has a controlling stake and enough capacity to

direct SOEs into climate friendly investments. To provide more finance, SOEs may also engage in private-public partnership projects where private sectors are less interested. Government supports and policies must be put in place in projects which carry higher risk-profile and economic externalities.

Government Investment Unit (PIP)
Based on the Principle and Guidance for Foreign Loan 2006-2009 *(Prinsip dan Arah Kebijakan Pinjaman Luar Negeri 2006-2009)* and also the government's Medium and Long-term National Development Plan *(Rencana Pembangunan Jangka Panjang dan Menengah Nasional),* to mobilise climate finance, the Government has established the Government Investment Unit (Pusat Investasi Pemerintah or PIP). PIP is an arm of the Ministry of Finance that manages sovereign wealth fund in partnership with the private sector. According to Government Regulation 1/2008, PIP may undertake portfolio investment as well as direct investment.

PIP offers finance with interest in return based on the interest rate of lending institution. From PIP, it will then be forwarded to project contractors with interest in return. The return paid by to PIP is categorised as non-tax state income *(Penerimaan Negara Bukan Pajak-PNBP).*

To fund government activities related to low carbon development, PIP has established a clean technology fund together with the Qatar Investment Authority (QIA). In this regard, the government has allocated 1.5 trillion rupiah for initial financing of this cooperation, with approval from the Committee overlooking assumption of the Government's Budget *(APBN).*

2. Multilateral and Bilateral Development Agencies (ODA)

Official Development Assistance is flows of official financing administered with the promotion of the economic development and welfare of developing countries as the main objective, and which are concessional in character with a grant element of at least 25 percent. ODA flows comprise contributions of donor government agencies to developing countries ("bilateral ODA") and to multilateral institutions. ODA may be bilateral: given from one country directly to another; or it may be multilateral: given by the donor country to an international organisation such as the World Bank or the United Nations Agencies (UNDP, UNICEF, UNAIDS, etc.) which then distributes it among the developing countries.

It is important to note that the question of whether climate financing should be eligible as official development assistance (ODA) is still controversial. The fact is that most donor countries consider that the newly established climate change trust funds are part of ODA. They are new and additional to existing levels of ODA. It is expected that most donors will include contributions to these climate change trust funds in their ODA reporting. There are also some features where these funds are not ODA, for instance, Adaptation Fund under GEF. It is not ODA because the fund is not reliant on donor funding or overseas development assistance but from 2 percent of the Certified Emission Reductions (CERs) issued for projects of the Clean Development Mechanism (CDM) and with funds from other sources.

Article 11 of the Kyoto Protocol stipulates that "… the developed country Parties … shall provide new and additional financial resources …" to meet the costs incurred by developing countries for the implementation of existing commitments and the transfer of technology. The phrase "new and additional" refers to public financial flows from developed to developing countries. However, the Kyoto Protocol does not define a baseline. Donors have long promised to give 0.7 % of their gross national product (GNP) as ODA, but have always lagged behind this figure. The Bali Action Plan (UNFCCC 2007) also agreed the need for

"adequate, ... new and additional resources". It is worth noting that in this sense ODA donor funds are arguably not additional, and they will certainly not be adequate for the full requirements for adaptation and mitigation.

As climate funds (from emission certificate auctions, for example) may provide the opportunity to increase ODA without burdening public budgets, industrialized countries have a strong interest in climate finance being regarded as ODA. One of the main arguments they advance is that climate change is a core developmental issue and climate financing should therefore be part of ODA. It may indeed often be difficult to distinguish climate projects from development projects. This is especially true of climate change adaptation, but also of mitigation (e.g. rural electrification using renewable energies). Furthermore, as development organizations have regional expertise and experience in the implementation of development projects, they may be appropriate agents for the implementation of climate projects in developing countries.

On the other hand, the developing countries and many Non-Governmental Organizations (NGOs) claim that the primary aim of ODA is the promotion of development. Climate financing, i.e. adaptation financing, must be seen, on the other hand, as compensation rather than development aid. It should therefore be provided in addition to the promised 0.7 percent of developed countries' gross domestic product (GDP).

ODA (Official Development Assistance) has been a major source for Indonesia's development finance. Recently, there has been a wide spread understanding among donor agencies on the danger of climate change. Many donors are now linking their ODA commitments to clean development finance, such as for development of geothermal and wind power.

To administer ODA flows, the Government has released Government Regulation No 2/2006. The Regulation sets foundation on grants and/or loan management, its mechanism of distribution, authority bodies and responsible parties for managing the debts, etc.

In the last 10 years, average ODA flows to Indonesia have reached US$2,036 million. The major contributors are Japan, and then followed by the US.

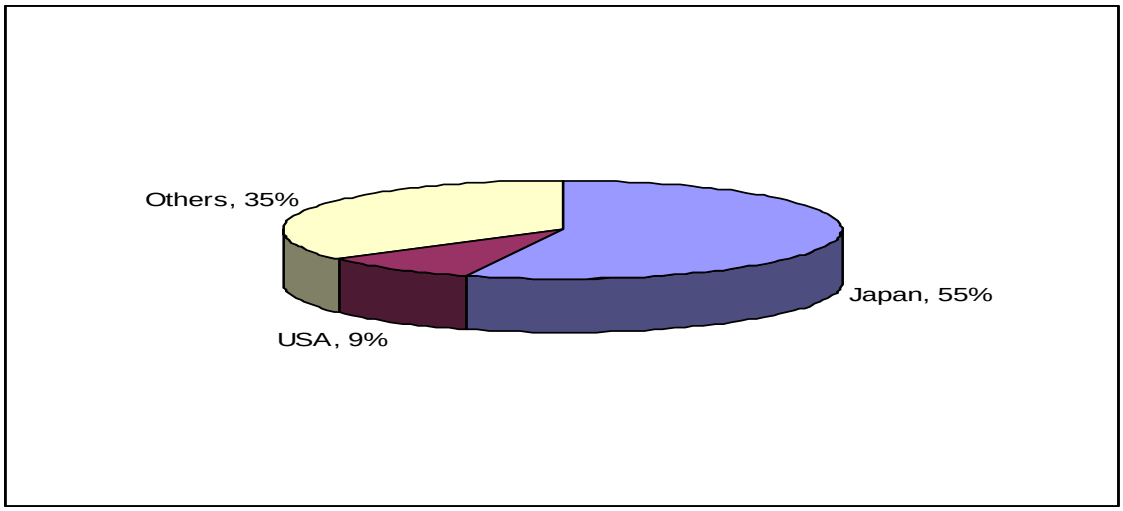
Table 15. ODA's Flow to Indonesia, 1989-2007

Current Prices (USD millions)				
ODA Total, Net disbursements				
1998	1999	2000	2001	2002
1264.95	2124.53	1654.4	1467.09	1300.63
2003	2004	2005	2006	2007
1772.89	128.48	2511.04	1312.64	872.29

Current Prices (USD millions)				
ODA Total, Gross disbursements				
1998	1999	2000	2001	2002
1952.33	2960.39	2042.79	1695.28	1527.69
2003	2004	2005	2006	2007
2134.94	1572.81	2831.88	2972.5	2866.09

Source: OECD

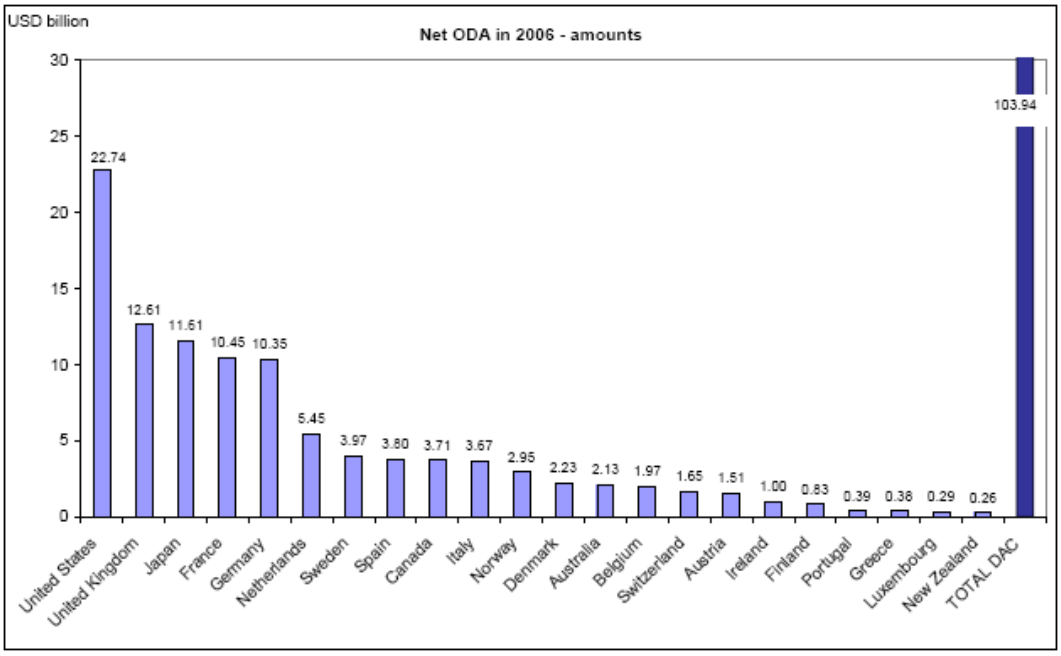
Figure 23. ODA to Indonesia by Donor



Source: OECD

Even though in real terms the United States is by far the largest donor, the U.S. federal government's aid budget is 0.2 percent of its GNI, whereas Sweden's is 1 percent.

Figure 24. Net ODA in 2006



Source: OECD

2.a. The World Bank

The World Bank is a vital source of financial and technical assistance to developing countries around the world. The World Bank is made up of two unique development institutions owned by 185 member countries—the International Bank for Reconstruction and Development

(IBRD) and the International Development Association (IDA). Each institution plays a different but collaborative role to advance the vision of an inclusive and sustainable globalization. The IBRD focuses on middle income and creditworthy poor countries, while IDA focuses on the poorest countries in the world. The IBRD and IDA provide low-interest loans, interest-free credits and grants to developing countries for a wide array of purposes that include investments in education, health, public administration, infrastructure, financial and private sector development, agriculture, and environmental and natural resource management.

The World Bank Country Partnership Strategy 2009-2012 for Indonesia identifies five thematic areas that are expected to form the core of the WBG's engagement:

(i) Private Sector Development;
(ii) Infrastructure;
(iii) Community Development and Social Protection;
(iv) Education; and
(v) Environmental Sustainability and Disaster Mitigation.

Based on The WB & The IFC Country Partnership Strategy 2009 – 2012 for Indonesia, a notional annual IBRD investment of about US$2 billion is expected. Actual annual lending volumes could vary significantly up or downwards, but will be commensurate with continued robust macroeconomic performance, financial stability and momentum on key reforms. IFC expects to invest about US$300 million annually in the priority sectors of finance, infrastructure and commodity-based supply chains. The investment program is expected to grow in the event of an acceleration of reform in private infrastructure provision.

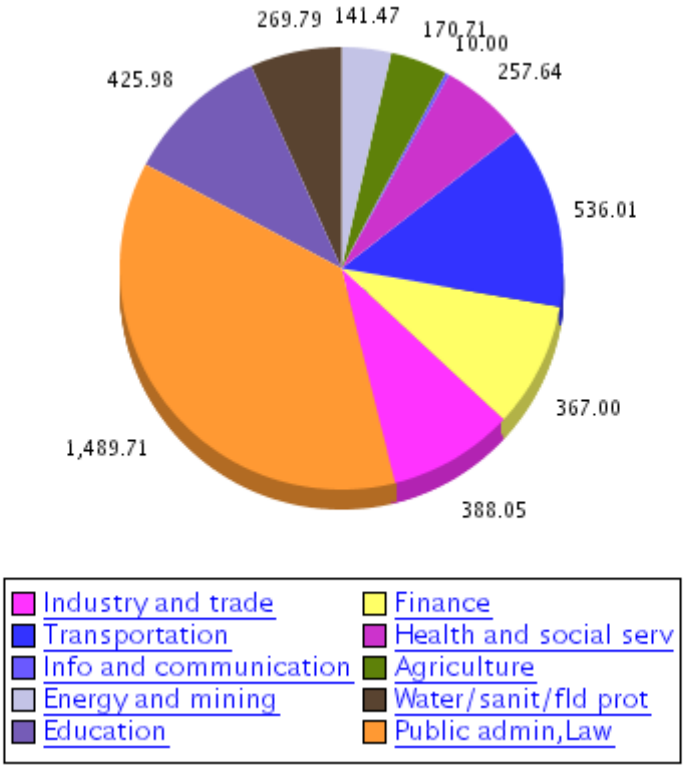
Trust funds and grant financing through trust funds will continue to be an integral part of the WBG program. The majority of trust funds will be aligned with the WBG's core engagement areas. Trust funds also allow for knowledge engagements outside these areas and support the harmonization and alignment of funding from various development partners behind core government programs.

To encourage environmental sustainability, the WBG will support measures promoting effective and transparent use of resources. Global best practice and lessons will be applied in assessing alternative development and policy paths for 'green growth'. The WBG's policy dialogue will seek to mainstream the discussion of climate change (with attention to both mitigation and adaptation challenges) across a range of actors, through the preparation and dissemination of information to raise awareness about carbon emissions, Indonesia's environmental vulnerability and import of relevant policies.

The WBG will support coordination and facilitate partnerships with the private sector and civil society for the implementation of the National Action Plan for Climate Change. One example is the Indonesia Forest Carbon Alliance. The Government is working in collaboration with a multi-disciplinary alliance of NGOs and research organizations — supported by the international partners including the WBG — to develop and pilot a framework and program to Reduce Emissions from Deforestation and Degradation (REDD). The WBG will also assist Indonesia in making use of the substantial funds and instruments that are becoming available to address global public goods, such as Climate Investment and the Adaptation Funds, as well as global carbon markets.

As can be seen from The WB & The IFC Country Partnership Strategy 2009 – 2012 for Indonesia, a notional annual IBRD investment of about US$2 billion is expected. In the last five years, some of The WB lending sectors are in close relationship mitigation activities (26.27%). They are: (i) Industry (9.57%), (ii) Transportation (13.21%), Energy and Mining (3.49%). From these data, we may expect that annual WB financial flows for mitigation actions will reach around US$525 Million.

Figure 25. The WB Lending to Indonesia cumulative 2005 – 2009, by Sector



Source: http://web.worldbank.org

More detailed figures can be seen in Table 18, as follows:

Table 16. The WB Lending to Indonesia cumulative 2005 – 2009, by Sector

	USD Million	%
Industry & Trade	**388.05**	**9.57%**
Transportation	**536.01**	**13.21%**
Info & Communication	425.98	10.50%
Energy & Mining	**141.47**	**3.49%**
Education	10.00	0.25%
Finance	367.00	9.05%
Health & Social serv	257.64	6.35%
Agriculture	170.71	4.21%
Water/Sanitation/Flood protectio	269.79	6.65%
Public Admin, Law	1,489.71	36.73%
Total	4,056.36	100.00%

Source: http://web.worldbank.org

In addition, IFC expects to invest about **US$ 300 million**. The IFC Investment Operation Program in 2007 shows that 28 percent of IFC investments go to sectors related to mitigation

activities. Thus, we may expect that annual IFC financial flows for mitigation activities will make up **US$ 84 million**.

Table 17. The IFC Investment Operation Program - Indonesia, 2007

	USD Million	%
Agriculture & Forestry	60.4	8%
Chemicals	116.4	16%
Industrial & Consumer Products	32.4	4%
Oil, Gas & Mining	0	0%
Transportation & Warehouse	0	0%
Total	742.7	100%

Source: The WB & the IFC Country Partnership Strategy 2009 – 2012 for Indonesia

2.b. The Asian Development Bank

ADB is an international development finance institution whose mission is to help its developing member countries reduce poverty and improve the quality of life of their people. ADB is owned and financed by its 67 members, of which 48 are from the region and 19 are from other parts of the globe. ADB's main partners are governments, the private sector, nongovernment organizations, development agencies, community-based organizations, and foundations.

Under Strategy 2020, a long-term strategic framework adopted in 2008, ADB will follow three complementary strategic agendas: inclusive growth, environmentally sustainable growth, and regional integration. In pursuing its vision, ADB's main instruments comprise loans, technical assistance, grants, advice, and knowledge. Although most lending is in the public sector - and to governments - ADB also provides direct assistance to private enterprises of developing countries through equity investments, guarantees, and loans. In addition, its triple-A credit rating helps mobilize funds for development.

In response to climate change, ADB is taking a leadership role to help the region mitigate the causes and adapt to the consequences of climate change. In line with its new Strategy 2020, ADB is integrating climate change into planning and investment, to ensure continued economic growth and a sustainable future for all in Asia and the Pacific.

ADB Country Operation Business Plan 2009-2011 for Indonesia

Indonesia will graduate from eligibility for Asian Development Fund (ADF) resources at the end of 2008 and be reclassified from 1 January 2009 as a borrower eligible for only ordinary capital resources (OCR). The Asian Development Bank (ADB)-wide planning process allocated an overall OCR envelope of US$1.22 billion for sovereign operations during 2009–2011, which is below recent lending levels and current demand.

ADB will continue to strike a balance between (i) program loans that support policy and institutional reforms and provide low-cost financing for the Government's budget and (ii) urgently needed investment loans, where ADB can leverage its resources to increase development impact. In terms of project financing, ADB will align its investments with the Long-Term Strategic Framework (LTSF) and the RPJM priority areas of infrastructure (energy; transport and communications; and water, sanitation, and waste management systems), education, and environment (integrated water resource and flood management). In conformity with the LTSF and the Government's new planning document on climate change,

every effort will be made to adopt climate change mitigation and adaptation measures in all lending operations.

The indicative total Technical Assistance (TA) program for 2009–2011 amounts to US$17 million, consisting of eight Project Preparatory Technical Assistance (PPTA) projects for US$9.2 million, seven CDTA projects for US$6.0 million, and three Policy and Advisory Technical Assistance (PATA) projects for the remaining US$1.8 million.

It is expected that total financial flows from ADB in 2009 – 2011 is US$ 1,237 million. The energy sector makes up 19 percent of flows, therefore, we can expect that annual financial flows for climate change mitigation will reach US$ 78.67 Million.

Table 18. ADB COBP 2009-2011 for Indonesia

	USD Million	%
Energy	**236**	19%
Finance	301	24%
Law, economic Management & I	404.3	33%
Water Supply	38.5	3%
Agri & Natural Resources	66.1	5%
Transport & Communication	100	8%
Education	91.1	7%
Total	**1237**	100%

Source: ADB COBP 2009-2011

In addition, the funds below are mobilized by the ADB which are very potential for the GOI to access.

Clean Energy Financing Partnership Facility

About The Fund
The Clean Energy Financing Partnership Facility (CEFPF) was established in 2007 to help improve energy security in developing member countries and decrease the rate of climate change (mitigation). It includes two types of fund: multidonor CEF (Clean Energy Fund) and single donor ACEF (Asian Clean Energy Fund). It will do this by financing the deployment of new, more efficient and less polluting supply and end-use technologies. ADB has set an initial target of US$250 million by 2008.

Mechanism: loan, technical assistance.

Considered as ODA?: Yes

Status
Pledged: US$90 million.
Deposited: US$39.8 million.
Funds disbursed: US$19.2 million.

Activities Supported
Potential investments include:

- Deployment of new clean energy technology
- Projects that lower the barriers to adopting clean energy technologies
- Projects that increase access to modern forms of clean and energy efficient energy for the poor
- Technical capacity programs for clean energy

Eligible Activities

- biomass, biofuel, biogas
- rural electrification and energy access
- distributed energy production
- waste-to-energy projects
- demand-side management projects
- energy-efficient district heating
- energy-efficient buildings and end-use facilities
- energy-efficient transport
- energy-efficient street lighting
- clean energy power generation, transmission, and distribution
- manufacturing facilities of clean energy system components, high efficiency appliances and industrial equipments
- energy service companies development

Climate Change Fund

About The Fund

The purpose of the fund is to facilitate greater investments in developing countries in Asia and the Pacific to address the causes and consequences of global warming. The fund will provide grant financing for technical assistance, investment projects, research and other activities.

Mechanism : grants for TA, investment, research.

Status

ADB will provide an initial US$40 million to the Climate Change Fund (75% for mitigation, and 25% for adaptation), which will be open for further contributions from countries, other development organizations, foundations, the private sector and other sources.

B.4. Asia Pacific Carbon Fund

The Asia Pacific Carbon Fund (APCF) is a trust fund established and managed by ADB on behalf of fund participants. The Fund is a component of ADB's ongoing Carbon Market Initiative (CMI), which provides financial and technical support for Clean Development Mechanism (CDM) projects. The APCF became operational on 01 May 2007 after receiving commitments totaling US$151.8 million. These funds are being used to co-finance CDM Projects supported by ADB in return for future supply of certified emission reductions certificates (CERs).

The Fund makes financing available upfront to project developers by purchasing CERs to be generated until 2012 by projects that are supported by ADB with debt, equity, guarantees or technical assistance. By making upfront payments to developers at the outset of a project for carbon credits - instead of the standard “payment on delivery” method - it helps reduce the initial heavy capital constraints involved in projects and stimulate new investment. At the same time, it provides countries that have GHG emission reduction goals the chance to invest in low-carbon projects in the Asia-Pacific region and receive carbon offsets in return. By giving ADB’s DMCs an incentive to improve their energy efficiency and use of renewable energy sources, the Fund also supports energy security in the region.

Mechanism: upfront financing to project developers by purchasing CERs to be generated until 2012 (forward contract feature).

Considered as ODA?: Unknown

Status:
Pledged: US$151.8 million

Activities Supported
The Fund is targeting the following project types:

- methane capture and utilization
  - coalmine methane
  - solid waste and waste water treatment
- energy efficiency
  - industrial technology
  - supply-side technology (e.g., upgrade of generation equipment)
- renewable energy
  - small-to mid-scale run-of-river hydropower
  - biomass
  - wind power
  - solar power
  - geothermal power

The Trustee is not restricted to the project types listed above. However, they do reflect the most likely source of Projects from which the Fund will secure CERs.

Conditions & Eligibility
The Regulations of the Fund specify that the Trustee may only select projects for possible co-financing that satisfies the following requirements:

Each project must:

- be located in one of ADB's DMCs that is also a non-annex one country under the Kyoto Protocol and eligible to host CDM Projects
- be (a) financed by ADB through a loan, equity investment, or guarantee, have entered into an agreement(s) with ADB for financing the project, or (b) supported with technical assistance from ADB's carbon market initiative and have entered into agreements with a third party or parties for financing the project (satisfactory to the Trustee)
- have been validated as a CDM Project by a Designated Operational Entity (DOE) prior to the execution of a CERPA
- generate CERs that result in permanent GHG Reductions and not temporary GHG Reductions
- comply with ADB Operational Policies and Procedures

<u>Future Carbon Fund</u>

About The Fund
The Future Carbon Fund is a public-private partnership between ADB and the governments and companies making upfront payments to developers at the outset of a project for carbon credits generated after 2012. At present, the Kyoto Protocol provides an international framework for reducing GHG emissions and for the trading of carbon credits. However, the current commitment period expires in December 2012, creating a cloud of uncertainty over future investments. By making upfront payments to developers at the outset of a project for carbon credits generated after 2012, the Fund will help reduce the initial heavy capital constraints involved in projects and stimulate new investment. At the same time, it will provide countries or organizations that have, or are developing, GHG emission reduction goals - even in the absence of a global framework - the chance to invest in low-carbon projects in the Asia-Pacific region and receive carbon offsets in return. The ADB-administered Future Carbon Fund aims to provide up to $200 million to help finance

renewable energy, energy efficiency and other greenhouse gas (GHG) mitigation projects undertaken in its developing member countries (DMCs).

Mechanism: upfront financing to project developers by purchasing CERs to be generated after 2012.

Considered as ODA? Unknown

Status
Committed US$200 million.

Activities supported
Mirroring Asia Pacific Carbon Fund

Conditions and Eligibility
Mirroring Asia Pacific Carbon Fund

2.c. The UNDP

The UNDP is an executive board within the United Nations General Assembly. The UNDP is funded entirely by voluntary contributions from member nations. The organization has country offices in 166 countries, where it works with local governments to meet development challenges and develop local capacity. Additionally, the UNDP works internationally to help countries achieve the Millennium Development Goals (MDGs).

According to **The UNDP Country Programme for Indonesia 2006 – 2010**, regular resource allocation for the country program period 2006-2010 is foreseen at US**$18-25 million**. UNDP will also seek financing partnerships towards mobilizing an estimated additional US**$200-250 million** in non-core resources. Specific allocation for Energy and Environment for Sustainable Development is amounting US$26,042,000 (Regular sources: US$2,042,000 Other sources : 24,000,000).

Table below shows that the UNDP Country Program for Indonesia is prioritized on achieving MDGs targets. Energy and environment development accounts only 10 percent of total fund disbursed.

Table 19. The UNDP CP, 2006 – 2010

	USD Million	%
Achieving MDGs	103.58	38%
Energy & Environment	**26.04**	**10%**
Democratic Governance	30.78	11%
Crisis Prevention	42.45	16%
Crisis Prevention - Aceh	70.00	26%
Total	**272.85**	100%

Source: UNDP

2.d. JBIC / JICA

In developing countries, Japan has implemented various types of cooperation, such as providing funds, transferring technologies for social and economic growth, assistance for disaster relief, and so forth. Such cooperation, mainly undertaken by the Government sector, is called ODA (Official Development Assistance).

- **Loans**
  Loan Aid is a cooperation scheme for assisting developing countries in their efforts to develop economic and social infrastructure and stabilize their economies through the provision low-interest and long-term loans, Loan Aid is provided by the Japan Bank for International Cooperation (JBIC).

- **Grants**
  Grant Aid is financial assistance without repayment.

- **Technical assistance**
  Technical cooperation is a form of assistance for human resource development in developing countries. Training capable people who will promote social and economic development is indispensable in any country. Technical cooperation is implemented in various ways, e.g. training, dispatching experts and volunteers, providing equipment and material, conducting development studies and "Technical Cooperation Projects", or a combination of these components. Knowledge and technology of Japan are passed to engineers and administrators of developing countries. Technical Cooperation is implemented by the Japan International Cooperation Agency (JICA), an independent administrative organization of Japan.

The table below shows that Japan's ODA to Indonesia constitutes around US$ 1,129 Million per annum. Some sectors are related to climate change mitigation, namely transportation (10.3%), energy (11.44%), forestry (2.94%), industry, mining and construction (1.29%).

Table 20. Japan's ODA for Indonesia, 1998 – 2007

1998	1999	2000	2001	2002
1273.1	2225.38	1142.33	865.26	631.59

2003	2004	2005	2006	2007
1149.79	583.95	1342.79	1018.29	1058.11

Source: OECD/DAC

Table 21. Japan's ODA by Sector – 2007

	USD Million	%
Transportation & Storage	1,330.98	10.31%
Energy	1,476.64	11.44%
Forestry	379.38	2.94%
Industry, mining, construction	166.26	1.29%
Total	12,912.28	100%

Source: OECD/DAC

Beside, in September 2008, JBIC signed Japanese ODA Loan Agreement with Indonesia under Cool Earth Partnership totaling up to 30,768 million yen. This provision is the First Climate Change Japanese ODA Loan based on Cool Earth Partnership.

This Climate Change Japanese ODA Loan is provided after Japan and Indonesia have agreed at the policy dialogue on climate change. Specifically, "policy actions" to be implemented by both countries are set out for each of the three areas below that Japan and Indonesia have jointly prepared: (1) reduction in GHG emissions; (2) adaptation to climate change; and (3) cross-cutting issues. Financing will be provided, after policy actions have achieved their targets. Japanese experts will be sent out as the monitoring team, which will evaluate the achievement status of each policy action, by utilizing JICA's technical assistance function.

2.e. AusAID

Australia and Indonesia have been development partners for many years, with a strong relationship stretching back to the 1950s. Through AusAID, the Australian Government's overseas aid program in Indonesia will provide an estimated A$452 million (IDR 3.7 trillion) in Official Development Assistance (ODA) in 2009-10Indonesia is the largest single recipient of Australian development assistance.

The AusAID Country Program objectives are :

- To promote sustainable growth and economic management, by improving economic policy and strengthening economic management at a national level; reducing infrastructure constraints; and improving natural resource management. Economic crisis policy and programs will be strengthened so that financial system stability is maintained and investment is encouraged. The development of infrastructure at national and local levels will be supported, including continuing improvements to road networks in eastern Indonesia under the Australia-Indonesia Partnership for Reconstruction and Development (AIPRD).

- To improve service delivery, by supporting better access to health services, education and water and sanitation to progress the MDGs.

- To improve democracy, justice and good governance, by strengthening capacity, accountability and responsiveness of legal, democratic and oversight institutions. Local government reforms in priority regions to improve service delivery and public financial management will be supported.

- To improve safety and peace, through improved responses to humanitarian needs, and improved capacity to ensure transport safety and security and to counter threats from transnational crime. The new Australia-Indonesia Facility for Disaster Reduction will be inaugurated to improve disaster response management in Indonesia and the region.

As shown by the table below, average annual Australia’s ODA to Indonesia is US$ 130.125 million, 4.01 percent of which (US$ 5.22 million) goes to climate change mitigation activities. This figure is excluding those which flow under International Forest Carbon Initiative.

Table 22. Australia's ODA for Indonesia, 1998 - 2007

1998	1999	2000	2001	2002
74.06	72.28	72.02	59.21	71.12

2003	2004	2005	2006	2007
86.5	106.11	184.67	240.22	335.06

Source: OECD/DAC

Table 23. Australia's ODA by Sector – 2007

	USD Million	%
Transportation & Storage	71.87	3.17%
Energy	7.65	0.34%
Forestry	4.75	0.21%
Industry, mining, construction	6.73	0.30%
Total	2,268.06	100%

Source: OECD/DAC

This is relatively small, since AusAIDs top sectoral goals are improving health and education services, fighting corruption, improving security, engaging in the fight against HIV/AIDS and improving the effectiveness of government organizations through training and other assistance.

2.f. USAID

The United States Agency for International Development (USAID) is the United States federal government organization responsible for most non-military foreign aid. An independent federal agency, it receives overall foreign policy guidance from the United States Secretary of State and seeks to "extend a helping hand to those people overseas struggling to make a better life, recover from a disaster or striving to live in a free and democratic country".

USAID advances U.S. foreign policy objectives by supporting economic growth, agriculture and trade; health; democracy, conflict prevention, and humanitarian assistance. It provides assistance in Sub-Saharan Africa; Asia and the Near East, Latin America and the Caribbean, Europe, and Eurasia. USAID is organized around three main pillars: Economic Growth, Agriculture, and Trade; Global Health; Democracy, Conflict, and Humanitarian Assistance.

As shown by the table below, average annual US's ODA to Indonesia is US$ 187.58 million, 11.14 percent of which (US$ 20.89 million) goes to climate change mitigation activities.

Table 24. USA's ODA for Indonesia, 1998 – 2007

1998	1999	2000	2001	2002
63.39	213.41	174.68	141.01	225.75

2003	2004	2005	2006	2007
211.77	162.9	157.91	281.21	243.74

Source: OECD/DAC

Table 25. USA's ODA by Sector – 2007

	USD Million	%
Transportation & Storage	1,326.79	5.37%
Energy	1,205.91	4.88%
Forestry	0.67	0.00%
Industry, mining, construction	220.21	0.89%
Total	24,724.50	100%

Source: OECD/DAC

The following funds are also administered by USAID:

Global Climate Change Program

About the Program
The USAID's Global Climate Change (GCC) Program is managed by the Office of Environment and Science Policy of USAID's Bureau for Economic Growth, Agriculture and Trade, the Global Climate Change. To help countries address domestic and international climate change priorities, USAID's Global Climate Change (GCC) Program dedicates about $195 million a year to promote:

- Clean Energy Technology
- Sustainable Land Use and Forestry
- Adapting to Climate Variability and Change
- Capacity Building
- Climate Science for Decision-Making

USAID places particular emphasis on partnerships with the private sector and on working with local and national authorities, communities, and nongovernmental organizations to create alliances that build on the relative strengths of each.

Mechanism: grants, technical assistance

Considered as ODA? Yes

Status
USAID dedicates US$195 million a year in GCC Program.

Tropical Forest Conservation Act (TFCA)

About the Act
The Tropical Forest Conservation Act (TFCA) was enacted in 1998 to offer eligible developing countries options to relieve certain official debt owed the U.S. Government while at the same time generating funds in local currency to support tropical forest conservation. The program also offers a unique opportunity for public-private partnerships and the majority of TFCA agreements to date have included funds raised by U.S.-based NGOs.

TFCA is implemented through bilateral agreements with eligible countries. The agreement with Indonesia marks the 15th Tropical Forest Conservation Act pact, following agreements with Bangladesh, Belize, Botswana, Colombia, Costa Rica, El Salvador, Guatemala, Jamaica,

Panama (two agreements), Paraguay, Peru (two agreements) and the Philippines. These debt-for-nature programs are projected to generate more than $218 million to protect tropical forests altogether.

In June 2009, The U.S. and Indonesian Governments signed a debt-for-nature swap agreement under the Tropical Forest Conservation Act that will reduce Indonesia's debt payments to the U.S. by nearly US$30 million over eight years. In return, the Government of Indonesia will commit these funds to support grants to protect and restore the country's tropical forests. This agreement, in partnership with Conservation International and the Indonesian Biodiversity Foundation (Yayasan Keanekaragaman Hayati Indonesia, or KEHATI), will be the first ever in Indonesia as well as the largest debt-for-nature swap of its kind thus far.

The agreement was made possible through contributions of US$20 million by the U.S. Government under the Tropical Forest Conservation Act of 1998 and a combined donation of US$2 million from Conservation International and KEHATI.

Established in 1995 to support and facilitate biodiversity conservation in Indonesia, KEHATI is the first environmental NGO created with USG assistance to participate in a Tropical Forest Conservation Act debt-for-nature swap.

Mechanisme: Debt-for-Nature Swap

Principal payments and interest on treated debt are made into a new local tropical forest fund. The swap involves non-government organizations that contribute monies to reduce or cancel a portion of eligible host country debt. The subsidized debt-for-nature swap option is executed through three legal agreements: (1) a debt reduction agreement between the USG and host country, (2) a swap fee agreement between the USG and donor NGOs transferring the private funds to the USG, and (3) a forest conservation agreement between the host country and donor NGOs outlining how the funds will be used and establishing the oversight committee and its operating modalities.

The Agreements create a local board (or oversight committee) to oversee the fund and award small grants to eligible recipients, primarily local non-governmental organizations such as environmental, forestry, indigenous or community groups. The board includes representatives from the USG and the host country, as well as representatives from NGOs approved by both governments. Under the TFCA, the NGOs must constitute a majority of board members.

Activities Supported

A wide range of activities can be funded under the TFCA, including:

Establishment, restoration, protection and maintenance of parks, protected areas, and reserves.

- Development and implementation of scientifically sound systems of natural resource management, including land and ecosystem management practices.
- Training programs to increase the scientific, technical, and managerial capacities of individuals and organizations involved in conservation efforts.
- Restoration, protection, or sustainable use of diverse animal and plant species.
- Research and identification of medicinal uses of tropical forest plant life to treat human diseases, illnesses, and health related concerns.
- Development and support of the livelihoods of individuals living in or near a tropical forest in a manner consistent with protecting such tropical forest.

2.g. GTZ / BMZ

Indonesian-German cooperation is focused on three priority areas, which were defined jointly with the Indonesian government at the last round of government negotiations in October 2007:

- Climate protection
- Private-sector promotion
- Good governance / decentralisation

In addition to these three priorities, health policy measures were agreed, e.g. to combat avian flu. Germany has pledged 86 million euros to Indonesia for the years 2007 and 2008 (or 43 million euros annually). Of this, 55 million euros are allocated to Financial Cooperation and 31 million to Technical Cooperation.

Some sectors as presented in the table below are related to climate change mitigation activities.

Table 26. Germany's ODA to Indonesia by Sector – 2007

Transport & Storage	39.51	0.41%
Energy	511.56	5.30%
Forestry	42.13	0.44%
Industry, Mining, Construction	94.01	0.97%
TOTAL	9644.36	100.0%

Source: OECD/DAC (2007)

Based on past data, we can expect that annual inflows from Germany to Indonesia for mitigation activities will reach around 7.13 percent of ODA flows, which is 3.06 million euros (US$ 4.25 Miilion eq) per annum.

2.h. DFID

As shown by the table below, average annual UK's ODA to Indonesia is US$ 54.2 million, 2.73 percent of which (US$ 1.5 million) goes to climate change mitigation activities.

Table 27. The UK's ODA to Indonesia 1998 – 2007 in US$ Million

1998	**1999**	**2000**	**2001**	**2002**
40.49	40.66	42.58	27.26	31.72

2003	**2004**	**2005**	**2006**	**2007**
37.17	40.28	104.73	102.9	74.32

Source: OECD/DAC

Table 28. UK's ODA to Indonesia by Sector – 2007

Transport & Storage	52.29	0.71%
Energy	40.26	0.55%
Forestry	20.53	0.28%
Industry, Mining, Construction	88.47	1.20%
TOTAL	7379.27	100.0%

Source: OECD/DAC

2.i. European Community(EC)

As shown by the table below, average annual EC's ODA to Indonesia is US$54.6 million, 13.62 percent of which (US$7.44 million) goes to climate change mitigation activities.

Table 29. EC's ODA to Indonesia 1998 – 2007 in US$ Million

1998	1999	2000	2001	2002
14.85	28.73	37.68	28.37	23.94

2003	2004	2005	2006	2007
27.97	42.59	72.13	137.2	132.6

Source: OECD/DAC

Table 30. EC's ODA to Indonesia by Sector – 2007

Transport & Storage	940.38	7.04%
Energy	504.79	3.78%
Forestry	21.9	0.16%
Industry, Mining, Construction	352.63	2.64%
TOTAL	13357.01	100.0%

Source: OECD/DAC

2.j. Netherlands

As shown by the table below, average annual Netherlands' ODA to Indonesia is **US$ 109.35 million**, 2.29 percent of which **(US$ 2.5 million)** goes to climate change mitigation activities.

Table 31. Netherlands' ODA to Indonesia 1998 – 2007 in US$ Million

1998	1999	2000	2001	2002
12.96	74.03	143.96	119.7	127.3

2003	2004	2005	2006	2007
84.05	80.49	175.99	146	129.1

Source: OECD/DAC

Table 32. Netherlands's ODA to Indonesia by Sector – 2007

Transport & Storage	30.47	0.63%
Energy	56.86	1.18%
Forestry	13.03	0.27%
Industry, Mining, Construction	9.56	0.20%
TOTAL	4800	100.0%

Source: OECD/DAC

2.k. AFD

As shown by the table below, average annual France's ODA to Indonesia is **US$55.9 million**, 6.77 percent of which **(US$3.8 million)** goes to climate change mitigation activities.

Table 33. France ODA to Indonesia 1998 – 2007 in US$ Million

1998	1999	2000	2001	2002
42.09	22.85	60.96	77.28	107.78

2003	2004	2005	2006	2007
111.5	35.98	29.3	33.21	37.62

Source: OECD/DAC

Table 34. AFD's ODA to Indonesia by Sector – 2007

Transport & Storage	539.64	6.38%
Energy	19.21	0.23%
Forestry	0.04	0.00%
Industry, Mining, Construction	14.27	0.17%
TOTAL	8463.53	100.0%

Source: OECD/DAC

Current Development

To support the Climate Change Program, the Agence Française de Développement (AFD)'s Board has just approved a 300 million dollar soft loan to the Government of Indonesia. In 2008, the AFD already granted a US$200 million loans a first tranche, in co-financing with Japan International Cooperation Agency (JICA). A loan agreement between the AFD and the Ministry of Finance is to be signed shortly and the funds would then be disbursed as a budget support.

The purpose of this Climate Change Program Loan (CCPL) is to sustain Indonesian driven policy reform for dealing with climate change issues through targets/actions stated in the form of a three-year "Policy Matrix", which covers mitigation (forestry, energy), adaptation (agriculture, water) and cross-sectoral issues. The last CCPL's Steering committee meeting endorsed the satisfactory results of the 2008 actions and decided an upgrading of the targets andactions for 2009.

In addition, the AFD is directly funding targeted technical assistance to ease the implementation of specific actions with:

- the Ministry of Industry : international expertise to introduce a GHG emission reduction scheme in the cement industry, which may be extended to other sectors such as steel industry;
- and the Ministry of Forestry :
- feasibility study of a "small-scale green carbon market" to give small scale forest plantations access to the voluntary carbon market;
- development of a spatial land use planning methodology for decision making (taking into account local development needs, forest resources dynamics and climate change risks).

Moreover, AFD funds on a 2-years basis the forestry expert of the CCPL monitoring team, which is looking after the evolution of the policy matrix.

2.l. DANIDA

Danish International Development Agency (DANIDA), is a Danish organisation inside the Ministry of Foreign Affairs of Denmark, set up to provide humanitarian help and assistance in developing countries.

As shown by the table below, average annual Denmark's ODA to Indonesia is **US$ 6.9 million**, 14.32 percent of which **(US$ 0.98 million)** goes to climate change mitigation activities.

Table 35. Denmark's ODA to Indonesia 1998 – 2007 in US$ Million

1998	1999	2000	2001	2002
2.25	1.88	1.4	3.65	1.89
2003	**2004**	**2005**	**2006**	**2007**
2.74	4.75	32.24	8.38	9.4

Source: OECD/DAC

Table 36. Denmark's ODA to Indonesia by Sector – 2007

	USD Million	%
Transportation & Storage	113.72	7.68%
Energy	59.30	4.00%
Forestry	7.74	0.52%
Industry, mining, construction	31.44	2.12%
Total	1,481.45	100%

Source: OECD/DAC

Climate and Development Action Programme

The 'Climate and Development Action Programme' is designed as an integral part of the Danida Aid Management Guidelines (AMG), linked to the Guidelines for Programme Management. Through Danida Aid Management Guidelines, the Climate and Development Action Programme is integrated into existing development aid procedures and policies, in order to ensure that climate change, where relevant, is addressed as one of several critical development factors. In addition to the requirements of the AMG, new specific policy requirements for implementation of the action Ppogram are not introduced. However, given existing resource constraints, there is a risk that implementation of the action program may be given insufficient priority and that lessons and good practice may not spread fast enough.

Mechanism : grants

Considered as ODA? : Yes

Activities Supported

- Climate change screening to be linked to the mandatory environmental screening process of the AMG and aligned with the existing Environmental Screening Note.
- Early lessons and good practice on integrating climate change considerations, to be obtained from dialogues with partner countries and multilateral partners and from selected sector programs (new or on-going), particularly on adaptation.
- Additional assistance to be offered to assist partner countries in early actions, stocktaking, and national climate change screening.

2.m. NORAD

As shown by the table below, average annual Denmark's ODA to Indonesia is US$ 11.58 million, 11.43 percent of which (US$ 1.32 million) goes to climate change mitigation activities.

Table 37. Norway's ODA to Indonesia 1998 – 2007 in US$ Million

1998	1999	2000	2001	2002
4.29	9.32	5.8	4.62	6.05
2003	**2004**	**2005**	**2006**	**2007**
6.57	7.37	45.09	10.26	16.41

Source: OECD/DAC

Table 38. Norway's ODA to Indonesia by Sector – 2007

	USD Million	%
Transportation & Storage	19.63	0.68%
Energy	288.57	10.01%
Forestry	4.90	0.17%
Industry, mining, construction	16.26	0.56%
Total	2,882.72	100%

Source: OECD/DAC

Norwegian International Climate & Forest Initiative

The initiative is to provide NOK 3 billion a year to efforts on reducing emissions from deforestation and forest degradation in developing countries (REDD). To this end, the Government of Norway´s International Climate and Forest Initiative works closely with committed tropical forest countries and international organizations such as the UN (UN-REDD), the World Bank (Forest Carbon Partnership Facility) and regional development banks. These efforts include the implementation of policies and measures proposed in national REDD-strategies, and the establishment of a credible system for monitoring, assessment, reporting and verification - in addition to capacity building and administrative development.

Mechanism

1. Support to multilateral channels (the UN system, the World Bank and Regional Development Banks).
2. Bilateral programs.
3. Research institutions and NGOs.

Status
Pledged: NOK 3 billion a year.

Considered as ODA? Yes

Activities supported

- establishment of a system for monitoring forest cover and biomass and collecting data on forest carbon volumes, and for reporting on emission levels from deforestation and forest degradation;
- incorporation of sustainable development concerns, including opportunities for economic and social development for the local population, conservation of biodiversity and local and indigenous people's rights;
- establishment of systems and national plans to prevent carbon leakage and ensure lasting results;
- thorough analyses of the drivers of deforestation and forest degradation, and the best ways of dealing with them;
- institutional and capacity building for national and local authorities, including anti-corruption measures and measures to increase transparency in forest and land use management;
- mechanisms for compensation for ecosystem services;
- establishment of the necessary legal, administrative and economic framework for sound, sustainable forest and land use management, and of the necessary capacity to ensure compliance;

Conditions & Eligibility

- All recipient countries that are selected as partners for the Climate and Forest Initiative must have the clear political intention of working systematically to reduce deforestation and forest degradation, and must later demonstrate this in practice. This work will include developing and implementing national REDD strategies, and protecting the rights of local people and their opportunities for development.
- Norwegian and international NGOs have been working on climate- and forest-related issues for many years, and have considerable expertise and capacity in this field. Close cooperation with NGOs will therefore be essential to our success. There will be a strong emphasis on systematic cooperation with selected NGOs, both at strategic

level and in individual forest countries, and with relevant research institutions at national and international level.

- Support for efforts to reduce deforestation and forest degradation must be performance-based. Credible reference emission levels must be established as soon as possible, and payments must be calculated on the basis of the reductions achieved relative to the reference levels. During expertise and capacity building in the preliminary phase, recipient countries must be judged on their progress in relation to interim milestones. Support will gradually be withdrawn from partner countries that do not achieve these milestones.
- The scale of the challenges involved in reducing emissions from deforestation and forest degradation is such that real results will only be achieved if other countries also provide substantial resources.

2.n. CIDA

As shown by the table below, average annual Canada's ODA to Indonesia is US$ 35.31 million, 1.36% percent of which (US$ 0.48 million) goes to climate change mitigation activities.

Table 39. Canada's ODA to Indonesia 1998 – 2007 in US$ Million

1998	1999	2000	2001	2002
21.2	26.31	26.67	18.78	11.55
2003	**2004**	**2005**	**2006**	**2007**
21.63	16.73	95.99	48.12	66.13

Source: OECD/DAC

Table 40. Canada's ODA to Indonesia by Sector – 2007

	USD Million	%
Transportation & Storage	24.51	0.66%
Energy	2.61	0.07%
Forestry	0.81	0.02%
Industry, mining, construction	22.74	0.61%
Total	3,715.08	100%

Source: OECD/DAC

CIDA Climate Change Development Fund

The Canada Climate Change Development Fund (CCCDF) is a Canadian initiative designed to assist developing countries in tackling the challenge of climate change. Established in July 2000, as part of the Government of Canada's International Strategy on Climate Change, the goal of the CCCDF is to contribute to Canada's international objectives in climate change by promoting activities in developing countries that address the causes and effects of climate change while at the same time contributing to sustainable development and poverty reduction. Canada believes that prompt preventative action is necessary and actively participates in the international effort to tackle the problem. The CCCDF is a five-year, $100 million initiative

and is administered by CIDA. A governance board comprised of assistant deputy ministers from climate change-active departments such as Environment Canada, Natural Resources Canada, Department of Foreign Affairs and International Trade, Industry Canada, the Climate Change Secretariat and CIDA, provides strategic advice and ensures coherence between this initiative and other climate change activities of the Government of Canada

Status
$ 100 million administered by CIDA

Mechanism: grants

Considered as ODA? Yes

Condition & Eligibility

The CCCDF was established with the following expected results: Reduced rate of growth in GHG emissions in developing countries; Increased sequestration of carbon in sinks such as forests, wetlands, mangroves, and soils; Reduced vulnerability of developing countries to the adverse effects of climate change; and Increased capacity of developing countries to participate in global efforts to combat climate change. Based on these expected results, four program areas for the CCCDF were identified, and projects were selected based on their contribution to at least one of the four program areas: Emissions reduction Carbon sequestration Adaptation Core capacity building.

2.o. SIDA

As shown by the table below, average annual Sweden's ODA to Indonesia is US$ 9 million, 3.54 % of which (US$ 0.32 million) goes to climate change mitigation activities.

Table 41. Sweden's ODA to Indonesia 1998 – 2007 in US$ Million

1998	1999	2000	2001	2002
0.61	2.97	4.07	3.74	1.58
2003	**2004**	**2005**	**2006**	**2007**
5.94	9.12	21.6	23.9	16.44

Source: OECD/DAC

Table 42. Sweden's ODA to Indonesia by Sector – 2007

	USD Million	%
Transportation & Storage	15.97	0.54%
Energy	39.86	1.36%
Forestry	9.86	0.34%
Industry, mining, construction	37.99	1.30%
Total	2,932.22	100%

Source: OECD/DAC

3. Climate Multilateral and Bilateral Assistance

3.a. Indonesian Climate Change Trust Fund (ICCTF)

Government of Indonesia (GOI) is currently establishing a fund, called "the Indonesia Climate Change Trust Fund" (ICCTF), to co-finance investments in adaptation to and mitigation of climate change. Activities financed by the ICCTF would have to be consistent with prevailing GOI policies on climate change, which are currently reflected in the National Action Plan Addressing Climate Change and the so-called "Yellow Book". Initially, the resources of the fund would consist of grants from bilateral and multilateral development partners. At first, the fund would only invest its resources in activities that do not generate direct financial revenues (expenditure fund). In a later stage, the ICCTF would also invest in revenue-generating activities (revolving fund). This note summarizes the key features of the ICCTF in the first stage of operations, as an expenditure fund[14].

Objectives and Scope of the ICCTF

The proposed Indonesia Climate Change Trust Fund is one of several mechanisms that GOI intends to use to mobilize the required funding to implement its response to climate change. The proposed overall objective of the Fund is to promote coordinated national action to respond to climate change in Indonesia.

Specific objectives of the ICCTF are as follows:

1) Align development assistance for climate change more closely with development priorities defined by GOI.
2) Improve targeting of investments in climate change using decentralized structures.
3) Improve access to financing for priority investments in climate change from existing funding sources
4) Prepare comprehensive policy framework for mitigation and adaptation
5) Facilitate private sector investments in activities aimed at affecting climate change

Initially, the fund's resources would be used to finance two types of activities: (i) project preparation support, and (ii) pilot projects. Activities would have to be proposed by central government agencies to be eligible for ICCTF grant support. In other words, in its initial phase, the ICCTF would effectively be a grant-making unit for central government agencies with a mandate to address climate change. In the first stage, the priority areas of the fund would be to:

1) Support access to finance from international sources (adaptation/mitigation)
2) Support investments for most vulnerable communities (including financing pilots to mainstream focused adaptation efforts)

Structure of the ICCTF

Institutional setup of the ICCTF. The proposed fund would consist of the following three tiers:

1) Steering Committee. This committee would consist of representatives of relevant Indonesian government ministries and foreign development partners who provide financial support to the fund. Its main tasks are to set funding policies, provide oversight to the secretariat and the ICCTF's service providers, and review activities

14 For details, refer to *The Indonesia Climate Change Trust Fund (ICCTF) – A Concept Paper* (March 2009).

proposed for funding by the Technical Committee. The Steering Committee would be chaired by the Chief Executive Secretary of BAPPENAS.

2) Technical Committee. This committee would consist of representatives of relevant Indonesian government ministries. Its main task is to review and evaluate funding proposals submitted to the Steering Committee. The Director of Environment in BAPPENAS would chair the Technical Committee.
3) Secretariat. Within guidelines given by the Steering Committee, the secretariat will support the Steering Committee on administrative manners, prepare progress reports and financial reports for review by the Steering Committee and Technical Committee, develop funding proposals (or review proposals submitted by other parties) for submission to the Steering Committee.

Service providers to the ICCTF

The fund would be supported by two types of service providers:

1) Technical service providers. A team of permanent advisers would assist the day-to-day activities of the secretariat and – where required – provide assistance to the technical and steering committees. A panel of "on-call" advisers would assist central government ministries with the preparation of applications for activities financed by the ICCTF and (if approved) assist with the selection of contractors to implement these activities, and act as supervision consultants to assist the ICCTF with monitoring and evaluation.
2) Financial service providers. The Minister of Finance would appoint a reputable national bank as a trustee of ICCTF funds. The bank would manage funds granted by development partners and – at the request of the ICCTF – channel funds for payment of service providers and contractors selected by central government ministries to implement ICCTF-financed activities.

The Yellow Book describes three options for the management of ICCTF resources: (1) one or more development partners, (2) a national financial institution, and (3) a Government unit. Option #1 is not consistent with the principles underlying the recently signed Jakarta Commitment and was therefore not considered. The proposed arrangement – as described in this note – combines the strengths of options #2 and #3:

- Accountability. Through the Steering Committee, Technical Committee and secretariat, the Government remains in full control of decision on the allocation of foreign grants – which form part of GOI's public funds.
- Experience. Through a national financial institution, GOI gains access to experience with trust fund management, which it does not have in-house.
- Avoidance of lengthy and rigid budgeting and disbursement procedures. The proposed fund channelell arrangements, as described below, allow the ICCTF to use its own planning and disbursement procedures, even though all its expenditures will be recorded in GOI's budgets (using the "direct foreign grant" procedure outlined in PerDJPerb 67/2006).

Fund Channelling Arrangements

Sources of funds of the ICCTF. Initially, the resources of the fund would consist of grants from bilateral and multilateral development partners. In December 2008, DFID committed itself to contribute GBP 10 million in grant funding to support GOI's response to climate change during the period 1 December 2008- 31 March 2011, of which GBP 1 million was designated in support of the development of the ICCTF during the first year of that period. Other development partners have indicated strong support for providing additional funding.

Step 1: submit prospective proposals (central government ministries). Central government agencies would be invited to submit proposals for activities that may be eligible for financing

by the ICCTF. Central government ministries may either submit their own proposals or submit proposals on behalf of other parties (such as NGOs or regional governments).

Step 2: pre-appraise prospective proposals (secretariat). The secretariat would assess the eligibility of activities proposed by central government agencies, based on criteria provided by the Steering Committee. (These criteria would take available funding and existing grant agreements with development partners into account.)

Step 3: submit proposals for approval by Steering Committee (secretariat). If a proposal meets all eligibility criteria for financing by the ICCTF, the secretariat will submits the proposal to the Steering Committee, together with an assessment of said proposal.

Step 4: approve or reject a proposal (Steering Committee and Technical Committee). Options for amendment and re-submission of a proposal would be defined in advance.

Step 5a: select a contractor (central government ministry, subject to ICCTF approval). A reputable contractor will be selected through a transparent tendering process, in accordance with prevailing regulations, and will enter into a contract with the central government ministry. The service provider must be acceptable to the ICCTF (non-objection clause).

Step 5b: request payment (contractors and service providers). Contractors and service providers will send an invoice to the Fund Manager, in accordance with contractual provisions. The agreement on completion of services has to be submitted by the responsible government ministry (contractor) or the ICCTF itself (service provider).

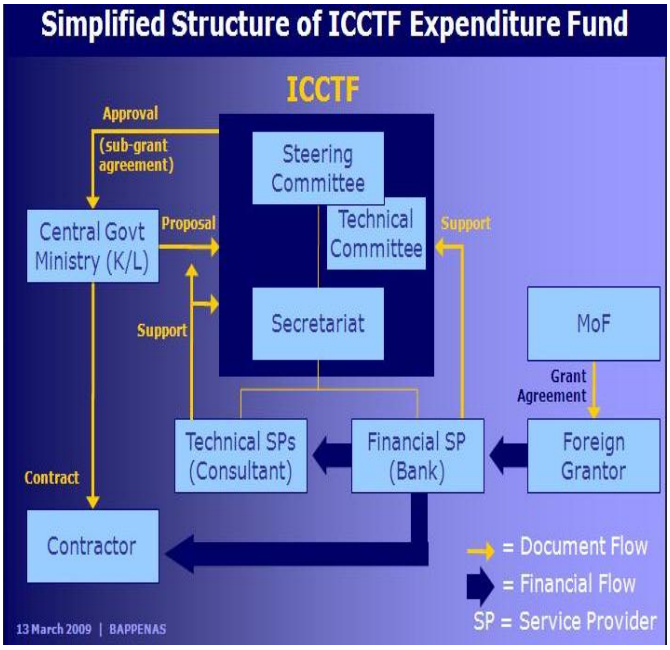
Step 5c: request payment (secretariat). Once a contractor or service provider has complied with its contractual obligations, the central government ministry will request the financial service provider (i.e. the ICCTF channelling bank) to pay due invoices from the ICCTF account. The ICCTF retains the right to suspend payments in case there is reason to believe that funds are not utilized in accordance with its intended purpose.

Step 5d: request replenishment of ICCTF account (MoF). Upon receipt of a request by the ICCTF, and the required supporting documentation, the Ministry of Finance would request a development partner to replenish the ICCTF special account in accordance with its grant agreement with GOI.

Step 6: monitoring and evaluation (Steering Committee). As part of its monitoring and evaluation responsibilities, the Steering Committee through the secretariat will monitor the implementation of ICCTF-financed activities, based on spot-checks and review of project implementation reports.

Step 7: audit (BPK, public accountants). Fiduciary arrangements for activities financed by the ICCTF must satisfy both GOI and development partner requirements. An independent auditor, appointed by the Government, will annually audit financial transactions funded by the ICCTF. An independent auditor, appointed by and paid for by the ICCTF, would audit the fund's compliance with implementing grant agreements between GOI and development partners, as well as the performance of the ICCTF's technical and financial service providers. All audited reports will made available to the general public.

Figure 26. Simplified Structure of ICCTF Expenditure Fund



Source: ICCTF Blueprint (Bappenas, 2009)

Monitoring, Evaluation and Auditing

Legal basis. The legal basis for the monitoring and evaluation of ICCTF-financed activities, as well as the auditing of financial transactions related thereto, consists of:

- GOI's prevailing laws and regulations. Relevant government regulations include those on monitoring and evaluation of the implementation of development plans (PP39/2006) and the preparation of work plans and budgets by central government ministries (PP21/2004).
- Grant agreement between GOI and a development partner. Such agreements will specify general arrangements for monitoring, evaluation and auditing of development partner funds channeled through the ICCTF.
- Contractual agreements between GOI and service providers. The Ministry of Finance will appoint a national financial institution to act as a channeling bank for the ICCTF, and enter into a contract with the selected institution. Similarly, BAPPENAS (through the ICCTF Secretariat) will contract technical service providers.

Because the ICCTF is not a separate legal entity, it cannot – by itself – enter into a contract with a service provider or sign a legally binding agreement with the recipient of an ICCTF-financed grant. It derives its authority for allocating external grants from the grant agreement between GOI and a development partner. The contract between MoF and the selected national financial institution will provide the basis for, *inter alia*, monitoring, evaluation and auditing. With regard to central government ministries, the contract will specify in detail the applicant's responsibilities for submitting periodic progress reports on financial and physical progress with the implementation of the ICCTF-financed activity before the national financial institution would be authorized to honor a payment request. It would also state that the ICCTF will have the right to suspend funding if there is reason to believe that funds are not utilized in accordance with the approved application.

Monitoring and evaluation. The ICCTF Secretariat, with the assistance of supervision consultants, will monitor and evaluate the performance of ICCTF-financed activities

implemented by central government ministries[15]. This exercise will be based on reports submitted by the applicant, backed up by field surveys and random spot checks. The Secretariat will periodically report the results to the Steering Committee. Annual monitoring and evaluation reports will be made publicly available.

Auditing. The proposed arrangements can be summarized as follows:

- ICCTF. The ICCTF Steering Committee will be held accountable for ensuring that external grants are allocated to the provisions stipulated in grant agreements with development partners. An independent auditor, appointed by the Steering Committee and paid for by the ICCTF, will annually conduct a 'policy compliance' audit.
- ICCTF service providers. The same independent auditor will audit the performance of ICCTF service providers, based on contracts with BAPPENAS (technical service providers) and the Ministry of Finance (financial service provider).
- Recipients of ICCTF grants. An independent auditor appointed by GOI (usually BPK) will audit the use of ICCTF funds by central government ministries. The recipient ministries would be fully responsible to ensure compliance with prevailing regulations on the use of public funds. (The responsibility of the ICCTF itself would be limited to ensuring that funds are allocated to applicants in accordance with grant agreements.)

Next Steps

BAPPENAS intends to establish the ICCTF before July 2009. This is admittedly an ambitious target given that the creation of multi-donor trust funds usually takes substantially longer. At the same time, it is recognized that the creation of the ICCTF is a high priority for the Government. The next steps consist of: (i) concept development, (ii) detailed design, and (iii) start of operations. It was assumed that the first two steps would each require four months (Table 2). Based on this schedule, the Fund would be fully operational by the end of October 2009.

Concept development (March-June 2009). During this phase, BAPPENAS would to further develop the proposed concept, initially in consultation with the Ministry of Finance, and in a later stage also with other relevant ministries and agencies. After BAPPENAS has reached an internal consensus with other GOI agencies, it will discuss the agreed concept in detail with selected development partners. The outcomes of this step are:

- Legal and financial basis for operation of Trust Fund established (including MoU between BAPPENAS, MoF and other key GOI parties for the establishment of the Fund, and the document to legally establish the Steering Committee and Technical Committee, and the required decrees to legalize the proposed fund channeling arrangements and establish the secretariat).
- Framework Arrangement between GOI and at least two interested development partners (in addition to DFID).

Detailed design (July-Oct 2009). Upon selection of a (refined) model that is acceptable to both GOI and development partners, BAPPENAS would define the institutional, legal and organizational arrangements of the fund in detail. These arrangements need to be in place before the ICCTF can start operating, and will include: the allocation of GOI budgets for establishment and running of ICCTF, the appointment of a channeling bank, work plans, SOPs, and an initial pipeline of activities to be financed by the Fund. Start of operations is expected to commence by the end of October 20.

15 In addition, central government ministries will monitor and evaluate the performance of ICCTF-financed activities in accordance with PP39/2006.

3.b. Specific Trust Fund[16]

There are many funds exist within World Bank environment, ADB, UNDP etc which provide similar climate change financing but run under normal existing mechanism (ODA procedures and requirements). There are issues whether these Specific Trust Funds are deemed as part of ODA or not. However, most donor countries consider that these Specific Trust Funds are part of ODA and are additional to existing commitments[17] even though 0.7 percent ODA goal is not met yet.

These funds are generally very limited and their availability is dependent on donors' commitments to replenish and continue the life of the funds. They run on *first-come first-served basis*, meaning and eligible recipients may be left unfunded when the funds just dry up. The following table shows sources of finance from specific trust funds intended primarily for mitigation actions.

Table 43. Specific trust funds

	Pledged (USD Mil)	Expected Funds Annual Disbursement (USD Mil)
Clean Technology Fund	4,700	1,566.7
Strategic Climate Fund	1,700	566.7
FCPF	165	55.0
GEF TF	313	78.3
UN-REDD	35	11.7
CEP (Japan)	10,000	2,000.0
ETF-IW (UK)	1,280	320.0
IFCI (Australia)	156	31.2
ICI (Germany)	560	84.0
GCCA (EC)	148	19.7

Source: http://www.climatefundsupdate.org

Indonesia has received several funding from these specific trust funds. As of May 2009, US$5,644,250 has been received from UN-REDD (Norway contribution). The programme is a collaboration between the United Nations Environmental Programme (UNEP), the United Nations Development Programme (UNDP) and the Food and Agriculture Organization (FAO). Aceh, with its large forest will be a focus area for UN-REDD. The assistance is ranging from work on carbon accounting to legal matters associated with deforestation and emission reduction efforts.

In June 2008, Indonesia also received IFCI fund (International Forest Carbon Initiative) under Indonesia - Australia Forest Carbon Partnership contract. The Partnership builds on existing long-term practical cooperation between Indonesia and Australia on REDD. It incorporates

[16] The main source of specific trust funds presented here is www.climatefundsupdate.org. The site provides rich resources on current funds trends and updates for climate finance. The term "specific" (in Specific Trust Funds) means that those funds are specifically dedicated for climate change issues.
[17] More thorough discussion on existing architecture and new architecture of climate change funds are available at "New Finance for Climate Change and the Environment," 2008 by Gareth Porter, Neil Bird, Nanki Kaur and Leo Peskett of ODI (Overseas Development Institute), supported by WWF .

$30 million for the Kalimantan Forests and Climate Partnership and a $10 million bilateral package of support for Indonesia on forests and climate. The Partnership is operating in three key areas: strategic policy dialogue on climate change; increasing Indonesia's carbon accounting capacity; and identifying and implementing incentive-based REDD demonstration activities.

3.b.1. Climate Investment Funds

The CIFs is a facility from the multilateral development banks which consists of the **Clean Technology Fund** (CTF) and the **Strategic Climate Fund** (SCF). The CTF seeks to fill a gap in the international architecture for development finance available at more concessional rates than standard terms used by the multilateral development banks and at a scale necessary to help provide incentives to developing countries to integrate nationally appropriate mitigation actions into sustainable development plans and investment decisions.

Clean Technology Fund

About the Fund
The Clean Technology Fund (CTF) is to support the rapid deployment of low-carbon technologies on a significant scale, with the objective of cost-effective reductions in the growth of greenhouse gas emissions. As the foundation of economic growth, the private sector has a significant role to play in climate change mitigation and adaptation. In pursuing a strategy that will combine public sector reform and private sector action, the CTF will seek to provide incentives necessary to engage private sector actions in achieving the objectives of the CTF. It is recognized that funding structures for engaging the private sector will need to be different to the structures applied for public sector proposal financing.

Mechanism
The CTF will use a blend of financial instruments, including grants, concessional loans and guarantees to make investing in low carbon technologies more attractive to both public and private sector investors in the developing countries. It will also be a collaborative effort between the World Bank and other MDBs, through an investments plan for each country of operation prepared under the leadership of the country government.

Considered as ODA?: Yes
The outgoing use of all CIF resources as concessional loans, grants, and guarantees through the MDBs can be reported by each MDB as ODA if: (a) it meets the criterion of promoting economic development and welfare; b) the grant element is at least 25 percent; and c) funds are to be used in a country included in DAC list of ODA eligible countries.

Status
Pledged: The total amount pledged by eight countries to the CTF is **US$ eq. 4.7 billion** as of April 15, 2009. Since the last meeting of the CTF Trust Fund Committee in January 2009, there have been no new pledged resources to the CTF. Pledges have been made by Australia, France, Germany, Japan, Norway, Spain, Sweden, and the United States.

Deposited: A countersigned contribution agreement has been made with the UK for the amount of GBP385 Million. Amount received from the UK as of 15 April 2009 is GBP60, with 325 outstanding.

Funds disbursed to Indonesia to date: None as of yet.

Activities Supported
The Clean Technology Fund will invest in projects and programs that contribute to demonstration, deployment and transfer of low carbon technologies with a significant potential for long term greenhouse gas emissions savings. Options include programs and large-scaled projects:

- At the sectoral or sub-sectoral level in a given country;
- Sub-nationally, by focusing activity on a particular province/state/municipality;
- Regionally, particularly where regional cooperation is required;
- Through the private sector, or public-private partnerships.

Potential sectors for CTF investments are in the power sector (renewable energy, as well as increased efficiency in generation, transmission and distribution); transportation (modal shifts to public transportation, improved fuel economy, and fuel switching); and large scale adoption of energy efficient technologies in the industrial, commercial and residential building sectors.

Conditions & Eligibility
Country access will be based on:

- ODA-eligibility (according to OECD/DAC guidelines); and
- An active multilateral development bank (MDB) country program.

Strategic Climate Fund

About the Fund
The Strategic Climate Fund (SCF) is one of the two (along with the Clean Technology Fund) multi-donor Trust Funds within the World Bank's Climate Investment Funds (CIF). The SCF is an umbrella vehicle for the receipt of donor funds and disbursements to specific funds and programs aimed at piloting new development approaches or scaling up activities aimed a specific climate change challenge or sectoral response. There are three funds under the SCF framework: the Pilot Program for Climate Resilience (PPCR), the Forest Investment Program (FIP) and the Scaling Up Renewable Energy in Low Income Countries Program (SREP).

Mechanism
The SCF will make available a range of financing, credit enhancement and risk management tools such as loans, credits, guarantees, grants and other support, targeted to the needs of developing countries. It has been reported that for the SCF, the grant component should be no more than 10 percent of total resources.

Considered as ODA?
The outgoing use of all CIF resources as concessional loans, grants, and guarantees through the MDBs can be reported by each MDB as ODA if: (a) it meets the criterion of promoting economic development and welfare; b) the grant element is at least 25 percent; and c) funds are to be used in a country included in DAC list of ODA eligible countries.

Status
Pledged: the total amount pledged by eight countries to the SCF is US$ eq. 1.7 billion as of April 15, 2009.

Deposited: As of April 15, 2009, the Trustee has entered into Contribution Agreements with Canada and the United Kingdom. The Trustee received CAD85 million in cash from the Government of Canada and GBP 100 million from the Government of the United Kingdom in

form of promissory notes for the SCF. The total receipts for the PPCR amount to US$ eq. 95.8 million. The Trustee is negotiating with the remaining contributors to formalize their pledges to the SCF through a Contribution Agreement.

Funding Decisions: the cumulative funding decisions made by the SCF Trust Fund Committee amount to about US$5 million, of which US$1.2 million represents the strategic plan preparation budget for the PPCR approved in November 2008.

Fund dirbursed to Indonesia: none as of yet.

Activities Supported
Within the framework of the SCF, targeted programs with dedicated funding (known as the 'SCF Programs') are being established to provide financing to pilot new development approaches or scaled-up activities aimed at a specific climate change challenge or sectoral response.

- **The Pilot Program for Climate Resilience (PPCR)** is the first Program under the SCF. It will provide incentives for scaled-up action and transformational change through pilot projects that demonstrate ways to integrate climate risk and resilience into core development planning, while complementing other ongoing development activities in a given country.

- **The Forest Investment Program**, another program under the SCF and currently under design, will mobilize significantly increased investments to reduce deforestations and forest degradation and promote improved sustainable forest management, leading to emission reductions and the protection of carbon reservoirs

- **The Program for Scaling-Up Renewable Energy in Low Income Countries (SREP)**, is within the framework of the Strategic Climate Fund (SCF). The SREP, also in the final stages of the design process, will demonstrate the economic social and environmental viability of low carbon development pathways in the energy sector by creating new economic opportunities and increasing energy access through the use of renewable energy.

Conditions & Eligibility
Criteria for eligibility of recipient countries will be established by each of the SCF Program Sub-Committees. ODA-eligible countries that have an active MDB country program may access the CIF. Guidelines for accessing financing are finalized by the program sub-committees or through the respective multi stakeholder design process. Implementation will be undertaken utilizing the core processes of the MDBs.

While the Trust Fund Committee or sub-committees may decide on the programming priorities and financing modalities for the SCF, the development and management of individual funded projects and programs will be country-led.

3.b.2. Forest Carbon Partnership Facility

About the Fund
The Forest Carbon Partnership Facility (FCPF) is a World Bank program created to assist developing countries in their efforts to reduce emissions from deforestation and land degradation (REDD). It has the dual objectives of building capacity for REDD in developing countries, and testing a program of performance-based incentive payments in some pilot countries.

Mechanism
The Readiness Mechanism is grant-based. The REDD Country Participant in the FCPF enters into a Grant Agreement with the Bank acting as a Trustee of the Readiness Fund. (However it is not mandatory that REDD Country Participants enter into a Grant Agreement; they can seek other funding sources if desired).

For the Readiness Mechanism, a grant will be disbursed at an average of US$3.6 million (inclusive of the original US$200,000 disbursed in preparation of Readiness Plan). However, the funds would be made available to the country in disbursements. Within the Carbon Finance Mechanism, money is delivered in exchange for emission reductions.

Considered as ODA?: Yes

Status
Pledged: $165 million has been pledged for both the Readiness Fund and the Carbon Fund ($92 million for the Readiness Fund; $75 million for Carbon Fund). The donor countries are: Australia, Finland, France, Germany, Japan, the Netherlands, Norway, Spain, Switzerland, the United Kingdom and the United States. The Nature Conservancy of the United States has also made a contribution to the fund, with more contributions being expected in 2009 from both the public and private sectors). The following tables are from the October 20, 2008 FCPF Organizational Meeting document Update on Pledges & Contributions to the FCPF.

Deposited: Unknown.

Funds disbursed to Indonesia to date: US$3.6 million

Activities Supported
(i) The Readiness Mechanism is designed to assist developing countries to reach a capacity level at which they will be ready to participate in a future system for positive incentives to REDD. This assistance will include, but is not limited to, support for:

a. Developing a national reference scenario for REDD;
b. Adopting a national REDD strategy that would seek to reduce emissions and at the same time conserve biodiversity and enhance the livelihoods of forest-dependent indigenous peoples and other forest dwellers. The REDD strategy should reflect each country's priorities and be mindful of its constraints; and
c. Designing and, if possible, implementing accurate measurements, monitoring and verification systems to enable countries to report on emissions from deforestation and forest degradation.

An eligible REDD Country's first step for accessing financing under the Readiness Mechanism is to complete the Readiness Plan Idea Note (R-PIN). This Note describes the country's overall vision for REDD, explains the situation and challenges of the country, and indicates the work areas for which it will request assistance.

Once a country develops its R-PIN, a Technical Advisory Panel and the World Bank will provide comment. A country which is selected by the Participants Committee as a REDD Country Participant, will then develop a Readiness Plan, which elaborates on the R-PIN. Finally, implementation of the Readiness Plan results in a Readiness Package, which contains at least the three core elements described above (namely, a national Reference Scenario, a REDD Strategy, and a Monitoring System).

(ii) For the Carbon Finance Mechanism, the following groups and categories of emission reduction Programs are envisaged:

- General Economic Policies and Regulations (taxation, subsidies, rural credit, certification, law enforcement).
- Forest Policies and Regulations (taxation, subsidies, certification, concession regimes, securing land tenure and land rights, forest law, governance and enforcement, zoning, protected areas, PES).
- Forest Management (forest fires, reduced impact logging, reforestation).
- Rural Development (community development, rural electrification, community forestry).

Conditions & Eligibility

All borrowing member countries of the IBRD or IDA that are located in subtropical or tropical areas are eligible. However, priority will be given to countries with substantial forest areas and forest carbon stocks and to those that have forests that are important for the livelihoods of forest dwellers and indigenous peoples. The Steering Committee in the interim and eventually the Participants Committee would select REDD countries based on their submission of a Readiness Plan Idea Note (R-PIN) and in accordance with the following criteria:

- Relevance of the country in the REDD context: Priority would be given to countries with the following characteristics: (i) substantial forest area and forest carbon stocks; and (ii) relevance of the forests in the country's economy, including relevance for poverty reduction, the livelihoods of forest-dependent indigenous peoples and other forest dwellers, and clarification of land tenure regimes;
- Quality of the Readiness Plan Idea Note: The Quality of the R-PIN would be evaluated on the following criteria: (i) ownership of the proposal by both the government and relevant stakeholders; (ii) consistency between national and sectoral strategies and the proposed REDD Strategy; (iii) completeness of information and data provided; (iv) clarity of responsibilities for the execution of REDD activities to be financed; and (v) the feasibility of proposed activities to reduce deforestation and forest degradation and their likelihood of success;
- Geographic and biome balance: Selection would take into account the need to balance experiences and learning across different continents and across the world's main forest biomes; and
- Variety of approaches: Consideration would be given to approaches that can contributeto the learning objective of the FCPF, by selecting country proposals that: (i) suggest innovative and/or comprehensive strategies/programs and approaches to tackle deforestation and degradation; (ii) focus on innovative and/or advanced concepts of monitoring, reporting and remote sensing of forest degradation, biodiversity protection and social benefits; (iii) aim to test new mechanisms and distribution methods of REDD revenues; (iv) provide regionally important leadership in addressing REDD or in technical areas relevant to Readiness; or (v) demonstrate approaches that are inclusive and focus on REDD in combination with poverty reduction, livelihood enhancement, and/or land tenure rights, including alternative forest sector or other governance arrangements.

Funds from the Readiness Mechanism were first planned to be distributed to 20 countries, but due to high demand for funds, the WB recently announced they plan to scale up to 30 countries, with WB underwriting the US$2.3 million start-up expenses for the Facility.

3.b.3. GEF Trust Fund

The Global Environment Facility (GEF) is a global partnership among 178 countries, international institutions, non-governmental organizations (NGOs), and the private sector to

address global environmental issues while supporting national sustainable development initiatives. It provides grants for projects related to six focal areas: biodiversity, climate change, international waters, land degradation, the ozone layer, and persistent organic pollutants.

About the Fund
The GEF Trust Fund is the common funding resource of the Global Environment Facility (GEF). Climate Change is one of the six focal areas supported by the GEF Trust Fund. The objective of this part of the fund is to help developing countries and economies in transition to contribute to the overall objective of the United Nations Framework Convention on Climate Change (UNFCCC). The projects support measures that minimize climate change damage by reducing the risk, or the adverse effects, of climate change.

Mechanism: Grants

Considered as ODA?: Yes

Status
Pledged: Donor nations commit money every four years through a process called GEF replenishment. The Trust Fund has had four replenishments so far.

- 1994: the first GEF replenishment of US$2 billion was contributed by 34 countries;
- 1998: the second GEF replenishment of US$2.75 billion by 36 countries;
- 2002: the third GEF replenishment of US$3 billion by 32 countries;
- 2006, the fourth GEF replenishment of US$3.13 billion by 32 countries.

Deposited: The contributions of the fourth replenishment, covering spending during the period of November 2006 to June 2010, are US$ 3,130.00.
Funds disbursed to date: US$ 2,388 million to Climate Change projects.

Activities Supported

- Renewable Energies
- Energy Efficiency
- New Low-GHG Energy Technologies
- Sustainable Transportation
- Adaptation
- Enabling Activities, National Communications and other obligations under the UNFCCC

Conditions & Eligibility
GEF funding is in accordance with the following eligibility criteria:

(a) GEF grants made available within the framework of the financial mechanisms of the UNFCCC should be in conformity with the eligibility criteria decided by the Conference of the Parties.
(b) A country is an eligible recipient of GEF grants if it is eligible to borrow from the World Bank or if it is an eligible recipient of UNDP technical assistance through its country Indicative Planning Figure (IPF).
(c) GEF concessional financing in a form other than grants that is made available within the framework of the financial mechanism of the conventions shall be in conformity with eligibility criteria decided by the Conference of the Parties of each convention. GEF concessional financing in a form other than grants may also be made available outside those frameworks on terms to be determined by the Council.

3.b.4. UN-REDD Programme Fund

About the Fund
Three UN Agencies – UNEP, UNDP and the FAO – have collaborated in the establishment of the UN-REDD program, a multi-donor trust fund that allows donors to pool resources and provide funding with the aim of significantly reducing global emissions from deforestation and forest degradation in developing countries.

Mechanism: Grants

Considered as ODA?: Unknown

Status
Pledged: US$35 million by the government of Norway.
Deposited: US$12 million by the government of Norway.

Funds distributed to date: not as of yet.

Activities Supported
The collaborative program will have two components:

- assisting developing countries prepare and implement national REDD strategies and mechanisms; and
- supporting the development of normative solutions and standardized approaches based on sound science for a REDD instrument linked with the UNFCCC.

Conditions & Eligibility
Countries are selected for phase I (the pilot phase) according to the following criteria:

- Request for quick start action
- Existing collaboration with UN partners in related areas for rapid progress
- Emission reduction potential
- Degree of REDD readiness potential
- Regional, biome and socio-economic representation
- Coordination with international REDD initiatives
- Leadership potential in sub-regional experience sharing
- Ability to contribute experiences to UNFCCC negotiations and development of REDD mechanisms

Guidance on how each criterion will be judged, and how REDD readiness potential will be assessed is not publicly available.

The countries that have been selected for phase I are:

- Africa: DRC, Tanzania, Zambia
- Asia & Pacific: Indonesia, Papua New Guinea, Vietnam
- Latin America & Caribbean: Bolivia, Panama, Paraguay

3.b.5. Cool Earth Partnership (Japan)

About The Fund
The Cool Earth Partnership is an initiative of the government of Japan. It aims to provide assistance to developing countries that are already making efforts to reduce greenhouse gas

emissions to enable them to achieve economic growth in ways that will contribute to climate stability, on the basis of policy consultations between Japan and those countries.

Mechanism
Grants and loan. Around 20 percent of the fund is allocated for grants, 40 percent is for ODA loan, and another 40 percent is for trade insurance for Japanese exporters of clean technology.

Considered as ODA?: Yes. The classification of the Cool Earth Partnership funds is 60 percent ODA. All of the grant money is ODA (which constitutes 20 percent of the Partnership Fund) and about half of the loan money is considered ODA, the remainder covers trade insurance schemes for Japanese exporters of clean technology.

Status
Pledged: US$ 10 billion (JPYen 1,250 billion) over 5 years. Deposited: Unknown. Funds disbursed to date: Unknown.

Activities Supported
Funds will be disbursed to support the following activities:

- Adaptation to climate change: measures to assist developing countries that are vulnerable to the adverse effects of climate change (e.g. African and Pacific island counties), to take adaptive measures (e.g. measures against disasters related to climate change such as droughts and floods, and the planning of adaptation measures).
- Improved access to clean energy: Measures to promote economic development through utilizing clean energy in developing countries that have insufficient access to modern energy supply (e.g. electrification of rural communities by the introduction of solar power generation and small-scale hydro energy).
- Mitigation of climate change: Measures to mitigate effects of global warming by reducing GHGs emission (e.g. improvement of energy efficiency of electricity producing power plants).

Conditions & Eligibility
Disbursement of funds is dependent on bilateral policy consultations with Japan, with the intent of reaching a common understanding of policies regarding climate change (e.g. reducing greenhouse gas emissions and achieving economic growth in a way that will contribute to climate stability).

3.b.6. Environmental Transformation Fund - International Window (UK)

About the Fund
The Environmental Transformation Fund – International window (ETF-IW) is an initiative of the government of the UK that focuses on poverty reduction, environmental protection and helping developing countries tackle climate change. In the course of its development, a large proportion of the proposed funding of the ETF-IW has been allocated to the World Bank-administered Climate Investment Funds (CIFs).

Mechanism
Finance disbursed through the Climate Investment Funds (including from the UK's contribution to them) will be part concessional loans and part grant. The exact division of grants and loans will emerge as the detailed design of the CIFs is finalised over the coming months and financing of investment plans is agreed. However it is expected it will mostly be in the form of zero or negligible interest loans similar to those under IDA.

Considered as ODA?: Yes. Donors have agreed that pledges to the CIFs will be additional to existing ODA contributions.

Status
Pledged: GBP800 million was pledged in the 2007 UK Budget. Deposited: The deposits will be made over the financial years 2008-11, by the DFID and DECC (100 million, 200 million, and 500 million). Funds disbursed to date: The first funds will be disbursed from the CIFs before the end of the 2008-09 financial year.

Activities Supported
The ETF - IW will support the activities of the following World Bank-administered CIFs:

- Strategic Climate Fund (SCF) , which will provide a forum for discussions between donors and recipient countries about climate related investment, and its sub-programmes:
    (ii) Pilot Programme for Climate Resilience (PPCR), which will support a small number of countries to integrate climate resilience across their plans and budgets and provide funding to implement these plans,
    (iii) Forest Investment Programme (FIP), which will support sustainable forest management and the right financial incentives to avoid deforestation.
    (iv) Scaling-up Renewable Energy Programme (SREP), which will focus on clean energy access projects in low income countries.
- Clean Technology Fund, which will invest in clean, efficient technology to help developing countries grow in 'greener' less carbon intensive ways.

The UK will also allocate GBP50 million to the Congo Basin Forest Fund and GBP15 million to the Forest Carbon Partnership Facility (FCPF).

Conditions & Eligibility
Operations will use International Financial Institution (IFI) regular procedures and lending criteria.
Country access to the Climate Investment Funds will be based on:

- ODA-eligibility (according to OECD/DAC guidelines); and
- An active multilateral development bank (MDB) country program.

3.b.7. International Forest Carbon Initiative (Australia)

About the Fund
The International Forest Carbon Initiative (formerly the Global Initiative on Forests and Climate (GIFC), is an initiative of the Australian government. Its overall objective is to demonstrate that reducing emissions from deforestation can be part of an effective international response to climate change.

The IFCI does not intend to set up a new fund or governance structure, but will work through established channels of bilateral dialogue and cooperation at the international level.

Mechanism : Unknown

Considered as ODA?: Unknown

Status
Pledged: AUD $200 million has been earmarked for this initiative over 5 years, of which $164.4 million will be allocated to AusAID, with joint decision making between AusAID and the Department of the Environment and Water Resources (DEW) in consultation with the Department of Agriculture, Fisheries and Forestry (DAFF). The $164.4 million allocated to

AusAID includes $27.3 million in 2007-08, $33.2 million in 2008-09, $43.6 million in 2009-10, $42.6 million in 2010-11 and $17.6 million in 2011-12.
Deposited: Unknown
Funds disbursed to date: Unkown

Activities Supported

- Indonesia-Australia Forest Carbon Partnership
- Kalimantan Forests and Climate Partnership
- Bilateral package of support to Indonesia on forests and climate
- Papua New Guinea-Australia Forest Carbon Partnership
- Research partnership on reducing emissions from deforestation
- Development of concept models for demonstration activities
- Partnership with the Clinton Climate Initiative on carbon monitoring
- World Bank's Forest Carbon Partnership Facility
- Asia Pacific Forestry Skills and Capacity Building Program

Conditions & Eligibility

Funding will support projects in selected developing countries (particularly, but not exclusively, in South-East Asia and Pacific Regions).

Indonesia is a key partner country for the IFCI and is expected to be the site of several major initiatives including the Kalimantan Forests and Climate Partnership announced at the APEC meetings in September 2007. Other partner countries could include Papua New Guinea, other Pacific island countries, countries in the Mekong sub-region and the Philippines.

3.b.8. International Climate Initiative (Germany)

About the Fund

The International Climate Initiative (ICI) is a fund of the German Government. The overall objective of the fund is to provide financial support to international projects supporting climate change mitigation, adaptation and biodiversity projects with climate relevance.

Mechanism

A variety of approaches are pursued within the ICI, including financing investments and programs in financial sectors by means of grants, as well as support via (interest-subsidized) loans and also, where appropriate, via project-based contributions to international funds.

Considered as ODA?: Yes
Funding is classified as ODA, with some exceptions for project funding in non-ODA eligible countries, such as Russia.

Status

Pledged: The ICI will mobilize resources from private companies (compliance buyers) under the framework of the European Union Emission Trading Scheme (EU ETS). In 2008, the German government auctioned 8.8 percent of its allowable emission permits to businesses. Approximately 30 percent of the revenue earned from this sale is intended to finance climate change-related projects. This is expected to amount to 400 million euros/year for domestic and international use 120 million euros/year is earmarked for developing countries and countries in transition. Of this, half is intended for sustainable energy projects and the other half for adaptation to climate change impacts and biodiversity projects.

Deposited: Funds are not retained between years. Any balance of the annual allocation that is not spent on projects goes back to the Federal Treasury.

Fund disbursement to date: In 2008, the ICI supported approximately 100 projects in developing, newly industrializing and transition countries with a total of around 110 million euros.

Activities Supported
The ICI will support sustainable energy systems, adaptation and biodiversity projects related to climate change. The criteria on which projects will be selected include those projects that can demonstrate a mitigation effect; which are anchored in partner countries national strategies; are innovative; build on the strengths of German climate policy and have synergies with the conservation of other global environmental goods.

In the field of sustainable energy supply, projects on a scale of up to € 80 million began to be implemented in 2008. The goal is to support partner countries in establishing an energy supply structure that prevents climate-damaging greenhouse gas emissions where possible. Support is also given towards increasing energy efficiency, expanding renewable energies, reducing environmentally harmful hydrofluorocarbons and for investment-related measures and know-how in partner countries.

Conditions & Eligibility
The ICI will initially focus on a number of countries that have a high potential for emissions reduction in view of their significant and sharply rising greenhouse gas emissions. Innovative projects are also being supported in other selected countries and regions. Furthermore, projects targeting valuable carbon sinks with high levels of biodiversity (such as in the Amazon region, the Congo Basin and South-East Asia) will receive support.

Existing structures of development cooperation will be used for the implementation of projects, with GTZ and KfW playing a key role in project identification and implementation. Projects will complement existing development cooperation with respect to climate change and energy policies, without being limited to certain sectoral or regional focuses or priorities.

Project proposals can be submitted by implementing organisations of German development cooperation, and by non-governmental and governmental organisations, universities and research institutes, private-sector companies, multilateral development banks, and organisations and programmes of the United Nations.

3.b.9. Global Climate Change Alliance (EC)

About the Fund
The Global Climate Change Alliance (GCCA) is an initiative of the European Commission. Its overall objective is to build a new alliance on climate change between the European Union and the poor developing countries that are most affected and that have the least capacity to deal with climate change. The GCCA does not intend to set up a new fund or governance structure, but will work through the European Commission's established channels for political dialogue and cooperation at national level.

Mechanism
Funding will be released solely through grants.

Considered as ODA?: Yes

Status
Pledged: The European Commission has earmarked 60 million euros in additional funding from the Environment and Natural Resources Thematic Programme (ENTRP) for the GCCA over the period 2008 – 2010 (with an allocation of 10, 25 and 25 million euros over the three years).

Under the 10th European Development Fund, intra-ACP (African, Caribbean and Pacific countries) funding of 40 million euros is allocated to the GCCA in priority for regional action, in addition to 180 million euros for Disaster Risk Reduction. Sweden pledged an additional 5.5 million euros in 2008.
Deposited: Unknown

Activities Supported

(a) Adaptation to CC - Development of adaptation plans in vulnerable countries other than LDCs; supporting implementation of NAPAs developed with GEF support; financing pilot adaptation projects in the water and agricultural sectors and on sustainable natural resource management (NRM).
(b) Reducing emissions from deforestation - Building reporting systems and national capacity to monitor deforestation; strengthening institutions and developing national strategies to combat deforestation; supporting innovative performance-based mechanisms to provide positive incentives for REDD; expanding programmes like Forest Law Enforcement, Governance and Trade (FLEGT) that improve sustainable NR governance and reduce emissions.
(c) Enhancing participation in CDM - Building capacity for participation and providing technical assistance for cost-effective project development; showcasing projects that are better suited to LDCs and SIDS and developing appropriate methodologies.
(d) Promoting Disaster Risk Reduction - Improving and extending climate monitoring, forecasting and information systems and converting data into effective preparedness measures; identifying measures to implement the Hyogo Framework for Action.
(e) Integrating CC into Poverty Reduction Efforts - Integrating adaptation plans into poverty reduction strategies and development strategies; developing institutional capacity in LDCs and SIDS for mainstreaming; climate-proofing EU funded programs and projects.

Conditions & Eligibility
The GCCA will provide support to poor developing countries, particularly the Least Developed Countries (LDCs) and Small Island Development States (SIDS). There are more than seventy countries in these categories.

To maximize the impact of initial resources available, the European Commission is in the process of selecting a number of pilot countries with whom practical cooperation will start with funds from the budget year 2008. The following broad criteria were established to select these countries:

(a) The country should have national and/or sectoral climate change policies in place or has expressed its intention of preparing them to ensure the integration of climate change into development strategies, plans and budgets.
(b) The government is keen to enhance policy dialogue and cooperation on climate change with the EU.
(c) The country has ideally already received, or is in the process of preparing for receiving, (General/Sectoral) Budget Support through the European Commission and/or other donors. Whilst the idea of the GCCA is to add adaptation-related funding to existing budget support programs, the existence thereof is not a precondition for support under the GCCA. Where this aid modality is not used (or where its use in the

area of climate change adaptation is not possible or beneficial in the short term), other means of support can be identified with the partner government.

(d) There is an EC Delegation with sufficient capacity to prepare and follow up implementation of the GCCA program. Ideally, the country has already established dialogue on environmental/climate issues with the European Commission or donors more widely.

(e) The country should preferably be involved and be politically active in the negotiations under the United Nations Framework Convention on Climate Change (UNFCCC) and in this sense serve as a model for other countries in its group/region.

(f) Further elements to identify countries and priority areas of intervention could be of a more technical nature, e.g. the hazard profile of the country (exposure to risk, adaptive capacity, climate data availability and projected climate changes).

4. Civil society finance & Philanthropic Organizations

Civil society resource organizations include non-governmental organizations, foundations, endowment funds, etc. Currently, it is only a few charity organizations in Indonesia identified in supporting climate finance. One of them is Kehati Foundation, a grant making institution established on 12 January 1994 which is very active in promoting green environment and biodiversity conservation.

On 16 April 2007, Kehati launched a green mutual fund in the form of collective investment contract amounting Rp3 billion. The purpose of the fund is to raise public financial supports for biodiversity programs undertaken by Kehati Foundation. In June 2009, Kehati also signed a DNS (debt-for-nature swap) with the US government to manage US$30 million Indonesia's foreign loan into programs facilitating conservation, protection and restoration of Sumatra tropical forest.

At international level, there are also The Energy Foundation, Oxfam GB, Conservation International, The Rockefeller Foundation, which have programs on climate change. In August 2007, the Rockefeller Foundation, in New York, has pledged US$70 million to help cities and towns around the world prepare for the potentially damaging effects of global climate change. The Doris Duke Charitable Foundation also released a US$100 million grant-making initiative in 2007 to help build a clean-energy economy that can reduce the threat of global climate change to people and the environment.

Those financial sources are very importance for Indonesia to access. Beside, civil society activities are expected to raise public awareness and participation so that climate issues become the people's concern.

4.1.2 Private Financial Sources and Mechanism

There are two potential financial sources not yet optimized by Indonesia to fund mitigation efforts. They are the private sector and the market.

1. Private Sector

It is expected that the contribution of private sector in mitigation finance will be greater in near future. Involvement of the private sectors can indicate the sustainability of projects when private sector understands that climate finance is commercially attractive and environmentally friendly for the benefit of today's generation and the next's. Government finance should diminish on proportional basis, its role then be taken by private sector investment.

Government should concentrate more on adaptation, due to its public goods characteristics in nature.

As the global market shifts into a carbon-based market, mitigation will be an enticing investment opportunity for the private sector. However, the large set-up cost for low-carbon infrastructure is a chief deterrent for the private to start contributing.

Private finance can be classified into two broad categories: domestic capital and foreign capital. Domestic capital may come from private investors, banks, and public capital markets. Foreign capital comes from the same sources, but they originate in another country.

Domestic/foreign capital includes:

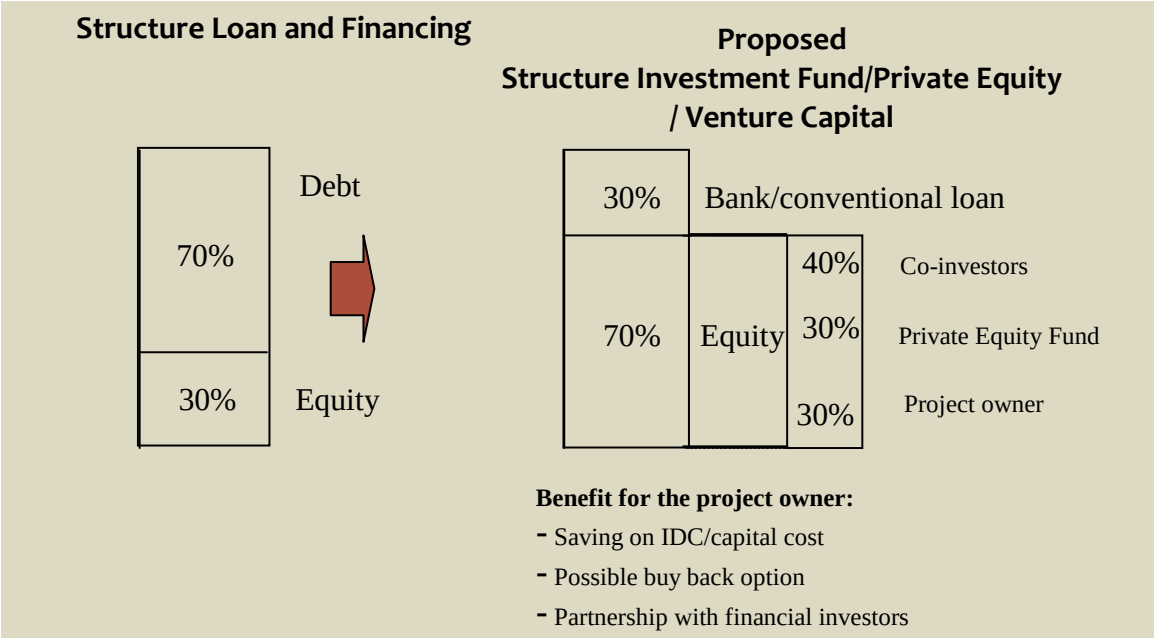
1) Commercial banks: provide finance through commercial lending.;
2) Private equity investors: through investment at start-up firms;
3) Pension funds: through direct investment and portfolio investment;
4) Insurance companies: through direct investment and portfolio investment;
5) Capital markets: through securities issuance (stocks, bonds, commercial papers, etc);

The ability to raise funds for mitigation activities will depend on risk-return profile of projects, and this risk-return profile is corresponding to maturity stage of technology / company. Private sectors are attracted by the potential profit from sales of the technology when it becomes commercially competitive. There will be minimal returns, if any, until the technology reaches technological maturity. That limits the possible private finance options to investments, such as venture capital and R&D funding, as the potential capital gains will only be realized several years in the future.

At the early stage of development, a project is usually financed by venture capital or private equity firms. At this stage, the project generally cannot access bank finance due to the riskiness of the project. At the commercial stage, the bank may be interested in financing. The project owners usually can raise finance through public offering in the capital market.

The financing of low carbon activities commonly used by the public sector follows the structure on the left of graph below. Here is a comparison of this structure with the used of investment funds on the right of the graph.

Figure 27. Proposed structure of Investment fund/private equity/venture capital



Source: own illustration

Direct funding portrays the following characteristics:

- It requires availability of sufficient own funding, equal to 30% of the company or project's investment value
- It requires sufficient collateral
- For green filed projects, exist Interest During Construction (IDC) in a significant amount and can reduce the internal rate of return (IRR)
- The cost of capital is high
- Not many investor consider CDM as additional guarantee
- The portion of lending is syndicated to several parties with the same criteria.

1.1 Commercial banks finance

Banks are intermediaries, which provide saving and lending services. Even if banks provide great potentials for Indonesia's climate mitigation finance, they are very conservative by nature in financing projects, since they carry public funds, and highly regulated by authority bodies. Banks generally will be only interested in proven technology investment. They also require collaterals in fixed asset or other guarantees, which may complicate new technology investment proposal. The following table gives us an insight to banks appetite in finance.

Table 44. Outstanding Loans in Rupiah & Foreign Currency of Commercial & Rural Banks By Economic Sector (Billions of Rp)

Year	2003	2004	2005	2006	2007	2008	Jul 2009
Agriculture	24,208	32,997	37,564	45,999	57,203	67,828	73,424
Mining	5,061	7,730	7,873	13,896	25,336	30,541	28,017
Manufacturing Industry	123,111	143,492	169,917	182,689	204,141	269,578	243,275
Trade	82,455	107,419	135,497	163,790	214,804	259,953	271,839
Services	87,379	106,645	133,521	156,362	210,561	306,141	312,559
Electricity, Gas and Wat	4,482	5,903	5,309	7,136	7,479	18,176	23,064
Construction	12,314	19,861	26,587	32,887	43,769	58,150	61,437
Transportation	16,119	17,578	19,635	26,306	36,551	62,139	68,630
Business Services	44,021	55,916	72,550	78,463	109,304	152,389	143,577
Social Services	10,443	7,387	9,440	11,570	13,458	15,287	15,851
Others	113,909	156,953	214,323	234,031	292,133	379,832	411,756
Total	**436,123**	**555,236**	**698,695**	**796,767**	**1,004,178**	**1,313,873**	**1,340,870**
Investment Loan	94,458	117,124	132,979	149,680	185,071	256,212	273,892
%	**22**	**21**	**19**	**19**	**18**	**20**	**20**
Working Capital Loan	170,564	211,551	272,193	312,119	388,258	518,618	525,899
%	**39**	**38**	**39**	**39**	**39**	**39**	**39**
Consumption Loan	112,144	155,151	212,089	231,777	290,048	376,689	408,954
%	**26**	**28**	**30**	**29**	**29**	**29**	**30**

Source: Statistic Bank Indonesia

Table 46 shows that investment loans account only 20 percent of total bank financing. It means that investment is still considered too risky for banks to proceed. Banks prefer providing working capital and consumption loans, which give us them more favourable risk profile in financing.

At present, only a limited amount of public and private banks that have taken part in financing low carbon projects, namely Bank Danamon Indonesia, Bank BNI, Bank Ekspor Indonesia. In general the banking sector would treat low carbon activities equivalent to any other business.

To attract commercial banks to finance climate projects, there must be some government policies and instruments to be put in place, namely government guarantees, policy changes in favour of climate projects, private-public partnership initiatives, etc. Some initiatives are now being introduced. For infrastructure projects, the Government has established PT SMI (Sarana Multi Infrastruktur) which provides finance in partnership with private sectors to climate change projects. The establishment of ICCTF and newly proposed LCDF (Low Carbon Development Fund) is expected to give enough appetite to banks in financing climate projects. But more importantly, government supports, industrial and banking policies must be adjusted in line with clean development favours.

1.2. Private equity & private equity funds

Private equity (PE) investors specialize their investment in a specific sector / industry with their specific knowledge in the area. PEs are very attracted in new start-up companies especially with newly introduced technology. Their exit is usually though sale of company in the future when the company is full-flagged running, and public offering through capital markets. Climate projects are one of top priority investments for private equity firms.

In Indonesia, only few private equity firms are also operating. The market for private equity in Indonesia is under-developed. Government must act to provide services as private equity firms do. Among the new, Saratoga Capital is a very aggressive private equity in the country.

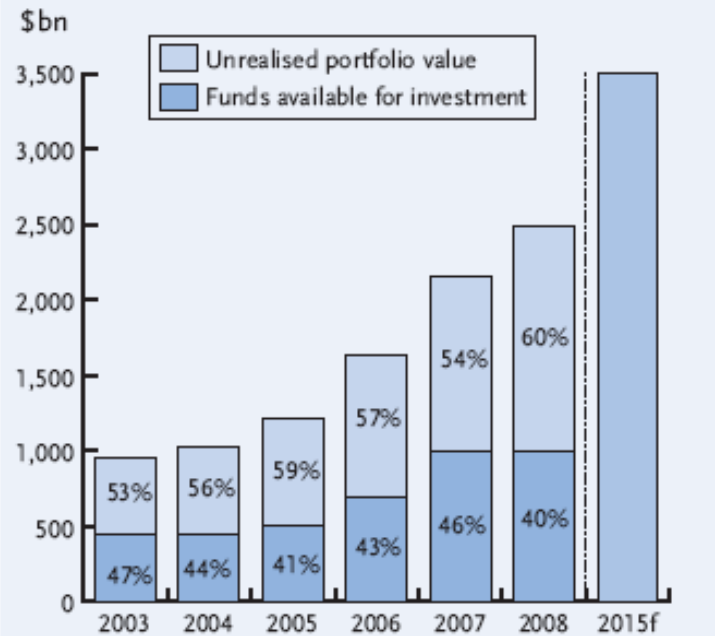
Table 45. Private equity firms and funds with offices in Indonesia

Investor	City	Founded
Actis Capital LLP	Jakarta	2003
Bahana Artha Ventura PT	Jakarta	
Crest Capital Partners	Jakarta	
Seavi Indonesia Venture PT	Jakarta	
SG Capital Partners LLC	Jakarta	

Source: www.private-equity.org.uk

According to IFSL forecast, private equity worldwide assets under management are about US$2,500 billion in 2008, 40 percent of which (or US$1,000) are still available for investment. It gives enough hope for Indonesia to tap in available resources from international private equity market. Lack of Government capital and expertise should encourage Government to engage international private equity firms to finance climate projects in the future. The largest private equity firm in the world today according to Private Equity International (2009) is TPG. The following tables show private equity worldwide assets under management, top 10 largest private equities, and top countries which attract private equity investment the most.

Figure 28. Private equity worldwide assets under management,2008



Source: Preqin, IFSL forecast

Table 46. The 10 Largest PE (US$ billion)

Private equity firms	Headquarters	US $ bn
TPG	Fort Worth (Texas)	52.4
Goldman Sachs Principal Inv. Area	New York	49
The Carlyle Group	Washington DC	47.8
Kohlberg Kravis Roberts	New York	40.5
Apollo Global Management	New York	35.2
Bain Capital	Boston	35
CVC Capital Partners	London	33.7
The Blackstone Group	New York	30.8
Warburg Pincus	New York	23
Apax Partners	London	21.3

Note: Firms ranked by amount of capital raised for direct private equity investment in 5 years up to end-2008

Source: Private Equity International

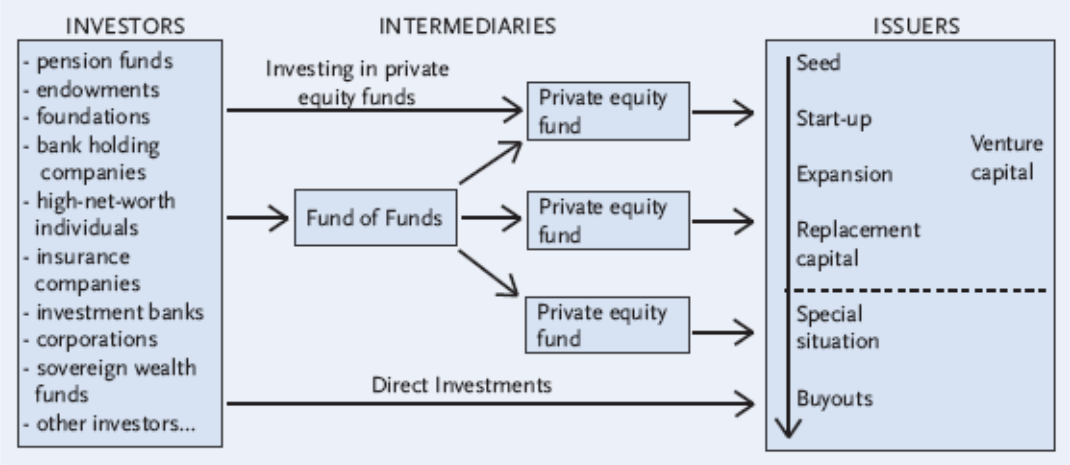
Table 47. Top Countries for Private Equity Investments and Funds Raised Table 47.

$bn	2007		2008	
	Investment value	Funds raised	Investment value	Funds raised
US	106	302	48	288
UK	50	61	32	65
France	18	10	12	15
China	11	11	13	13
India	18	6	11	8
Japan	15	5	10	3
Australia	15	6	2	3
Others	85	89	61	55
Total	**318**	**490**	**189**	**450**

Source: IFSL estimates based on PEREP Analytics, Thomson Reuters, PricewaterhouseCoopers, EVCA, AVCJ data

Most institutional investors such as pension funds, insurance companies, investment firms, etc do not invest directly in privately held companies, lacking the expertise and resources necessary to structure and monitor the investment. Instead, institutional investors will invest indirectly through a private equity fund. Certain institutional investors have the scale necessary to develop a diversified portfolio of private equity funds themselves, while others will invest through a fund of funds to allow a portfolio more diversified than one a single investor could construct. Government of Indonesia has provided legal umbrella to anticipate this development. Collective investment contract mutual fund with limited partnership under Bapepam Regulation No IV.C.5 is already effective. The following table shows private equity investment structure, in which private equity funds in form of collective investment contract may be applicable in the country.

Figure 29. Private equity market



(Source: Federal Reserve Bank of Dallas, EVCA/Thomson Reuters / PricewaterhouseCoopers

PE or VC provide investment by buying stock or other lending instruments similar to stock, that are obligation or conversion of obligation. This has several impact:

- The funding of the company will increase and the cost of capital will decrease
- Banking Loan will only be used at the finishing stage in the form of Working Capital Loan, this will free the company from Interest During Construction (IDC)
- The responsibility to pay back the loan is at the last stages, for that cash flow will be lighter
- IRR will increase significantly and will increase the interest of the financial investor significantly. It is expected that this will interest many more financial investors to re-finance the project or company.
- Financial weight of the project owner will not be too heavy just between 30% to 70%
- The structure will stimulate the growth of the project
- Investors is able to invite other investor to share risk and function as co-investors. Different criteria between PE Fund and co-investors can be introduced.

This structure can be adopted in other countries with an international regulation or in Indonesia based on the current binding regulation (including *UU Pasar Modal No. 8 Tahun 1995)*. The form of investment fund like Collective Investment Contract *(Kontrak Investasi Kolektif) are in the form of Reksa Dana Kontrak Investasi Kolektif Terbatas* or a non-*reksadana Kontrak Investasi Kolektif Terbatas Non-Reksa Dana*. This form can also be implemented in countries based on Selain itu, Anglo Saxon law, for example the structure in Malaysia with their Restricted Investment Scheme and in Singapore with their Special Purposes Unit Trust.

1.3. Pension funds and insurance companies

Pension funds and insurance companies are cash rich private economic actors. And hence, they are very potential sources for direct investment in climate finance. Their investment, however, must be extremely prudent and is regulated by financial authority bodies to protect public interest. Insurance companies, more specifically, are in the common interest for investing in adaptation and mitigation since climate change now has become one of their

business risks. Damages resulted by climate change will increase insurance companies exposure to climate impacts.

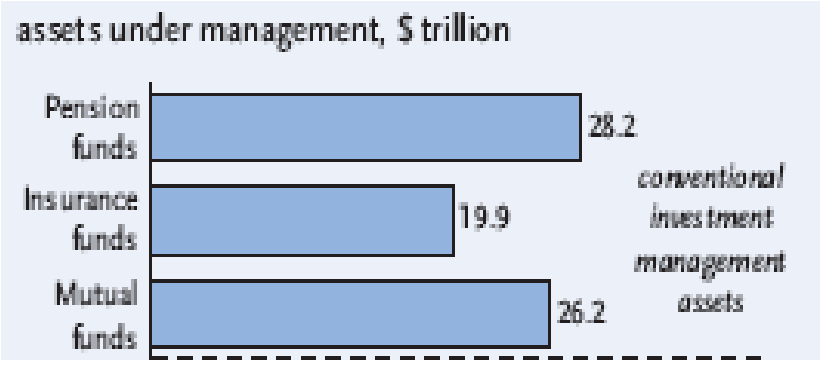
In 2008, funds invested by domestic pension funds reached Rp 91 trilliun (US$9 billion equivalent). While for insurance companies, total insurance assets for March 2008 account for 134.11 trillion, 77.23 percent of which contributed by life insurance.

The pension funds investment allocation in 2008 is for bonds (27,8%), SUN (government bonds) (26,8%), deposit accounts (20%), stocks (12,6%), mutual funds (5,5%), properties (4%), direct investment (2,8%), and SBI (T-bills) (0,5%). Pension funds tend to invest in bonds since bonds feature of *duration matching* profile provide them with more security in investment. As we may be aware of, pension funds are long-term investment in nature, which matches bonds profile.

Ministry of Finance Regulation No 199/PMK.010/2008 on Pension Fund Investment provide legal umbrella for pension funds to invest in certain areas, including direct investment and investment collective contract mutual fund (reksa dana KIK). Investment in collective investment fund with limited partnership (KIK Penyertaan Terbatas) is only eligible for pension funds, which have minimum total investment of Rp 200 billion, and have adequate risk management. Investment in KIK Penyertaan Terbatas is also limited to 10 percent of total investment. More interestingly, pension fund allocation to direct ownership investment is limited to 25 percent, which is an enough room for pension funds to participate in climate finance.

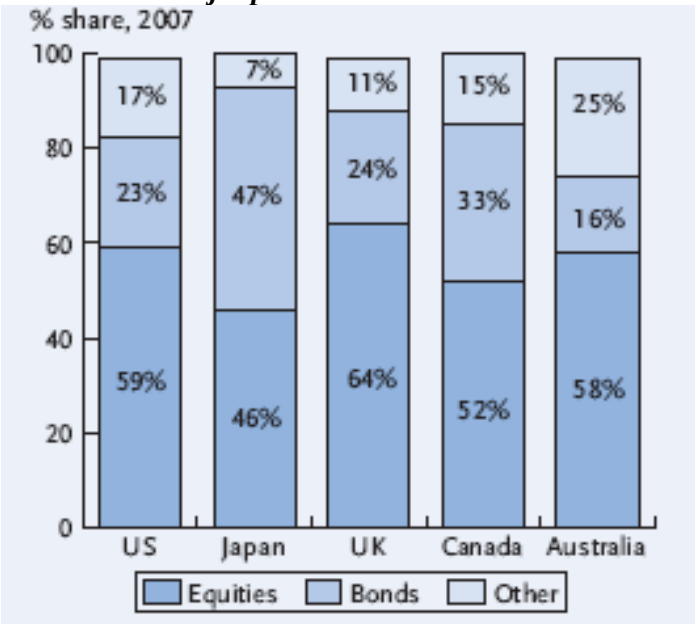
At the international level, pension funds and insurance funds also account for a large amount of money, which may be of potential for Indonesia's climate finance. It depends on Indonesia's initiatives to attract those available funds internationally. However, we must also be aware that their investment appetite is for bonds and money market instruments. The following tables show the size of insurance and pension funds worldwide, and their asset allocation strategy. Also, the largest pension funds

Figure 30.World pension funds and insurance funds under management



Source: IFSL estimates

Figure 31. Assets allocation in major pension markets



Source: P&I/Watson Wyatt World 500

Some initiatives must be taken to attract pension funds investment in climate finance, such as creating financial instruments which comply with BAPEPAM and MoF regulation, for instance Reksa Dana dalam Bentuk KIK Penyertaan Terbatas, as mentioned before. While for direct investments, there must be reputable private equity firms, in the form of Reksa Dana Perseroan (Bapepam Regulation IV.A.2), that is eligible for pension funds to invest.

Box 1. Current Picture of FDI

The following table shows that private sectors contribute US$15.5 Million annually to Indonesia's investment, 57 percent of which may be aligned into climate change mitigation investment (US$8,887 Million).

The table also shows that Foreign Direct Investment is quadruple to Direct Investment. Even if this direct investment structure is not favourable (heavily dependent on FDI instead of domestic one), but it also give us insights that climate direct investment is more likely to realize since foreign investors are more climate literate, in many respects.

Table 48. Domestic Investment & Foreign Direct Investment, 2007-2008

	2007	2008	Average	Percen
Domestic Direct Investment	3,711	2,166	2,938	19%
- Food Industry	571	872	722	5%
- Metal, Machinery and Electronic Industry	**377**	**253**	**315**	**2%**
- Paper & Printing	1,548	191	869	6%
- Food Crops & Plantation	375	126	251	2%
- Construction	**225**	**94**	**159**	**1%**
- Other	615	630	623	4%
Foreign Direct Investment	10,341	14,871	12,606	81%
- Transport, communication, storage	**3,305**	**8,530**	**5,918**	**38%**
- Metal, Machinery and Electronic Industry	**714**	**1,281**	**998**	**6%**
- Motor Vehicles and Other Transport Equip. Industry	**-**	**756**	**378**	**2%**
- Chemical & Pharmaceutical Industry	**1,612**	**628**	**1,120**	**7%**
- Trade & Repair	-	582	291	2%
- Food industry	704.1		704	5%
- Paper & Printing	672.5		673	4%
- Other	3,334	3,094	3,214	21%
	14,052	17,038	15,545	100%

Source: BKPM (National Coordinating Board

1.4. Public capital markets

Capital market is a very mature mechanism of trade since it involves million market participants, either individual or institutional investors. The one that generates investment, however, is actually at public offering (IPO) or primary market since at this stage the real investment flows come directly to the issuers. But at secondary market, one after IPOs, the money is actually only circulated among investors. The following table gives some insights how much money flows into riil investment through public offering.

Table 49. Stocks & bonds initial public offerings, in trillion rupiah

	2004	2005	2006	2007	2008
Stocks	258	268	281	328	329
Bonds	83	91	103	134	134

Source: Bank Indonesia Statistics

As compared to banks lending in 2008, see the following table, capital market accounts only 52 % of investment as compared to banks's investment. It means that financial structure of Indonesia is still heavily dependant on bank dinancing. However, capital market still promises a great potentials for climate finance, if some innovations are created.

Table 50. Capital market IPOs vs banks' investment loan

	Amount	Percent
Capital market IPOs	134	52
Banks' investment loan	256	100
Total bank loans	1313	513

Source: Bank Indonesia Statistics

Some innovations may be created in the form of blending IPOs with CDM finance. However, much difficulties arise in accessing CDM finance, due to its unpopularity, unfavourable beurocratic process of CER (certified emission reduction) registration, huge initial capital for CER registration, uncertainty of post-Copenhagen agreement, lack of banks support (CER is still not considered as collateral), etc. The only possible way of securitisation, currently, is a creation of mutual funds. But again, this instrument may possibly not attract public capital market participants since they are risk averse in nature and, not like institutional investors, public participants are market followers. The government should create protected mutual funds in the form of collective investment contracts to minimise risk profile of securities for public capital market participants. There are still a lot tasks to perform in marketing climate investment instruments for the public.

2. Market-Based (Voluntary Carbon Finance)

2.1. CDM and Offsets

Other sources of private finance are the funds collected internationally without going through national budgets. It includes international levies on emission reduction credits and auctioning of emission allowances at the national or international level. The voluntary market generally applies to companies, individuals, and other entities and activities not subject to mandatory

limitations that wish to offset GHG emissions. The voluntary market has been very small compared to the regulatory market, but has been growing quickly.

Table 51. Regulatory vs voluntary carbon market

Carbon Market Program	Voluntary vs. Regulatory	Notes
Clean Development Mechanism (CDM)	Regulatory	Certified Emission Reductions (CERs) can be used for compliance with Kyoto commitments
European Union Emission Trading System (EU ETS)	Regulatory	EU ETS regulates emissions from power generation and other industries in the EU
Voluntary Offsets Markets	Voluntary	Companies, individuals, and events buy emission reductions to reduce their carbon footprint

Source: own illustration

Table 52. Regulatory vs voluntary market characteristics

Market Programs	Relative Market Size	Requirements / Transaction Costs
Kyoto Compliance Market (CDM, JI)	Large	Rigorous / High
Voluntary Offsets Market	Small, but significant	regulatory market programs, but can be high depending on

Source: own illustration

Voluntary market participants are:

- Buyers include companies that buy offsets for their own operations, companies that buy offsets on behalf of their customers (e.g., airlines & travel agents, automobile & petroleum companies), events (e.g., 2006 World Cup football/soccer), and individuals.

- Sellers include retailers and wholesalers who buy and resell offsets, and project developers who develop GHG abating activities and sometimes sell direct.

- Market intermediaries include brokers who connect project developers and resellers with institutional ER buyers, and consultants who help clients select ER suppliers and prepare offsets portfolios.

The international carbon markets have resulted in new capital flows that are supporting sustainable energy and other climate protection activities.

Until now, Indonesia has gained from the carbon market, albeit not as much as it was originally expected. As of now, Indonesia has only gained less than 1.2 percent of the number of projects with issued CERs compared to the world's total. Indonesia's position in the world CDM market *vis-a-vis* credits issued, projects in the pipeline and total expected credits by 2012 is shown in **Error! Reference source not found.**55. The World Bank-led National trategy Study on the CDM predicted that Indonesia's share in the world's total would reach 2 percent. Actual exploitation for projects already registered falls short of this potential, however projects in the pipeline reach a slightly higher share.

Table 53. Indonesia's share in the CDM

	Indonesia	**World**	**%**
Projects having issued CERs	6	535	< 1.2
CERs issued	326	316,796	0.1
Project registered	27	1,750	1.5
Potential **CERs** until 2012 from registered projects	3,501	309,460	1.1
Project seeking registration	7	205	3.4
Potential **CERs** until 2012 from projects seeking registration	209	29,816	< 1.0
Projects under validation	58	2,633	2.2
Potential **CERs** until 2012 from projects under validation	5,985	285,034	2.0
Total **projects** in the pipeline	92	4,588	2.0
Total **CER** potential until 2012 in the pipeline	9,694	624,311	1.6

Source: UNEP Risoe, www.cdmpipeline.org, as of August 2009.

2.2. Payment for Environmental Services

PES is a mechanism to provide financing for provision of four environmental services types currently stand out:

1. Carbon sequestration and storage (e.g. a Northern electricity company paying farmers in the tropics for planting and maintaining additional trees);
2. Biodiversity protection (e.g. conservation donors paying local people for setting aside or naturally restoring areas to create a biological corridor);
3. Watershed protection (e.g. downstream water users paying upstream farmers for adopting land uses that limit deforestation, soil erosion, flooding risks, etc.);
4. Landscape beauty (e.g. a tourism operator paying a local community not to hunt in a forest being used for tourists' wildlife viewing

Sometimes several services can be provided in a synergetic way — and a 'bundled' payment scheme can enable several service users to package their payments to service providers. But not all services are truly threatened and scarce, and not all users are willing to pay. Partial trade-offs between services are also likely: for example, a fast-growing plantation that

maximizes carbon sequestration is perhaps not particularly biodiversity-rich, water-enhancing or attractive for tourists.

Environmental services other than those listed above could potentially be traded (e.g. wilderness areas providing pollination services to agriculture), but so far only the four identified above exhibit significant commercial scale.

4.2 Potential Mechanism to Manage Climate Fund: Indonesian Low Emission Development Financing Facility

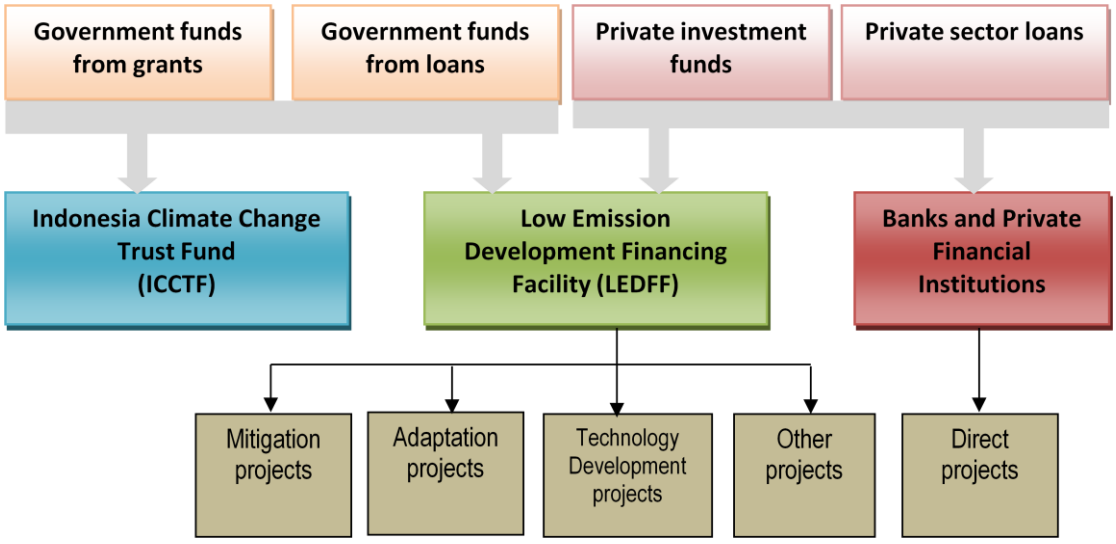
The Indonesian Low Emission Development Financing Facility (Indonesian LEDFF) is an initiative to develop a mechanism in the effort to implement a low carbon development. The Indonesian LEDFF simulation of a public-private partnership trust fund, as a form of a investment fund based on the existing government regulation on financial market, that is Law No.8/1995 on the Financial Market and also existing regulation of the National Authority of the Financial Market in Indonesia (Bapepam-LK).

The objective of an Indonesian LEDFF, is to manage the sources of funding from public and private support for a low carbon development based on Government Regulation No. 2/2006 on Guidance for Foreign Loan and/or Grant, and also to manage private funding sources, including funding from pension funds, insurance, and other investment institution using different instruments in the financial market.

In specific, LEDFF is expected to leverage the private and market based sources of funding for the following reasons:

1) It provides a coordination to private funding to match the large-scale capital necessity for investment in the low-carbon infrastructure.
2) As LEDFF will receive endorsement from government as well as some initial capital, it will increase the private confidence in government commitment to long-term climate change mitigation effort.

Figure 32. ***LEDFF position in climate change mitigation***



Source: own illustration

Funding to support a low carbon economy from public/government or private sources is managed by LEDFF and/or other trust fund established by the government, then directly disbursed to the private sector by the common banking system. Private sources are projected to be the main funding source while government funding progressively will only serve as icing on the cake.

Funding managed by the LEDFF is dispersed to projects categorized by the function of the project in the action, as follows:

1. Mitigation projects are activities funded in the effort to reduce green house gas emission;
2. Adaptation projects are activities funded to help communities anticipate and the impacts of climate change;
3. Technology development projects are activities funded in the development of technology required by economic sectors/industries to mitigate and adapt to the change in the climate.

Structure of the Indonesian Low Emission Development Financing Facility

There are two recommended alternatives regarding the structure of the Indonesian LEDFF (see Figure 2).

Alternative 1, where LEDFF is a single entity with a single chosen investment manager and custodian bank

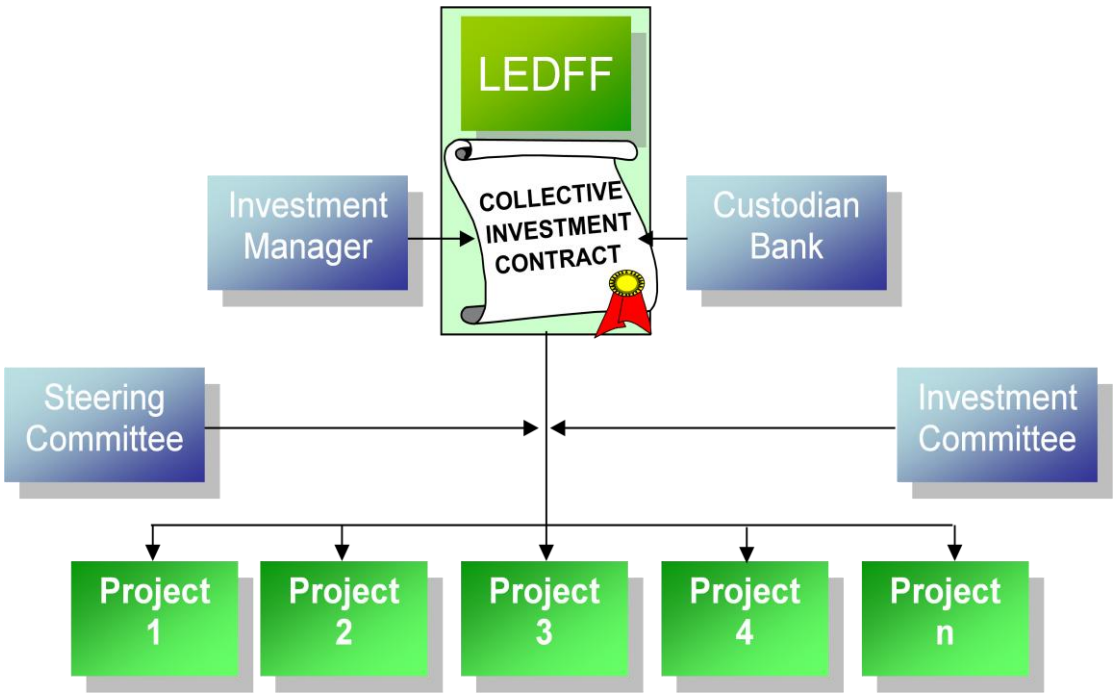
Alternative 2, where there exist multi LEDFF entities, managed by several chosen investment managers. With several investment managers it is projected that they could increase the potential of fresh funds that are currently not identified as public or private funding gathered by these investment managers.

LEDFF is basically a trust fund using the structure of a Collective Investment Contract (*Kontrak Investasi Kolektif*-KIK), based on Law No.8/1995 of the Capital Market (*UU Pasar Modal No. 8 Tahun 1995*) which regulates that a (trust) fund can take the form of a special type of mutual fund (Reksa Dana Tujuan Khusus) or "pool of funds". The Collective Investment Contract is based on a contract by the investment manager and the custodian bank. The Investment Manager is a licensed securities firm authorized by BAPEPAM-LK for the management of investment by investors of securities. In this regards, the Investment Manager is responsible for:

1) Business/Project Valuation;
2) Financing Leveraging, in obtaining *fresh funds* not identified by the current public and private sources.

A Custodian Bank is a commercial bank listed by Indonesia's central bank, Bank Indonesia, and authorized by Bapepam-LK to perform as a custodian. The Custodian Bank works as a representative of the investors, and as the administrator owner of the unit of information and complaint and other investments. The investment manager and the custodian bank are not allowed to have any affiliation with each other, except in the case of a bank currently under recapitulation and temporary owned by the government.

Figure 33. Structure of LEDFF



Source: own illustration

The committee of LEDFF consists of entities with professional expertise and experience in managing these investments and is expected to deliver considerable outcomes, as follow:

1) Steering Committee
2) Investment Committe
   - Chosen expert/professional

3) Investment Manager, for example:
   - Bahana TCW Investment Management ;
   - Danareksa Investment Management;
4) Custodian Bank
5) Law consultant

Alternative Fund Channeling Mechanism

There are several alternatives of channeling funding which LEDFF can consider:

1) Direct
2) Through a dedicated account
3) Through public services agencies (*Badan Layanan Umum*)
4) Through co-financing grants
5) Through bank, by two-step loan scheme
6) Through local private investment
7) Through "Indonesian Climate Change Trust Fund ("ICCTF")", the proposed structure, to cater both public and private resources and could be distributed to both public-private partnership projects and/or private projects.

Recipient of Funding

1) Public program/projects
2) Private projects/companies
3) Public-private partnership projects

Funding from foreign donor and/or multi donor fund can also be forwarded and utilized by:

1) Direct funding to government/public programs in the form of grants and/or loans;
2) Funding government/public programs through a dedicated account manage by an authorized party, in this case a Ministry or appointed Agency;
3) Funding through government public services agency administered by a government ministry with authority, before the funds are forwarded to government/public program (as in the case of BPJT);
4) Funding through a company as in the case of PIP (Government Investment Unit) and/or in the establishment of *PT Sarana Multigriya Finansial* as a "secondary mortgage facility";
5) Funding through the Indonesian Climate Change Trust Fund (ICCTF) currently developed by the National Development Planning Agency (Bappenas) together with the Ministry of Finance; or
6) Directly investing in individual private projects.

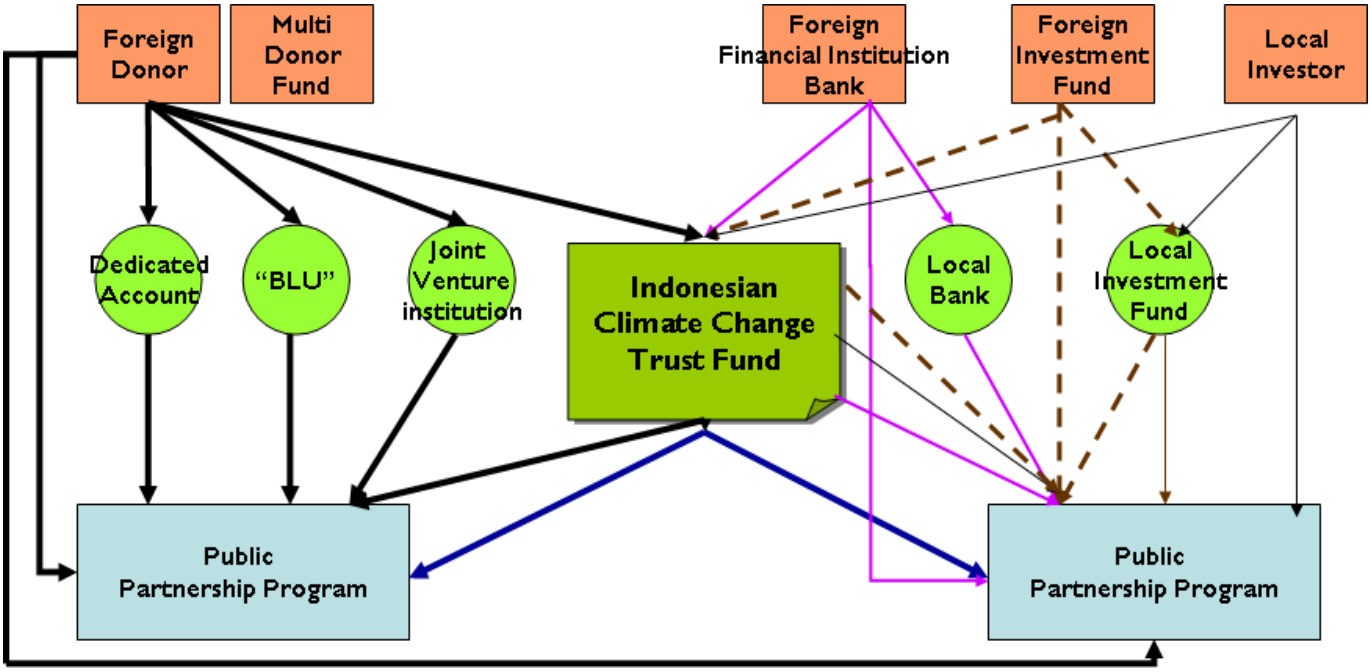
Alternative funding channels for private foreign financial institution/bank are:

1) Direct loan to private projects;
2) Applying a "2-step-loan scheme' through government banks; or
3) Channeling through ICCTF before forwarding it to private projects.

Private Foreign Investment Fund, including Private Equity Fund, Venture Capital Fund, or local investors such as individual, pension or insurance fund can also invest on low carbon activities through:

1) Direct investment to private projects, by buying issued stocks, obligation or converted bonds;
2) By placing the fund to Indonesian Investment Fund, as described in the Law on Capital Market (Law No. 8/1995); or
3) By placing the fund in the ICCTF before it is channeled to private projects.

Figure 34. Alternative financing mechanism



(Source: own illustration)

4.3 Policy Instruments

The Indonesian Ministry of Finance has identified a list of possible policy instruments for influencing climate change mitigation and adaptation[18]:

- *Tax differentiation/Tax holidays* can be used to encourage or accelerate investments toward national priority areas. Tax holidays are often used to promote economic development through foreign direct investment.
- *Depreciation* (part of tax policy). Accelerated depreciation for certain kinds of investments provides relief through the tax code affecting firms' cash flow and return on investment.
- *Import tax breaks* (or differential taxation) can be used to stimulate investment in clean technologies (already in limited use in Indonesia)
- *Subsidies (or tax breaks)* for technology adoption can promote specific types of products or technology investments, such as insulation or refrigeration upgrades.

[18] Background Paper for the High Level Event on Climate Change for Finance Ministers, Bali 2007.

- *Tax treatment of carbon market revenue* can help or hinder investments that seek to obtain Carbon Emission Reduction (CER) credits. Some uncertainty over carbon revenue taxation policy has been raised as an issue in the Ministry of Finance Focus Group Discussion Process (see FGD Report, March 2009).
- *Emissions fees or user charges* can be used to reduce emissions or change the mix of inputs used in production processes toward cleaner alternatives
- *Risk guarantees* can be used to lower the cost of capital (and provide an incentive for private banks to lend toward national priority areas). These could be targeted toward specific industries or technologies through special investment funds or lending windows.
- *Transportation sector charges* (fuel taxes per liter, road tolls, airline traffic taxes) would raise revenue and encourage greater efficiency in fuel use. Economic effect is similar to reducing fuel subsidies.
- *Royalties/rent capture* systems push the incentives upstream to the production of energy resources from the extraction industries.

However in reality, until now, no specific tax policy instruments have been applied to carbon finance related products. The Directorate General of Taxation has yet applied specific taxation rules on products and outputs related to carbon finance projects using CDM. There are several current tax facilities that can be used to this purpose: *PPN* (VAT), *PPh* (income tax), *bea masuk* (import duties), *pajak bahan bakar kendaraan bermotor* (fuel/gasoline taxes) and *BPHTB* (duty on land and building acquisition). Nonetheless, there is still the issue as to whether CERs themselves constitute a taxable product. There is also a view that CERs can not be categorized as a commercial paper, because it is regarded as an assistance from the developed countries to developing countries, which counts as delivery of non taxable goods. Thus no VAT is attached to it.

On the other hand, several specific tax exemption facilities for certain investment areas already exist, which could also be applied to carbon finance projects. The main examples are Government Regulations No. 1/2007 and No. 62/2008 which provide tax incentives for several industries. These incentives include: a 30 percent deduction of income tax for investment for a period of 6 years; granting a quicker depreciation and amortization rate for investment projects; a tax tariff treaty for foreign firms with a uniform income rate of 10 percent; and investment allowance (compensation for losses) based on certain conditions for 5 – 10 years.

Currently, there is zero tax for CDM which means an incentive for investors. Companies that have conducted green initiatives have received tax facilities, for instance in the case of waste management. Also, during the start up investment period, if a company is in loss they don't have to pay income tax. This is all part of the overall effort to promote investment and CDM projects can already benefit from this reasonable set of incentives.

In addition to that, the Ministry of Finance has also provided facilities to promote clean energy initiatives under Goverment Regulation No. 62/2008, which includes geothermal activities (Minister of Finance Regulation No. 178/ PMK.011/2007). Geothermal power generation is considered to be the long-term alternative to replace fossil fuel. However, so far the incentives and tax facilities already provided for geothermal development have not yet made it more competitive in the market. One key barrier to geothermal project development is pricing: State Electricity Company (PLN) offers to buy electricity at a price below the production cost for geothermal facilities, a gap of 2-2.5 cents per kilowatt hour. Existing tax facilities can reduce the gap by about 1 cent, so there is a need to cover an additional gap. The Ministry of Energy and Mineral Resources is considering using the Carbon Partnership Facility (a carbon purchasing fund) in a strategic manner to sell carbon credits, which would help to cover some of the remaining gap between the purchase price and the production cost of geothermal electricity.

Meanwhile, the Ministry of Industry has formulated a road map and strategy for greenhouse gas emission reductions for four key industries: Cement, Pulp and Paper, Steel and Textiles. The emission reductions projected for 2025 are as follows: Cement = 17%, Pulp and Paper = 20%, Steel = 32% and Textiles = 35%.

Other than the existing policies, the Ministry of Finance, in collaboration with the NCCC, has also identified possible policies to support emissions reduction in the manufacturing sector as shown in the table below:

Table 54. Emission reduction policy options in Manufacturing Sector

Emissions Rank*	Industry Sectors	No. Firms/ Plants	Min Industry Priority	Capital Stock/ Investment Options: (potentially eligible for carbon finance)	Regulatory Options: Energy/ Equipment Efficiency Standards	Fiscal Policy Enhancements: Incentive & Financial Assistance	Energy Management & Energy Efficiency Options
Large, Concentrated Industries (50 firms or less)							
1*	Cement	18	HI	Co-firing with biomass; blended cement; MOI plan implementation	Grinding equipment; motors	Encourage sectoral CDM; Faster depreciation or tax breaks for energy efficiency/ emissions reduction investment	All sectors with few, large firms can benefit from energy management practices and audits using in-house resources or through Energy Service Companies (ESCOs)
2	Steel Rolling	51	MED	MOI plan implementation; Ecotek options in rolling industry	arc furnaces; voluntary agreements	Tax breaks, soft financing for capital stock improvements;	
3*	Iron and Steel Basic Industry	16	MED	Alt fuels; heat recovery; MOI plan implementation	Furnace and drive efficiency	Access to international climate finance to lower cost of capital	
6*	Pulp	9	MED	Co-firing with biomass; heat recovery; cogeneration		Direct grant program or targeted tax policy for 9 pulp mills	
8*	Structural materials made of porcelain (ceramic tile)	30	HI	Process optimization; therma efficiency	kilns; spray dryers	Gov't finance of ESCOs; incentives (or penalties) for underperforming firms; (e.g. low interest loans, change depreciation schedule)	
10*	Straight Fertilizer	15	HI	Optimize process controls; heat recovery	high efficiency process equipment	Direct grant program or targeted tax policy for 15 fertilizer/urea plants; Gov't finance o ESCOs; low interest loans for investment	
Textiles, Many firms, less concentrated target							
4	Weaving mills	495	HI	Modernize equipment throughout industry (2700 machines at a cost of US$1.7billion); co-gen & heating system reconstructio	CFLs; loom & mill efficiency	Tax policy to encourage foreign investmer low interest loans for efficiency investmen accelerated depreciation schedule	Consider a donor assistance project to provide ESCO-like advice for the Textile industry.
7*	Textile Fiber	78	HI		CFLs; loom & mill efficiency		
13	Finished textiles	167	HI		CFLs; loom & mill efficiency		
14	Spinning mills	68	MED		CFLs; loom & mill efficiency		
Other Industries: Distributed, smaller firms, less concentrated target							
9	Motor vehicle component and apparatus	168	MED	sector-specific analysis for electric equipment and process efficiency	motors, chain drive		Energy Management & Energy Efficiency Options
11	Crumb Rubber	146	HI			Gov't finance of ESCOs	Gov't assisted ESCO services
15	Cultural Papers	43	MED		CFLs		ESCO
16	Tire and inner tubes	33	MED		CFLs		ESCO
17 (& 20)	Crude vegetable (& palm) and animal cooking oil	295	MED/HI			Gov't finance of ESCOs	Gov't assisted ESCO services
19	Basic chemicals not elsehere classified	37	MED				Energy Management & Energy Efficiency Options

Source: Ministry of Finance and NCCC, 2009

5. Lessons Learned

5.1 Challenges and Opportunities

Based on the key findings on potential and existing financial flow an mechanism to finance climate change mitigation, there is a number of identified key challenges that needs to be addressed in order to realize low carbon development in Indonesia:

Mainstreaming of climate change as development issues. The concept of economics of climate change or carbon-based economy is yet to be a popular notion in Indonesia. Climate change and economy is often perceived as two different courses, especially by the capital market and the banking community. That is why, the progress of implementation of low carbon development as well as the financial instruments to support it is relatively slow.

Focusing on reducing emissions through deforestation and energy sector. The findings on the cost of mitigation reveals that currently the largest portion of emission comes from deforestation and that it is cost effective to implement abatement scenario on this area. It is also noted from the findings that energy sector under business as usual will grow significantly up to six folds in 2030. That is why, it is also important to focus on reducing emissions in this sector.

Coordinating government multilateral and bilateral funding. As explained in the previous section, there are numerous sources of climate funding. Without a clear coordination, there is a high risk of overlap in mitigation activities. Furthermore, the funding needs to be coordinated to achieve Indonesian mitigation priorities. Addressing this challenge, Indonesia has had a mechanism of Indonesian Climate Change Trust Fund (ICCTF). There is a need to ensure that this mechanism will be managed professionally and can work effectively in an efficient and accountable manner.

Generating alternative funding through private sources and market mechanism. Mitigation effort requires a large funding that it is not sufficient to solely relies on Government funding and foreign assistance. Low carbon development requires private investment and increased involvement in market-based mechanism. Unfortunately, huge start-up cost of low-carbon infrastructure often deters the private sectors to take part in mitigation effort. Especially in the financial crisis context, companies often prefer short term rather than long-term investment such as low carbon development. Addressing this challenge, The Indonesian Low Emission Development Financing Facility (Indonesian LEDFF), an initiative to encourage private needs to develop more innovative way to leverage private funding

In terms of involvement in market mechanism, Indonesia gained less than 1.2 percent of the number of projects with issued CERs compared to the world's total. There is a need for Indonesia to develop the capacity, monitoring and reporting mechanism to optimize the country's potential in carbon market. Indonesia also needs to expand national projects is Payment for Environmental Services (PES). It can provide alternative financing support to maintain Indonesian forest. Although there have been a few PES projects in Indonesia, there is yet to be a national scale implementation.

Developing policy instruments and regulatory framework that supports low carbon development. Currently there is no specific policy instruments (e.g. on carbon tax and carbon pricing) which have been applied to carbon finance related products. The Ministry should develop a tax policy addressing this either by creating a new tax scheme or using existing ones. In the findings, it is also mentioned that the Ministry of Finance has identified possible policies to incentivize manufacturing sectors to take part in mitigation effort. The challenge would be to implement those identified policies into action.

5.2 Possible Next Steps

This study provides a stellar basis for Indonesia to start implementing the low carbon economy, which consists of a number of steps.

First step is to develop a standard approach towards moving to a low carbon economy. In order to further enrich the knowledge on low carbon economy and create a benchmark, it is important to develop few pilot programs in selected provinces. The pilot projects should involve the development of LEDFF, as explained in the previous section, to support the fund generation from private sectors. The programs should be carefully monitored and evaluated, resulting in a list of lessons learned and best practices that will be valuable for further implementation of low carbon economy. This first step is expected to result in replication of the pilot programs to be implemented across Indonesia.

Second step is to refine the green house gases abatement cost curve based on input from relevant stakeholders and continued analysis of key sectors. Other than engaging provinces across Indonesia, it is also important to engage other sectors. This is part of the effort to mainstream climate change as development issue to all relevant stakeholders of development in Indonesia. To do so, it is necessary to have a cost curve specific to sectors and owned by the sectors.

Third step is to use the study as input for the new administration. Indonesia is developing the National Action Plan on Emissions Reduction and actively involved in UNFCCC negotiation. To perform both processes, the government will require a sound perspective on how to balance environmental and economic needs, backed up by extensive research. The study will provide references for the possible abatement scenario and the impact to emission reduction, the cost and the source of funding available to cover that cost. The study also provides a menu on alternatives to deliver the available funds, including development of institutions and mechanisms that can be integrated in a long-term development plan. The use of the study as a basis for further development plan and negotiation will also ensure a more sustainable result of NEEDS.

Final step is to continue raising awareness of not only the risks, but also the opportunities bring about by climate change. This should be done to two segments. First segment is the public as the constituents. With public more aware of climate change as a development issue, we will have better support for development practices of various sectors to reflect this paradigm shift. However, it is also important to address sectors directly. As said in the previous section, NGOs, philanthropic organisations and private sectors hold a great potential of funding for climate change mitigation. That is why it is important to engage them as the second segment of the awareness raising.

Below is the summary of the next step action plan:

1) **Develop a standard approach towards moving to a low carbon economy**
   - Pilot alternative development programs in select provinces
   - Generalize approach to scale at the national level
   - Implement program across Indonesia
2) **Refine the green house gases abatement cost curve based on input from relevant stakeholders and continued analysis of key sectors**
3) **Provide input into the new administration**
   - Assist in the development of National Action Plan on Emissions Reduction
   - Craft a coherent position for Indonesia within the UNFCCC process while working with partners in the G77 & China, Forestry-11 and other peat-rich nations
4) **Continue raising public awareness of the opportunities and risks from climate change trends**
   - Build a communication program towards the broad population and influencing key decision makers (academic, public and private sectors)
   - Engage private companies, NGOs, philanthropic organizations and donor countries in developing the national action plan

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