EVOLUTION OF INDONESIA'S CLIMATE CHANGE POLICY

FROM BALI TO DURBAN

EVOLUTION OF INDONESIA'S CLIMATE CHANGE POLICY FROM BALI TO DURBAN

Agus Purnomo
Amanda Katili-Niode
Eka Melisa
Farhan Helmy
Doddy Sukadri
Suzanty Sitorus

EVOLUTION OF INDONESIA'S CLIMATE CHANGE POLICY

FROM BALI TO DURBAN

EVOLUTION OF INDONESIA'S CLIMATE CHANGE POLICY

FROM BALI TO DURBAN

Agus Purnomo

Amanda Katili-Niode
Eka Melisa
Farhan Helmy
Doddy Sukadri
Suzanty Sitorus

SPONSORED BY :

ATENEO DE MANILA UNIVERSITY

JICA

Evolution of Indonesia's Climate Change Policy
From Bali to Durban

First Copy, May 2013

AUTHORS:
Agus Purnomo
Amanda Katili Niode
Eka Melisa
Doddy Sukadri
Farhan Helmy
Suzanty Sitorus

EDITORS:
Tony La Viña
James Kho

PROJECT EDITOR:
Eka Melisa

COVER:
Meisin Hendarsin

DESIGN & LAYOUT:
Meisin Hendarsin
Agung Pamuji
Manny Marbela

PRODUCTION:
Nur R Fajar

Purnomo Agus
Evolution of Indonesia's Climate Change Policy
From Bali to Durban
120 pages ; 20 x 25 cm
ISBN:

Cover Photo by Rahadian Bachtiar/CIFOR

Printed by:

"…for the climate negotiators and the people of Indonesia who have inspired us to write and complete the book."

At the time this book is printed, the global CO2 concentration has reached 400 ppm. Please join us on efforts to avoid devastating future of our children and grandchildren.

Table Of Content

Preface

AGUS PURNOMO

Thanks to Allah swt, the Almighty God, for it is with His approval that this book could be completed.

One quiet day in my office it struck me that Indonesia has undergone a long process of evolution to shape our domestic policies and international positions on climate change. The official decisions and documents that exist today are the result of alot of interesting stories, long debates and many difficult considerations. Until now, all of these are experiences that Indonesia has not shared with the international audience. This book takes us through the evolution of Indonesia's climate change policies, beginning from the months before Indonesia hosted one of the most successful Conference of Parties to the UNFCCC (i.e. COP13/CMP 3 in Bali in 2007). It will hopefully shed light on the decision-making and struggles among diverse interests within and outside of government structures.

I shared the outline of the book colleagues in Indonesia's National Council on Climate Change and assembled a team to translate the events and share our personal anecdotes and experiences within these pages. I discussed this idea with some old friends, including Chip Fay from the Climate and Land Use Alliance who approached Tony La Viña to facilitate the writing proccess.

The publishing of this book is possible thanks to the support of my fellow authors, Amanda Katili Niode, Eka Melisa, Doddy Sukadri, Farhan Helmy, and Suzanty Sitorus. It is also possible due to Tony La Viña and James Kho who patienly edited the work chapter by chapter.

Special thanks to CLUA for their support of the development of this book and JICA for supporting the printing of this book. There are many colleagues and friends that have been directly and indirectly involved in the development of the book. For all of their contributions and support, I extend my thanks. My gratitude to Abror Rizki, Nur R Fajar, and CIFOR for their contributions of photographs which we have used.

Many thanks to the Executive Chair of the National Council on Climate Change, Rachmat Witoelar, who provided clear direction in organizing UNFCCC COP 13/CMP 3 in Bali in 2007 and through our the first five years of the National Council on Climate Change.

Finally, we express our gratitude to many others who have contributed to our efforts, too numerous to be mentioned individually.

Jakarta,

May 2013

Agus Purnomo

From the Editor

ANTHONY LA VINA

It is with great pleasure and a privilege to work with the team of authors, led by Agus Purnomo, in developing this book describing how Indonesia has evolved to play a leadership role in international negotiations to address climate change.

When the Climate and Land Use Alliance approached the Ateneo School of Government to facilitate the development of this book, the idea was to draw out the story and lessons from inside Indonesia to share with a global audience. The School's Climate Change Program plays a strategic role in providing institutional support to build capacity of Philippine and international stakeholders to effectively engage in discussions and decision-making on climate change issues. The School also endeavors to enrich research and development (R&D) on climate change policy and environmental governance; promote regional and international cooperation; and promote best practices in good governance.

Over the years, as a negotiator for the Philippines, facilitator of the LULUCF (in Kyoto) and REDD-Plus negotiations (in Copenhagen and Durban)and currently co-coordinator of G77 & China for the Ad Hoc Durban Platform for Enhanced Actionin the UNFCCC, I have seen how Indonesia has grown from a country focused on its national interest to one that is as much concerned about catalyzing global solutions to reducing GHG emissions. This development was evident when Indonesia hosted COP-13 in Bali in 2007. Despite its own internal struggles to define a climate change strategy, Indonesia was able to show the world how to bridge diverse and conflicting interests in international negotiations. Bali was also significant in drawing the participation of thousands of non-government actors, which has become the norm since then. Perhaps, it was because of the experience in addressing the internal struggles that Indonesia was able to lead a hugely successful COP. Prof. Emil Salim said then is true: "by saving the country, we can also save the world."

Under the leadership of President Susilo Bambang Yudhoyono, Indonesia has emerged as among the fastest growing economies in the world. The country counts on its natural resources (especially forests) for growth even as it diversifies the economic base. The GHG emission from forests is a global concern. However, as you will read in this book, Indonesia has drawn its own roadmap for sustainable economic growth, while reducing its contribution to global GHG emissions, with support and incentives from the international community.

It is important that the global community reads Indonesia's story-both the domestic and international struggles and triumphs. This book is written by the people who were important to the success of the Bali COP and who still are the catalysts of change in Indonesia.

Lastly, I would like to congratulate Agus Purnomo and his team: Amanda, Eka, Doddy, Farhan and Suzanty, for doing a great job in writing, meeting and discussing endlessly, despite their

heavy work schedules. Thank you for giving James and me this wonderful opportunity to work and learn with you on this bookproject. I also thank especially, Prof. Rachmat Witoelar, who ably lead the Environment Ministry then and leading the National Council and Climate Change now, for his support and fascinating back-stories.

I hope that you enjoy reading the book.

Tony La Viña

Indonesia has played a crucial role in addressing climate change globally, through its active participation in the UNFCCC negotiations as well as through its own actions to address the causes and impacts of climate change.

President of Indonesia, Susilo Bambang Yudhoyono and the UN Secretary General, Ban Ki-moon and the President of the COP13 Rachmat Witoelar, in plenary session, Bali, December 2007.
Photo by Abror Rizki/Istana Presiden.

Chapter 1

Introduction

Agus Purnomo
Antonio La Viña

The United Nations Framework Convention on Climate Change (UNFCCC) is turning two decades old. The science on climate change and its impacts is maturing, and there is little doubt about what actions are needed to mitigate the anthropogenic causes of climate change, as well as to adapt to its impacts. Parties to the Convention have struggled to find solutions that are effective and least disruptive to domestic and international economic goals.

The 20th Anniversary of the Rio Summit was celebrated last year but the parties to the UNFCCC have yet to determine how much emission reduction each one of them shall commit to address the drivers of climate change. Even as international debates continue, Indonesia is taking bold steps; not only for its own good, but to show by example how one country can contribute to solve the global challenge. Given its unique situation and domestic interests, Indonesia has played a crucial role in addressing climate change globally, through its active participation in the UNFCCC negotiations as well as through its own actions to address the causes and impacts of climate change.

Indonesia is in unique position because it is a forest rich archipelago and a developing country which contributes to CO2 emission. As domestic awareness grows and strategies are formed, Indonesia's commitment in addressing global climate change is also increase.

In hosting COP-13, Indonesia helped set the course for international actions, as well as domestic reforms. In the words of Prof. Dr. Emil Salim, head of the Indonesian delegation at that time: 'by saving the country, we can also save the world.'

This has become a matter of urgency since the country is already experiencing the devastating effects of climate change-induced natural disasters that have resulted in casualties, displacement of communities, as well as damage to the physical infrastructure. At the same time, Indonesia looks at the climate crisis as an opportunity to retool its economy for green growth for the next century that is "pro-growth, pro-job, pro-poor and pro-environment."[9]
Indonesia is the largest archipelagic country of some 18,000 islands, with a total land area of 1.9 million km2, a coastline of 104,000 kms, territorial sea of 284,000 km^2, and an Exclusive Economy Zone of almost 3 million km^2.[10] The country is devided into 33 provinces, 399 districts/regencies, 98 cities, 6,747 sub-districts, and 78,198 villages.

The total population is also growing fast, from 119,208,000 in 1971 to 237,641,000 in 2010. Three quarters of the population are below 35 years old and three quarter of that age group are below 25 years old, making education and nutrition important issues for the country. Poverty is also a challenge for the country. In 2010, 31,023,390 people are still below poverty level, earned yearly income below Rp. 253,016. The Gini Ratio of Indonesia is 0.38 by 2010.

Under the current administration of President Yudhoyono, the economy of Indonesia has grown at the level of 6.10% in 2010, with GDP of Rp. 6,389,093.00 billion (current price) and Rp. 2,310,689.80 billion (constant price) and a GDP per capita level of Rp. 26,895,061.53.

Since the early 1970s, Indonesia spurred its economic growth through its abundant forest resources, oil and gas, as well as precious minerals like gold, copper and tin. Substantial wealth has been accumulated in the last four decades, but with wealth came significant environmental degradation due to unsustainable and poor management of forest and land resources.

After introducing Law No. 22, 1999 or "Regional Autonomy," the government devolved its powers and responsibilities to local governments in all sectors except for national security and defense, foreign policy, monetary and fiscal matters, justice, and religious affairs. This devolution marked a substantial change in institutional governance which expanded the role of local governments in the management of natural resources in their locality.

In early 2000s, experts started looking at the impact of disasters and extreme weather on fishing and agriculture communities. Indonesia went through 1,429 disasters in the period of 2003-2005 alone, mostly on weather-related flooding and landslides. This came after a decade of notable rice

9 *MP3EI, 2011*
10 *BPS, Trends of the Selected Socio Economic Indicators of Indonesia, August 2011*

crop failures due to droughts.[11] Then came the 2005-06 El Niño that worsened forest fires and haze. Government was figuring out how to empower communities to cope – "adaptation" was not yet a term of common use. The impact of extreme weather on food security, forest fire, and energy security convinced many agencies that this was no longer just an environmental concern but something which affected all aspects of the country's development.

Mitigation Challenges

Climate change is not explicitly covered in existing laws, and existing institutions are still adjusting to the challenge of addressing it, noting a need for strategic directions. Early on, the National Action Plan (2007) has set the course, and the challenge is to make the journey to low carbon growth. As a rapidly developing country, Indonesia needs economic growth, but it must also evaluate trade-offs, including the environmental consequences of development activities.

The current seven (7) percent growth target is now accompanied with political determination to reduce greenhouse gas emissions through significant reduction in the rate of deforestation. At the G20 Summit in Pittsburgh on September 25, 2009, President Susilo Bambang Yudhoyono made a pledge for Indonesia to reduce emissions by 26%, and up to 41%, with international supports. After Copenhagen, the 26% reduction was translated into a National Action Plan on Emission Reduction "*Rencana Aksi Nasional Penurunan Emisi Gas Rumah Kaca* or RAN GRK") which details Indonesia's submission to UNFCCC into national (and sectoral) planning on how, when, and where the reduction will take place.

By 2011, Presidential Decree No. 61 /2011 has set the modalities and procedures for RAN-GRK and its derivatives, the Provincial Action Plan on Emission Reduction ("Rencana Aksi Daerah Penurunan Emisi Gas Rumah Kaca or RAD-GRK). The Decree also consisted of matrices on a preliminary action plan on reducing emission in seven (7) main sectors.

Efforts to reduce emissions that Indonesia has committed to embark on can be enhanced by international scientific cooperation and market mechanism. From the science of calculating emissions from forest and peat lands, to creative financing schemes that deliver supports as well as results without persistent delays.

This is where studies like "Indonesia GHG Gas Abatement Cost Curve" by the National Council on Climate Change in 2010 delivers added values to the current plannning to reduce emission nationally. While reports such as the 2010 Second National Communication provided RAN-GRK with data collection of current situations, the Cost Curve Study served RAN-GRK with options of the most cost-effective measures and the differences between

11 MP3EI, 2011

those options. The Cost Curve Study also allows national and provincial governments to choose among the options based on the technology costs of the measures.

Financing Mechanism and Technology Development

There is a lot of international interest in Indonesia's climate change policy because of its vast potential for mitigating emissions, mainly from its forests. It has received offers for technical and financial assistance from multilateral and bilateral sources in delivering actual emission reductions in the long term.

The success story of COP 13 (2007) in Bali and the announcement of Indonesia's 26/41 commitments in G-20's 2008 Pittsburg Summit had focused international attention on Indonesia. This is also the reason why Norway approached Indonesia in COP14 in Poznan in 2008 on the possibility of adding Indonesia's efforts on reducing emission, in particular on deforestation and forest degradation (REDD+).

Indonesia's Letter of Intent with Norway, signed in May 2010, has been one of the topics that has been trending in climate change financing debates because its amount was one of the biggest supports that has ever been promised to developing countries on climate change. But It is important to remember that REDD+ is about exploring uncharted territory, and Indonesia is crossing new frontiers in its efforts to reduce greenhouse gas emissions through the program. Its officials are aware of this inadequacy, but is bent on pursuing the agreement as a means to achieve a sustainable growth for the country.

As the country develops its REDD+ strategies over the coming months and years, the government welcome vigorous debate. This is an issue that will shape Indonesia's economic policy for years to come, so it deserves full public scrutiny.

Financial mechanisms cannot be discussed without touching upon the topic of climate-friendly technology development and diffusion in developing countries. The transfer of technology, in many cases would be a significant part of a financial debate as technology will require considerable amount of money.

Contrary to its literary interpretation, techology transfer is not free or low-cost technology from developed countries to developing countries. New Technology is developed by private entities and most developed countries are not willing to pay for its transfer costs. Most of the time, activities that are labelled as technology transfer are packaged in the form of a small scale pilot project or a training opportunity.

President of COP 13, which is also the Environment Minister of Indonesia, Rachmat Witoelar in a COP13 plenary session in Bali, December 2007.
Photo by Abror Rizki/Istana Presiden

Thus, technology transfer is a complicated issue; an up-hill battle for most developing countries. In the end, a developing country must either develops its own technology or contents itself with a second best or out dated technology.

Adaptation Challenges

While international attention on Indonesia is largely due to its crucial contribution to mitigation, the country also faces difficult challenges in adapting to climate change impacts. Located in the equator and spread in three times zone with large and small islands, active volcanoes, tall mountains with ice caps, with extensive spread of coral reefs and atoll islands, Indonesia has climate systems that are very different from a landlocked country. It has more than 40 climate zones which require serious investments to predict accurately through weather forecasts for the benefit of individual farmers and fishermen, as well as the entire agriculture industry.

International cooperation is also needed to develop Indonesia's resilience to climate change, in particular in predicting weather forecasting. The use of satellite monitoring and terrestrial sensor equipments, combined with state of the art modeling and computing capability will enable planners and individual farmers to cope with the volatile and unpredictable climate.

It is widely known that the cost of adaptation consists not only of the measure itself but also the socio-economic cost of applying such a measure, in particular, in developing countries. Therefore, the cost of a real adaptation program is never a small amount. However, the multilateral financing mechanisms do not allocate enough resources for adaptation.

There are discussion about linking the funding for adaptation with mitigation actions. But years of negotiations on Adaptation Fund in the Kyoto Protocol Regime shows that it is not really an easy thing to do and only a small amount has been disbursed since the Fund's creation. Thus, the target benificiaries of the adaptation measures are not receiving the support meant for them.

Indonesia plays a bridging role internationally because of its unique situation as a major player in forest issues, a developing country, an oil producer, an archipelago, a fast-growing economy that survived a global economic crisis, having large population, being high vulnerable to
natural disasters, etc. Because of these characteristics, Indonesia belongs to many alliances with countries with similar objectives and can speak from many different perspectives.

International Negotiation

Indonesia became a party to UNFCCC and participated regularly in previous COPs. Recognizing the vulnerability of its geographical conditions and the importance of protecting the global environment, Indonesia signed the UNFCCC in 1992 and ratified it by Act No.6 of 1994 on Ratification of the United Nations Framework Convention on Climate Change.

Indonesia signed the Kyoto Protocol in 1998 and ratified it by Act No. 17 of 2004 on Ratification of the Kyoto Protocol to The United Nations Framework Convention on Climate Change.

Indonesia plays a bridging role internationally because of its unique situation as a major player in forest issues, a developing country, an oil producer, an archipelago, a fast-growing economy that survived a global economic crisis, having large population, being high vulnerable to natural disasters, etc. Because of these characteristics, Indonesia belongs to many alliances with countries with similar objectives and can speak from many different perspectives.

Indonesia has evolved into a leader in bridging differences/ facilitating agreements on critical issues since hosting the 13th Conference of Parties of the UNFCCC in December 2007 where the Bali

Action Plan and Bali Road Map on climate change has been agreed upon. Indonesia strove to ensure fairness, transparency and involvement of all stakeholders during the conference.

Indonesia has always been an active player in the international negotiation fora. It chaired G77/ China and the ASEAN in 2011. On UNFCCC negotiations, several Indonesians have been involved as facilitators and bureau members. As its role in the international arena matures beyond being a host and facilitator, Indonesia needs to be more assertive in ensuring what is best for its people while contributing to global objectives on the four building blocks of Bali Action Plan: mitigation, adaptation, finance and technology transfer.

Objective of the Book

This book aims to share the experiences and lessons that Indonesia has gone through in the last five years in shaping domestic policies and international positions on climate change. It seeks to give a background to official pronouncements and documents. There were long debates and considerations before decisions were made, and these discussions were often not recorded. But these stories are valuable in shedding light on the decision-making process and the struggles of drawing consensus among diverse interests even within the government structures.

There are significant milestones in the evolution of Indonesia's domestic policy and international position on climate change.

The UN Secretary General, Ban Ki-moon and the President of Indonesia Susilo Bambang Yudhoyono and the President of the COP13 Rachmat Witoelar, in plenary session, Bali, December 2007.
Photo by Abror Rizki/Istana Presiden.

Chapter 2

Significant Milestones in Indonesia's Policy on Climate Change

Amanda Katili Niode
James Kho
Eka Melisa

There are interesting topics on climate change issues in Indonesia that can be shared. This particular volume is focusing on issues of mitigation, including reducing emissions from forest and peat lands, financial mechanisms and international negotiations. Indonesia has limited resources to build resilience to climate change, being an emerging economy. This adaptation issue will be dealt in the future publication.

Significant milestones in the evolution of Indonesia's domestic policy and international position on climate change are:

1. The 13th Conference of the Parties to UNFCCC, Bali
2. Institutional responses after Bali: the creation of DNPI
3. Strategic mitigation policy the 26/41 commitment
4. Addressing LULUCF mitigation and realizing REDD-plus: Indonesia-Norway Letter of Intent

The 13th Conference of the Parties to UNFCCC, Bali

In September 2006, at an Informal Ministerial Consultations for UNFCCC COP-12 in Rüschlikon, Switzerland, then Minister of Environment, Rachmat Witoelar suggested that Indonesia host COP-13. Witoelar was

the President of the UNEP Governing Council from 2005 to 2007 and was well-respected internationally because of his able handling of UNEP affairs.

At the time, Indonesia was already recognized as a center for biodiversity but was not yet fully aware of the dangers of climate change. It was not keen on hosting COP-13 because of the projected high costs that will be incurred in a time of recession but realized that the event will present an opportunity to promote the issue and policies on climate change at the domestic level.

By the time of COP-12 in Nairobi, the Government of Indonesia offered to host the thirteenth session of the Conference of the Parties and the third session of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol in Nusa Dua, Bali. The offer was accepted in February 2007, which meant Indonesia only had eight months to prepare for the event.

At the ASEM (Asia-Europe Meeting) 3rd Environmental Ministers Meeting, Denmark initiated the Troika, an informal group of the three countries that will be hosting the COPs 13 (Indonesia), 14 (Poland) and 15 (Denmark). The Troika Head of States/Governments communications eventually involved the UN Secretary General.

The preparation for COP-13 was regularly reported at Cabinet meetings led by President Yudhoyono. At one of the cabinet meetings, Trade Minister Mari Pangestu showed a copy of China's First National Action Plan on Climate Change published in June 2007 and suggested that Indonesia prepare a similar plan prior to COP-13. Indonesia's National Action Plan was prepared through an inter-ministerial work coordinated by the Ministry of Environment under the Deputy Minister for Nature Conservation Enhancement and Environmental Degradation Control.

History of the Bali Road Map

Bali was chosen as a venue for COP-13 almost by default. The island has the infrastructure for hosting thousands of delegates, and the Balinese culture of openness and concept of life was perfectly suited for the conference. The Balinese philosophy ***Tri Hita Karana***, means keeping the harmony and balance between humans to God, human-to- human and human to the environment, provides superb cultural setting for the always difficult negotiation.

A Pre-COP-13 meeting was set to enhance communication and prepare the common frameworks on selected issues among key participants of the UNFCCC COP-13/MOP-3 in Bali. The preparatory meeting would also call for a range of possible cooperations among nations on effective international response. President Yudhoyono also agreed to Witoelar's suggestion to host an Informal Ministerial Meeting on Climate Change in October 2007.

There was broad consensus that the Bali Conference should establish a Road Map with a timetable and concrete steps for the negotiations on the future regime with a view to reaching agreement

by 2009. Bali would thus provide an excellent opportunity to advance the important climate negotiations by converting the present exploratory dialogue into a negotiating framework. It would be necessary, before Bali, to reach convergence on new or additional processes that may need to be established within the UNFCCC framework.

In the Chair's Summary Notes presented by Witoelar, there was a general agreement that four (4) building blocks, the essential elements for long-term cooperative action, are at the core of a post-2012 framework. They are: Mitigation, Adaptation, Technology Transfer and Investment and Finance. The building blocks need to be built upon and expanded, and that equal weight must be given to adaptation and mitigation and such special issues as deforestation and forest degradation.

Several assumptions were identified on how to deliver the building blocks, including:

1. Broad consensus on the need for a Bali Roadmap towards a comprehensive multilateral framework beyond 2012;
2. The UN Climate Change Convention and the Kyoto Protocol provide the framework for the global response to climate change -- there is no need to reinvent the wheel.
3. There is a need for a process under the Convention, in addition to the Kyoto Protocol Ad Hoc Working Group (AWG), to advance work on the building blocks.
4. There is a need to foresee both informal exchange of views and formal negotiations.
5. Two tracks were identified: AWG (Kyoto Protocol) and New Convention process. In addition, the results of other parallel processes such as the G-8+5, Major Economies Meeting on Energy Security and Climate Change, etc. should be brought in.
6. There is a need to establish a contact group in Bali for complementary consultations by the President.

The term Bali Road Map came up at the Midnight Sun Dialogue on Climate Change where Environment Ministers and High Officials from 28 countries and the European Commission met at Riksgränsen, Sweden, June 11-14 2007, for an informal discussion on international cooperative action on climate change.

COP Sessions

As President of COP-13, Rachmat Witoelar was assisted by seasoned diplomats led by Ali Alatas, Sumadi Brotodiningrat, and Makarim Wibisono. Professor Emil Salim, President Yudhoyono's adviser, acted as the chief delegate of Indonesia. He was chairman of WSSD PrepCom IV in Bali in 2002. Ismid Hadad of the Indonesian Biodiversity Foundation was the Secretary of the Indonesian Delegation. A presidential decree designated Agus Purnomo as the Executive Chair of COP-13.

President Yudhoyono closely monitored the progress of the conference. In his opening address, the

President of COP13 Rachmat Witoelar are discussing a document with the chairs in a plenary session in Bali, December 2007.
Photo by Abror Rizki/ Istana Presiden.

President said that developed countries must do more due to their historical responsibility for global warming and must continue to take leadership on climate change. He said they must do significantly more to cut their own emissions, and do more to work with developing countries through clean energy technology sharing and financial assistance for mitigation and adaptation. On the other hand, he said, developing countries must also do their part by being committed to a path of sustainable development through the mainstreaming of the environment in their national development plans. He added that countries that are blessed with forests must do all they can to preserve and expand their forest cover and those experiencing high economic growth must plan a long- term low-carbon development. President Yudhoyono added that developing countries can also take advantage of a rapidly expanding carbon market to harness opportunities for their own socio-economic development.

Achievements in Bali

At his closing speech, COP-13 President Rachmat Witoelar, said that through the Bali Conference, the Bali Road Map was adopted. The Bali Road Map consists of forward- looking decisions which represent various tracks that are essential to reaching a secure climate future. He said that a new negotiation process, the Ad-Hoc Working Group on Long-Term Cooperative Action, designed to tackle climate change with the aim of completing this by 2009, was also launched in Bali. The conference also launched the Adaptation Fund, defined the scope and content of Kyoto Protocol's Article 9 and charted a course forward on technology transfer and a program on reducing emissions from deforestation. These achievements, Witoelar said, represent the core elements of the Bamboe Bali Roadmap.

For the first time, finance and trade ministers of various countries met in sidelines of negotiations during the COP-13 to focus on the tools and policies that they can bring to bear on climate change mitigation and adaptation issues. Similar meeting of trade ministers from developing countries also took place alongside COP13.

The Finance Ministers High Level Event on Climate Change was organized with assistance from the World Bank for materials preparation, 39 countries and 10 international financial institutions attended this event.

The purpose of the meeting was to initiate a continued discussion process among finance ministers on climate change issues. There were three sessions, namely, Economic Magnitude and Consequences of Climate Change, Policy Instruments for Addressing Climate Change, and Common Objectives on Climate Change Finance Issues. A final session was held to discuss follow up initiatives.

Meanwhile, the Informal Trade Ministers Dialogue on Climate Change Issues with assistance from International Institute for Sustainable Development (IISD) of Canada, was supported by the UK & Norway for materials preparation the dialogue was attended by 39 countries and 14 national and international institutions. The objective of the informal consultation was to exchange views and build trust within the key countries of both UNFCCC and WTO to further:

- increase the understanding and capacity of both climate and trade communities in dealing with institutional challenges of climate change in future trade regime; and
- encourage international trade communities to take initiative in discussions of future climate regime to settle potential dispute between WTO rules and the implementation of the UNFCCC and its Kyoto Protocol.

Lessons Learned

According to Witoelar, the COP-13 in Bali had all the recipe for a good COP, namely, total involvement of everyone, and a transparent and participative process. He said that for negotiations to take place, there need to be common interests and at the same time issues of conflicts surrounding such common interests. Witoelar said that their challenge was to build a common platform with “co-benefits” of combating climate change while achieving sustainable development.”

COP-13 is known as among the most successful COPs, with one of the largest and most diverse participation: from official delegates, to NGOs, youth, indigenous peoples, etc. According to reports, COP-13 was attended by over 10,800 participants, including more than 3,500 government officials, 5,800 representatives of UN bodies and agencies, intergovernmental organizations and non-governmental organizations, and nearly 1500 accredited members of the media.

There was a convergence of factors which contributed to the success of Bali:

- On November 17, 2007, the Intergovernmental Panel on Climate Change (IPCC) released its Summary for Policymakers for the Synthesis Report of the IPCC Fourth Assessment Report (IPCC-AR4) on climate change science. The Synthesis Report summarizes, in plain language, the main findings of the three working group (WG) reports released earlieri n the year. These working groups summarized the state of knowledge regarding the physical science of climate change (WG I), the observed and projected impacts of climate change (WG II), and the options and potential pathways for mitigating future climate change (WG III). The report's overarching message is that threats are real but there are affordable ways to deal with climate change.

- Towards the end of the Bali Conference, the IPCC and Al Gore Jr. were awarded the Nobel Peace Prize "for their efforts to build up and disseminate greater knowledge about human-made climate change and to lay the foundations for the measures that are needed to counteract such change."

- Ten days before the Bali meetings started, Kevin Rudd was elected as Australia's 26th Prime Minister. Signing the formal instrument for Australia to ratify the Kyoto Protocol was his first act as Prime Minister.

- Europe took a global leadership role in fighting climate change. Its European Climate Change Program (ECCP) sought to deliver on the EU's Kyoto commitment by taking initiatives in wide-ranging areas, including the promotion of renewable sources of energy and energy-saving measures for buildings and cars. The European Commission's strategy for the EU's future climate change policy after 2012 has made the European countries determined to reach an agreement at COP 15 in Copenhagen.

Institutional Responses After Bali: the creation of President's led Climate Council DNPI

After hosting COP-13, President Yudhoyono started laying the foundations for Indonesia's domestic policies to address climate change. In the President's address during the launching of the National Action Plan (NAP), he said it is important for Indonesia to mitigate global warming and climate change inasmuch as it is vulnerable to their impacts. Yudhoyono said Indonesia would therefore reduce greenhouse gas (GHG) emissions from the energy sector, and from land use, land-use change and forestry (LULUCF), while also increasing carbon sequestration. He also said that efforts to control climate change cannot be separated from economic development and poverty alleviation. The President incorporated climate change considerations into Indonesia's national development planning through BAPPENAS, the National Planning Agency in 2008-09.

President Yudhoyono then instructed COP-13 President Witoelar to propose an institutional set-up for Indonesia to address climate change issues holistically at the highest levels. The proposal that emerged was to create a Council similar to the existing food security council. However, Witoelar wanted the council to be independent, with multi-sectoral membership, unlike the food security council that was under the Ministry of Agriculture. The design of the council drew from the experience of COP-13, where the organizing committee, led by Agus Purnomo, was multisectoral in composition.

> *The need for coordination was clearly stated in the NAP through its Principle of National Development Management which has four components:*
>
> *First, harmonize all policies and legal instruments to broaden economic activity and maintain the competitiveness of the main production system following the three requirements of socio ecology national development (human/ natural wellbeing, productivity and sustainability of natural services);*
>
> *Second, the main instrument for compliance is the integration and harmonization of spatial use along with the utilization of public resources to overcome the "status quo" that prevents the implementation of sustainable development in Indonesia;*
>
> *Third, the achievement of climate change mitigation targets along with social ecology targets should be achieved through adaptation of consumption pattern and sustainable production from all agents of change;*
>
> *Fourth, integration of all mitigation and adaptation targets with socio-cultural aspects through social preparation and social engineering that is conducted based on the specific characters of local community and environment.*
>
> *The two most important policy areas in mitigation and adaptation, energy sector and LULUCF should follow the above development guidance which until now remains fragmented in five policy portfolios (agriculture, forestry, public works, land and spatial planning).*

The proposal for the multisectoral council was carefully studied until July 2008 when the President issued Decree #46/2008 establishing the Dewan Nasional Perubahan Iklim (DNPI) or National Council on Climate Change composed of Cabinet-level members with multi- sectoral working groups. DNPI became the official think tank to give advice to the President on climate change. Led by the President of the Republic of Indonesia as Chairperson, DNPI has the Coordinating Minister of Economy and the Coordinating Minister of Social Welfare as its vice chairpersons.

The Council members are 17 Ministers (State Secretary, Cabinet Secretary, Environment, Finance, Home Affairs, Foreign Affairs, Energy and Mineral Resources, Forestry, Agriculture, Industry, Public

Works, Development Planning/BAPPENAS, Fishery and Marine, Trade, Research and Technology, Transportation, Health) and Head of Meteorology, Climatology and Geophysics Agency/BMKG.

In implementing its decisions, the council has two organs:

The first organ include Working Groups that serve as think tank units to prepare drafts of new or revised Climate Change Policies. The existing Working Groups cover (1) Mitigation (2) Adaptation, (3) Technology Transfer, (4) Financial Mechanism, (5) Land-use and Land-use Change and Forestry, (6) Post 2012 Programs, and (7) Scientific Basis and Climate Data Inventory. The Council's Working Group consists of stakeholders from various sectors such as key officials and professionals from ministries, academia, non government organizations, private sector and other communities related to the Group's tasks.

The second organ is the Secretariat of the Council that serves as a support unit for the Council. The Secretariat delivers monitoring and evaluation, public awareness campaign, promoting CDM projects, capacity building, international cooperation, legal assistance, and general administration of the Council.

Recruitment of the Head, Vice Head and Secretary of the Working Groups was conducted by requesting the assignment of top-echelon officials to Ministers who are DNPI members. Experts and representatives of the private sector and the NGOs who are active in Climate Change science and negotiations were also invited to be involved in DNPI activities.

Domestic Challenges to Institutional Changes

The Ministry of Environment had worked very hard in preparation for and during the COP-13, but after the Conference, DNPI became the focal point for activities relating to Climate Change. Many in the Ministry of Environment were disappointed but realized that the creation of DNPI was a political decision that they had to accept.

One of the sources of tension among the agencies was that the DNPI was created by a Presidential decree primarily for coordination, while the sectoral ministries that had been created by law still held primary responsibilities in their respective areas of concerns. Sectoral agencies expected that the authority they had wielded would be diminished and their budgets potentially reduced with the creation of the DNPI. Although its budget is being channeled through the Ministry of Environment, DNPI is to function as an independent agency. Its budget is fixed until 2014.

DNPI has highly respected leaders and highly competent staff members recruited from the public and the private sectors. In time, DNPI needs to strengthen/ clarify its role domestically, although its role internationally is clear. Some people have expressed their opinion that if climate change is

a development issue, then coordination must be with *Bappenas*. In a sense, *Bappenas* charts the course for economic development consistent with goals set for mitigation and adaptation. DNPI, on the other hand, is focused on high level coordination, especially in international negotiations, and is content to let existing institutions implement policy decisions on the ground. The institutional challenges, with respect to roles in environment and development is not new in Indonesia and did not just arise because of the entry of the DNPI into the picture.

There is recognition that since climate change is no longer purely an environmental issue, then DNPI may be in a better position than the Ministry of Environment to coordinate climate change related activities. The Ministry plays an important part in the working group that define policies. The Ministry's responsibilities lie with respect to crafting the implementing regulations. For example, policy directions on MRV must be complemented by regulations on production/market of forest products and peat lands. Therefore, the Ministry and the DNPI can work synergistically.

DNPI has highly respected leaders and highly competent staff members recruited from the public and the private sectors. In time, DNPI needs to strengthen/ clarify its role domestically, although its role internationally is clear.

The REDD+ Task Force

The idea of partnership between Indonesia and Norway was developed as early as during COP-14 in Poznan in 2008. Hans Brattskar, then Norway's ambassador for climate change, approached Agus Purnomo, then alternate head of the Indonesian delegation to the UNFCCC, on the possibility of Norway contributing to Indonesia's action on reducing emission from land use and land use change and forestry (LULUCF).

Two of the reasons on why Indonesia attracted Norway's support were the success of COP- 13 in Bali which Indonesia hosted as well as Indonesia's straightforward and clear commitment to reduce its greenhouse gas emissions by 26% from business as usual (BAU) conditions.

President Yudhoyono in COP15 Copenhagen, Denmark, December 2009, restated a pledge for Indonesia to reduce its greenhouse gas emissions by 26%, and 41% with financial assistance.
Photo: Abror Rizki/Istana Negara

To implement the LoI signed in May 2010, President Yudhoyono released a Presidential Decree on the establishment of the first REDD+ Task Force (Presidential Decree no. 10/2010) to be led by Kuntoro Mangkusubroto, a former minister from previous administrations known for his clean reputation and his success in leading the work of Aceh Recovery Body. However, Kuntoro was new to the issue of climate change and had little knowledge on forest and land. To support him, the task force was filled with Vice Ministers from Bappenas and Finance; and echelon one from Forestry, Environment, Finance, National Development Planning Agency, National Land Agency, Office of Cabinet Secretariat, and the Indonesia National Council on Climate Change.

The differing knowledge and approaches on the issues applied by the task force members required adjustments between the head Kuntoro and the technocrats. This was also the reason why the task force's initial outputs were more on the technical level such as presidential decree on moratorium and a provincial pilot project. Due to the need to deliver the rest of the agreed outcome of the LoI, including the establishment of REDD+ Agencies, financial mechanism and MRV framework for land use and land use change, a second task force was established through Presidential Decree no. 25/2011 with slight changes in the composition such as the inclusion of the Ministries of Agriculture and Energy and Mineral Resources as additional task force members.

Local Government Awakening

Local government awareness on REDD+ is growing. For example, East Kalimantan, Central Kalimantan, and Jambi provinces are now actively involved and seeking assistance on REDD+. The challenge for local governments is even more difficult because they have to translate complex international and national directions to practical, on-the-ground concepts that the local community can relate to. For example, in East Kalimantan, local officials met with indigenous peoples to explain to the latter that under the REDD, they have an important role to play. Land tenure, poverty, daily subsistence/ livelihood are some of the other issues that the local governments must take into consideration in pursuing new policy directions for a low carbon economy.

Devolution of powers to local governments have posed challenges since its introduction in 1999. About 80% of government functions have been devolved, including forest management, directly to the districts, bypassing the province. Around 22-24 million hectares of primary forests is held by the national government for conservation while the rest is under the control of the districts for production.

Strategic Policy Directions on Mitigation: the 26/41 Commitment

At the G-8 Meeting in Japan in 2008, President Yudhoyono was asked to share his thinking on sustainable development strategy of the developing countries with emphasis on food security and climate change. President Yudhoyono called for an effective global partnership for climate change with significant mid-term and long-term targets in accordance with the Bali Action Plan and taking into consideration countries' historical contributions to the global emissions, with 1990 as the baseline year.

Indonesia has revised its energy mix to address the target of C02 emissions reduction by 17 percent from the business as usual scenario by 2025. Apart from that, Indonesia also aimed to reduce emissions from the forestry sector by reducing the forest and bush fires hot spots by 50 percent in 2009, 75 percent in 2012 and 95 percent by 2025 from the baseline year in 2006.

During bilateral meetings at the margin of the G-8 Meeting in Japan, such as between Indonesia and India, and between Indonesia and Australia, President Yudhoyono also exchanged ideas on National Action Plans on Climate Change and agreed to increase partnerships with their counterpart Ministry or Council for Climate Change in each country.

Thereafter, at the G20 Summit in Pittsburgh in September 2009. President Yudhoyono made a pledge for Indonesia to reduce its greenhouse gas emissions by 26%, and 41% with financial assistance. He said Indonesia is devising an energy mix policy including Land Use, Land Use Change, and Forestry (LULUCF) that will reduce its emissions by 26 percent by 2020 from BAU

(Business As Usual) and 41 percent with international supports. The targets, according to Yudhoyono, is entirely achievable because most of Indonesian GHG emissions come from forest related issues, such as forest fires and deforestation. He said Indonesia is looking into the possibility of commiting a billion ton of CO_2 reduction by 2050 from BAU. The President vowed to change the status of Indonesian forests from that of a net emitter sector to a net sink sector by 2030.

With the 26/41 commitment, Indonesia made the first big step to bridge the commitments of developing countries with the targets set for developed countries. It is higher by 1% than 25% commitment of Japan; higher than the 40% developing country target. The 26/41 target could be seen as a very ambitious target by Indonesia, but in fact, it could be easily achieved through forestry and peatland management. There could be inexpensive immediate actions in LULUCF - the low hanging fruit - where Indonesia can show immediate impact.

There is some concern that since the President's term ends in 2014 and the current ministers are not yet fully conversant on the intricacies of climate change policies, the 26/41 target set by the Yudhoyono Administration may not be met. However, there is growing awareness among the stakeholders on the ground, as well as internationally, which can provide the incentive for Indonesia not to reverse its commitment.

Implementation challenges in LULUCF and REDD-plus: Indonesia-Norway LoI

In Indonesia, the highest of forest cover loss occurred in the period 1997 - 2000 which was 2.83 million has (forest and non forest area) per year, with the highest rate occurring in Sumatra with 1.15 million has per year, followed by Kalimantan with 1.12 million has, Sulawesi with 692 thousand has, Maluku 294 thousand has and Papua with 156 thousand has per year.

About 60% of Indonesia's greenhouse gas emissions come from the LULUCF sector (Indonesia: The First National Communication, 1999). An international scientific publication stated that forest and peat land fire in Indonesia in 1997 contributed 13-40% of the global carbon emission (Page, et. al., 2002). Although the calculation techniques used are debatable among experts, Indonesia must nonetheless conduct efforts to reduce forest and land fires.

In the context of climate change forests play a key role as a carbon sink (absorb carbon), carbon storage (store carbon) and carbon source (emitting carbon). Deforestation and degradation can increase the forests' s role as sources, while afforestation, reforestation and other planting activities increase their role as sink and storage sites. Greenhouse gas emissions from LULUCF in Indonesia come from deforestation (forest conversion to other uses such as agriculture, plantation, settlement. mining, regional infrastructure) and degradation (the decrease of forest quality because of illegal logging, forest fire, overcutting, land clearance by slash and burn, and shifting cultivation.

Financial incentives are expected to come from international community to compensate and give better 'returns' to local people who turn away from activities that are destroying the forests.

Norway-Indonesia LoI

On May 26 2010, an important agreement on REDD Plus, known as the Letter of Intent (LoI), was signed by Indonesia's Foreign Minister, Marty Natalegawa and the Norwegian Minister of Environment and International Development, Erik Solheim in Oslo, Norway. The signing of LoI was witnessed by Indonesia's President, Susilo Bambang Yudoyono, and the Norwegian Prime Minister, Hubert Ingraham. In brief, the LoI reflects high commitment and willingness of the two governments to participate in reducing GHG emissions in Indonesia, particularly from sources caused by deforestation and forest degradation.

Under the partnership, Norway pledges a total funding assistance amounting to US$ one billion to be given in three phases starting from 2010 to 2014. The first phase, called the preparation stage was set up from June to December 2010 (it is now extended to June 2011); the transformation stage is from 2011 to 2013; and the contribution stage is from 2014 onwards.

The first stage covers five main critical activities, i.e. 1) completion of the REDD Plus National Strategy (Stranas); 2) establishment of REDD Plus Agency, i.e., the special agency directly reporting to the President for implementation of the REDD Plus; 3) establishment of the MRV agency and suspension of new licenses for the exploitation of natural forest and peatland; 4) arrangement of financial architecture for REDD Plus; and 5) selection of a pilot province for REDD Plus demonstration activities. These five main activities are under the direct supervision of the President who assigns the Head of the Special Delivery Unit for Development Supervision (UKP4) Minister Kuntoro Mangkusubroto, to chair a Task Force to coordinate with line Ministries and undertake the tasks mentioned in the Letter of Intent.

On September 20, 2010, the Presidential issued Decree on the creation of REDD Plus Task Force. The Task Force is chaired by Dr Kuntoro, who is also the chairman of UKP4, with high level decision makers from relevant line Ministries as members, including Forestry, Environment, Finance, National Development Planning Agency, National Land Agency, Office of Cabinet Secretariat, and the Indonesia National Council on Climate Change.

Indonesia is among the first large developing country that has committed itself to making large absolute cuts in its GHG emissions.

Geothermal power plant in Kamojang, Garut, West Java. Geothermal become one of Indonesia developed renewable energy as part of climate change mitigation actions.
Photo by MPK Division/DNPI

Chapter 3

Focusing on Mitigation

Eka Melisa
Farhan Helmy

Indonesia was among the first developing countries to announce a domestic voluntary emissions reduction target of 26% from a business-as-usual level by year 2020 and up to 41%, with international support. The announcement was made by President Yudhoyono, at the G20 meeting in 2009 and was repeated during his speech at the Summit Session of the COP-15, followed by Indonesia's submission to UNFCCC on 19 January 2010 which underlined the initial focus areas/sectors of Indonesia's 26% emission reduction.

In a letter submitted by the executive chairman of the DNPI, Rachmat Witoelar to the UNFCCC, on January 19, 2010,he identified the seven initial focus areas and sectors as follows: sustainable peatland management, decreasing the rate of deforestation and forest land degradation, development of carbon sequestration in forestry and agriculture, promotion of energy efficiency and saving, development of alternative and renewable energy sources, solid and liquid waste management, and switching to low carbon modes of transportation.

The submission indicated Indonesia's support to the implementation of the Copenhagen Accord which echoed President Yudhoyono's speech in the Summit Session particularly on the importance of having a global goal

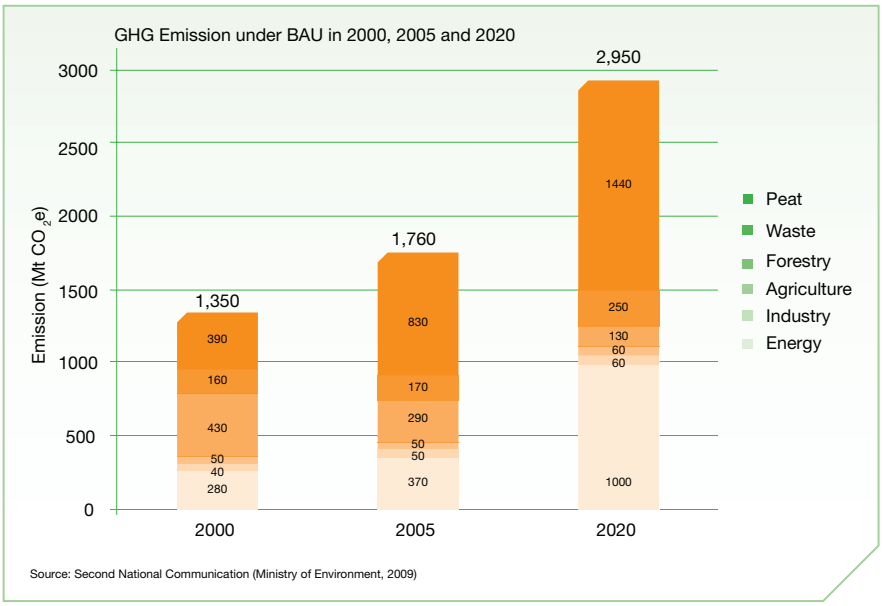
that include contributions from all parties to stabilize concentration of Greenhouse Gases in the atmosphere by applying the principle of "common but differentiated responsibilities."

However, what has generally gone unnoticed by the international community is that actions to respond to climate change are not an unknown territory for Indonesia. Such actions have already been developed and taken in response to the critical issues of sustainable development.

Recent Studies on Indonesia's Potential Emission Profile

Indonesia submitted its First National Communication (FNC) to UNFCCC in 1999 identifying the fast-growing industry sectors that will be responsible for the bulk of the increase in the country's GHG emissions over the next two decades. Although the study failed to address Indonesia's potential emission from forestry and agriculture due to limited data at the time, it predicted that Indonesia's opportunity for mitigation will come from fossil-based industries, namely, mining, oil and gas, electricity, agriculture, and forest.

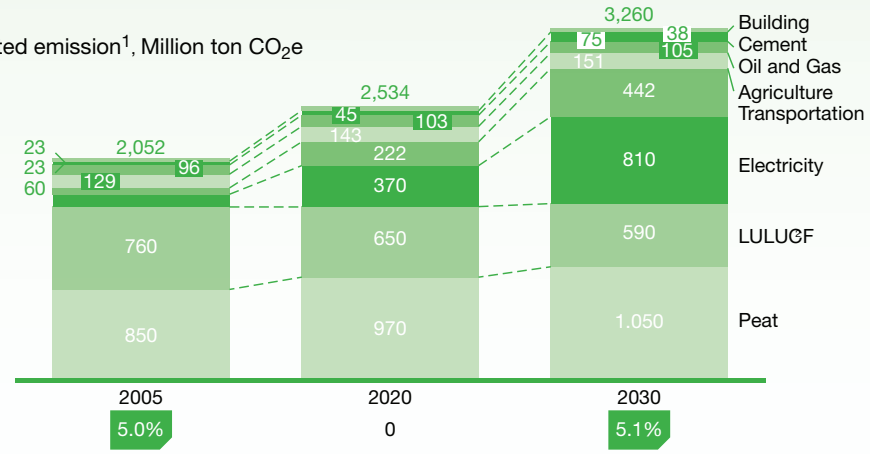
The Second National Communication (SNC) prepared by the Ministry of Environment and submitted to UNFCCC estimared Indonesia's annual GHG emissions to be around 1.72 Gt CO_2e in year 2000 and 2.12 Gt CO_2e in year 2005, divided as follows: Land-Use and Forestry (48% of total emission), Energy (21%), Peat Fire (12%), Waste (11%), Agriculture (5%) and Industrial Processes (3%). SNC also projected that Indonesia's emissions will reach up to 2.95 Gt CO_2e by year 2020.



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

Another study by the DNPI on GHG Abatement Cost Study (2010) also estimated Indonesia's annual GHG emissions while determining the abatement cost of emissions contributed by six sectors that are considered to cover majority of emissions and reduction potentials as follows: buildings, cement, agriculture, transport, power, forestry and peat. The study came up with a slightly different stimate for 2020's emission level (3.30 Gt CO_2e) but made the conclusion that Land Use, Forestry and Peatland are the two major sectors that will contribute largely to Indonesia's future emissions.

Indonesia emission projected to increase from 2.1 to 3.3 GtCO_2e between 2005 and 2030



1. Only sector direct emission are included
2. LULUCF emission based on clean emission approximation, including absorbtion

Source: Indonesia Cost Curve Abatement, DNPI (2010)

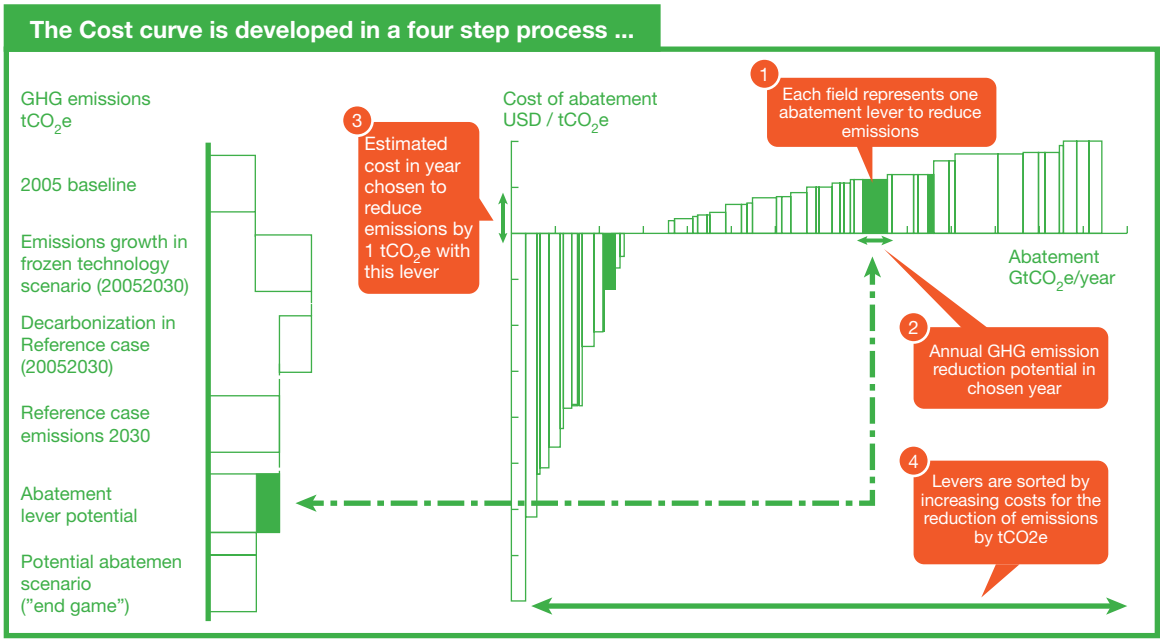
The global greenhouse gas abatement "cost curve" developed by global consultancy firm McKinsey & Company[9] summarizes the technical potential to reduce emissions of greenhouse gases at a cost of up to US$80 per ton CO_2e of avoided emissions.[10] The cost curve shows the range of emission reduction actions that are possible with technologies that either are available today or are highly likely to be available by 2030.

The width of each bar represents the potential of that opportunity to reduce GHG emissions in a specific year compared to business-as-usual development. The potential of each opportunity assumes aggressive global action starting in 2010 to capture that specific opportunity and so does not represent a forecast of how each opportunity will develop. The height of each bar represents the average cost of avoiding 1 ton of CO_2e by 2030 through that opportunity. The cost is a weighted average across sub-opportunities and years. All costs are in 2005 real US dollar. From left to right,

9 *McKinsey & Company (2009) Pathways to a Low-Carbon Economy: Version 2 of the Global Greenhouse Gas Abatement Cost Curve*

10 *Following IPCC definitions, the abatement cost curve shows technical measures with economic potential under US$ 80 per tCO$_2$e*

the graph presents the range of opportunities from the lowest-cost abatement to the highest-cost.[11] The uncertainty of volume and cost estimates can be significant for individual opportunities, in particular for LULUCF and peat and for emerging technologies.



The cost curve has identified ways for Indonesia to reduce as much as 2.3 Gt CO_2e in cuts by 2030, using existing technologies. Put another way, the graph identifies specific ways to cut as much as 70 percent of Indonesia's emissions by 2030. About 150 different measures have been identified that can be executed by the government, private sector and the community. If all these measures are implemented, they will add up to 70 percent of total emissions reduction in 2030. The five biggest opportunities to reduce emissions are: preventing deforestation (570 Mt), preventing fires on peatland (310 Mt), preventing oxidation of peatland through water management and rehabilitation (250 Mt), implementing and enforcing sustainable forest management (SFM) (240 Mt) and reforesting marginal and degraded forests (150 Mt).

Better management of Indonesia's land holds the key to cutting emissions and improving economic planning. It offers the possibility of reducing emissions by 1.9 Gt CO_2e by 2030

These studies and others that came out in early 2000s show that, while the bulk of Indonesia's current GHG emission come from the Forestry and Land Use sector, the country's current dependence on fossil-based fuel energy –most notably coal and oil- may increase Indonesia's fossil-based industry emissions up to 5-6 times from the current level by 2030.

11 *A negative cost lever on the cost curve implies that while an upfront capital investment may be required, the lever will more than pay for itself over its lifetime through energy savings when the investment is evaluated at a societal cost of capital (for the purpose of this study, this has been taken at four percent).*

RELATED POLICIES ON MITIGATION

- First National Communication (FNC), MOE, 1999
- Act no. 6/1994 Ratification of UNFCCC
- Revision of Act no. 23/1997 (delivered 2003) Inclusion of climate change issues into Environmental Management
- MOE Decree no. 53/2003 National Committee on Climate Change
- Act no. 17/2004 Ratification of Kyoto Protocol
- MOE Decree no. 207/2005 National Committee on Clean Development Mechanism
- Presidential Regulation no. 46/2008 National Council on Climate Change
- National Action Plan Addressing Climate Change (RAN – PI), MOE, 2007
- National Development Planning: Indonesia Responses to Climate Change (Yellow Book), Bappenas, 2008
- Annual Government Work Plan 2009 (RKP 2009), Bappenas, 2008
- Mid-Term Government Work Plan 2009-2014 (RPJM 2009-2014), Bappenas, 2009
- Presidential Decree on REDD+ Task Force, 2010
- Second National Communication (SNC), MOE, 2010
- National Action Plan on Emission Reduction (RAN – GRK), Bappenas, 2011
- National Guidelines of GHG Inventory, MOE, 2011

By the fourth quarter of 2011, two Presidential Decrees on National Action Plan on GHG Emission Reduction (Decree No. 61/2011, known as "RAN-GRK") and National GHG Inventory (Decree No. 71/2011) were issued. The matrices that were included in the RAN-GRK can be used as a "baseline" by the Indonesian goverment in measuring, reporting, and verifying the real delivery of its GHG emission reduction commitments. The basic data for calculating how much reduction was needed for each key sector was based on prediction of total national emission from both National Communication and the Cost Curve Study. RAN-GRK also consists of modalities to review and renew the matrices based on annual MRV process that will use numbers of actual reduction as calculated by the process identified in the National GHG Inventory process.

Institutional Development

Indonesia was among the first developing nations that ratified the UNFCCC through Act no. 6/1994. Since then Indonesia has been actively involved in the international debate individually or as part of the Group of 77 and China.

Meanwhile, Indonesia's domestic debate on whether or not the nation should ratify the Kyoto Protocol also intensified. The questions of who, what and how the nation would coordinate its actions on climate change was one of the reasons why Indonesia's ratification of the protocol was delayed.

In 2003, as an effort to accelerate the process of coordination among Government Agencies and to take decision on (cross-cutting) issues related to climate change, the Ministry on Environment (MOE) Decree no. 53/2003 establishing the National

Committee on Climate Change was issued. In 2004, the Indonesian Parliament agreed to ratify the Kyoto Protocol through Act no. 17/2004 six months before the protocol entered into force in December 2004.

The MOE issued Decree no. 207/2005 to establish the National Committee on Clean Development Mechanism (CDM) as a follow-up to Act no. 17/004. This committee acted as the CDM Designated National Authority allowing Indonesia to participate in the CDM market. The two committees were composed of representatives from relevant government agencies and a few non-government organizations so they can make decisions in a democratic manner.

After COP-13 in Bali, the government recognized the need to set up a formal institution that will serve as the body responsible for policy coordination among key stakeholders of climate change programs, particularly in the implementation of adaptation and mitigation actions.

In July 2008, President Yudhoyono issued Presidential Decree No. 48/2008 to establish the National Council on Climate Change chaired by the President himself with both the Coordinating Ministers for Economic Affairs and for People's Welfare as his vicechairpersons, and 16 cabinet ministers plus the Head of Meteorology, Climatology and Geophysics as council members. One of the working groups that were established to support the daily operation of DNPI was the Mitigation Working Group.

The Mitigation Working Group has primary responsibility to coordinate efforts to formulate national policy, strategy and programs on mitigation through strategic approaches, including the following:

- Strategic and integrative research in responding to the immediate demands of climate change actions;
- Science integration into economy-wide climate change research, policy development and planning;
- New approaches on mobilizing and deploying financial/technical resources industryfrom various stakeholders; and
- Policy information exchange and database development.

In the middle of 2011, under the auspices of Indonesia and the United States's Comprehensive Partnership, DNPI and the US Department of State agreed to establish a partnership to develop the Indonesia Climate Change Center(ICCC) in responding to the need for robust science in decision making. Under this initiative, four clusters of research has been established: peatland and peatland mapping, low emission development scenarios, climate resilience and MRV for climate program. Part of this initiative is to support the work undertaken in the REDD+ Task Force to improve Indicative Moratorium Map and to establish a "One Map" movement facilitated by UKP4 Geographical Information Agency (Badan Informasi Agency or BIG) in having one reference, one standard, one database and one geo-portal.

TransJakarta bus as part of a macro transportation pattern in the capital Jakarta. TransJakarta is part of climate change mitigation programs of the transport sector.
Photo by Nur R Fajar/SKPPI

Further, DNPI has been developing integrative strategic researches with multilateral, bilateral agencies and international NGOs, as well as actively establishing networks at the national and regional level.

Engaging Private Industry

At the global level, a climate change issue is not limited to the environmental context, but is included in the level of economic activity and trade in goods and services. Countries in Europe and America are moving aggressively to implement standardization of production processes and finished products that are environmentally friendly (eco products) in the circulation of goods and services in their countries. This standardization has been used as one criterion for selecting quality products that go into their domestic markets.

Governments and businesses will still face the challenges on how to combat climate change while also ensuring the right conditions for sustainable economic growth. A number of challenges that would influence this transition include the reduced quantity and quality of resources, unprecedented impacts of the changing climate as well as inadequate institutions that can respond to the issues.

Investments and innovations are essential elements in driving the economy towards sustainable development. Combining these two will create a new market for goods, and services. As such, a

significant investment is needed to ensure the institutional transformation that will maintain high economic growth and at the same time, ensure lower GHGs emissions. Innovation will play a critical role in finding new ways towards sustainable production and consumption.

As a means of promoting "green investment" and "green innovation," a series of meetings to discuss issues and initiatives on Investments and Innovations related to climate change had been conducted with several industries. These meetings serve as follow-up to previous meetings that discuss "green technology" and "green industry" in the context of low carbon economy.

Scenario	Region	2020	2050
A 450ppm CO2eq	Annex I	-5% to 40%	-80% to 095%
	Non-Annex I	Substantial deviation from baseline	Substantial deviation from
		in Latin AMerica, Middle East,	baseline in all regions
B 550 ppm CO2eq	Annex I	East Asia and Central Asia	-40% to -90%
	Non-Annex I	-10% to -30%	Deviation from baseline in most regions,
		Deviation from baseline in Latin	especially in Latin America and Middle East
C 650 ppm CO2eq	Annex I	America and Middle East, East Asia	-30% to -80%
	Non-Annex I	0% to -25%	Deviation from baseline in Latin
		Baseline	America and Middle East, East Asia

Source: IPCC AR4, 2007, box 13.7

Nationally Appropriate Mitigation Actions: Why and What?

The Intergovernmental Panel on Climate Change (IPCC) released its Fourth Assestment Report (AR4) that established several scenarios on how to keep the stabilization of the atmospheric GHG emissions at the low level to avoid dangerous climate change. In each of the scenarios, the assessment considers the combination of developed countries' absolute emission reductions with relative emission reductions of developing countries.

The lowest stabilization level assessed in the scenarios is 450 ppm CO_2e or usually corresponding with the below two (2) degrees Celcius increase of average global temperature. Based on this scenario, developed countries need to reduce their aggregate emissions by 25-40% from 1990 levels by 2020 and by 80-95% by 2050. developing countries need to deliver substantial deviation

from baselines in several regions by 2020 and extended to all regions by 2050.

The findings of IPCC AR4 has been the basis for the discussions in the 13th Conference of Parties (COP) of United Nation Framework Convention on Climate Change (UNFCCC) in Bali at the end of 2007, including the need to address contribution by developing dountries on mitigation efforts while continuing to practise the principle of "common but differentiated responsibilities (CBDR)" and "respective capabilities (RC)" through deeper cuts in developed countries's emissions.

As the host of COP-13, Indonesia established a Roadmap that served as the battle ground for the next round of climate change negotiation which seeks to deliver a new, legally binding agreement to strengthen the implementation of the UNFCCC after the first commitment period of the Kyoto Protocol. The Roadmap consisted of two-tracks of negotiations. One is the continuity of the Ad-Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol (AWG-KP). The other one seeks to launch a new negotiation for the four building blocks of the Bali Action Plan (BAP) through the Ad-Hoc Working Group on Long-term Cooperative Action under the Covention (AWGLCA).

One of the building blocks of AWG-LCA is enhanced action on mitigation that clearly differentiated mitigation commitment by Annex I Parties and nationally appropriate mitigation actions (NAMAs) by developing countries. Hence, the nationally appropriate idiom in the developing countries mitigation action clearly define its nature: voluntary and nationally driven.[12]

Since then, the UNFCCC has encompassed different types of NAMA that are currently being discussed. However, due to its complexity and implication of a bigger role for developing countries in mitigating climate change while maintaining the pace of their development, NAMA remains as a new concept that need to be defined soon by the Parties of the UNFCCC if they want to deliver the new framework of climate change that responded well to the scientific findings of the IPCC.

Indonesia's Contributions to NAMA,

Indonesia announced its domestic voluntary emissions reduction target in 2009, pledged to voluntarily reduce GHG emission by 26% from a business-as-usual level by year 2020 and up to 41%, with international support. While the pledge itself was never formally categorized as a NAMA, Indonesia is one of the major supporters of the building blocks of the Bali Action Plan. It is also one of the countries that developed Copenhagen Accord in which NAMA is one of the major elements. In early 2010, Indonesia's submission to UNFCCC on the seven main mitigation actions as a follow up to the Copenhagen Accord strengthened Indonesia's commitment to supporting NAMA.

12 *Decision 1/CP.13, Bali Action Plan*

Below are the NAMAs of Indonesia:

Dear Mr. de Boer,

With reference to my letter dated 19 January 2010, I have the honor to reiterate Indonesia's association with Copenhagen Accord that in our view served as a very important milestone in our common endeavor in addressing the challenges of climate change.

For information to the UNFCCC Parties, please find the information of our voluntary Mitigation Actions, in the format set forth in Appendix II of the Copenhagen Accord II, as follow:

Nationally Appropriate Mitigation Actions	Emission Reduction
The Reduction will be achieved, inter alia, through the following action: 1. Sustainable Peat Land Management 2. Reduction in Rate of Deforestation and Land Degradation 3. Development of Carbon Sequestration Projects in Forestry and Agriculture 4. Promotion of Energy Efficiency 4. Development of Alternative and Renewable Energy Sources 6. Reduction in Solid and Liquid Waste 7. Shifting to Low-Emission Transportation Mode	26% by 2020

Domestically, Indonesia has established steps to translate the voluntary emission targets into development policies and measures. In 2008, as a response to the Bali Action Plan, Indonesia had incorporated climate change into its 2009-2014 Mid-Range Development Plan ('Rencana Pembangunan JangkaMenengah' or RPJM). In the Plan, climate change was recognized as a cross-cutting issue embedded in at least three out of eleven national development priorities: food resilience, energy and environment, and disaster management. During the same year, the National Planning Agency (Bappenas) released the "National Development Planning: Indonesia's Response to Climate Change," or the "Yellow Book" as a bridging document to the development of the RPJM. Two priorities for adaptation, ocean and coastal resources and agriculture; and two for mitigation, forestry and energy and mining, were included in the Yellow Book.

Having learned from the lesson of Kyoto Protocol implementation, the Presidency of COP-13 established in the Bali Action Plan new monitoring tools for mitigation actions known as 'MRV' or Measurable, Reportable and Verifiable.[13] Any legally binding outcomes for the future framework of UNFCCC should incorporate sets of MRV criteria to ensure the implementation of mitigation actions beyond 2012.

13 *BAP, Para 1 b (i) and 1 b (ii)*

However, as stipulated in the Convention and in the Bali Action Plan, mitigation actions by developing countries are voluntary in nature. Therefore, there should be different sets of MRVs for NAMAs undertaken by developed and developing countries bearing in mind the right to development of developing countries. For developing countries,include Indonesia, MRV applies both to NAMA and to the provision on Technology, Financing and Capacity Building by Developed Countries.

Just like the debates on NAMA, the debates on MRV was politically charged. The principles of MRV was not established until a balanced and clear system was defined for the mitigation actions of both the developed and the developing countries.

After Copenhagen, the 26% pledged emission reduction was translated into a National Action Plan on Emission Reduction ("*Rencana Aksi Nasional Penurunan Emisi Gas Rumah Kaca or RAN GRK*") which details Indonesia's national and sectoral plans on how, when, and where the reduction will take place.

RAN-GRK originally was developed to elaborate on the 26% target, but along the way, Indonesia also recognized the potential of emission reduction in area/sectors that will need international support as part of the additional 15% reduction. RAN GRK was issued as Presidential Decree No. 61/2011 and currently is being translated into Provincial and District Plans. In order to be up-to-date and inclusive, RAN GRK builds on important studies undertaken by Indonesia's prominent agencies and ministries, such as Abatement Cost Curve Study (2010), Second National Communication (Ministry of Environment, 2010) and Indonesian REDD Strategy or REDDI (Ministry of Forestry, 2009).

MRV, the Art of Contribution

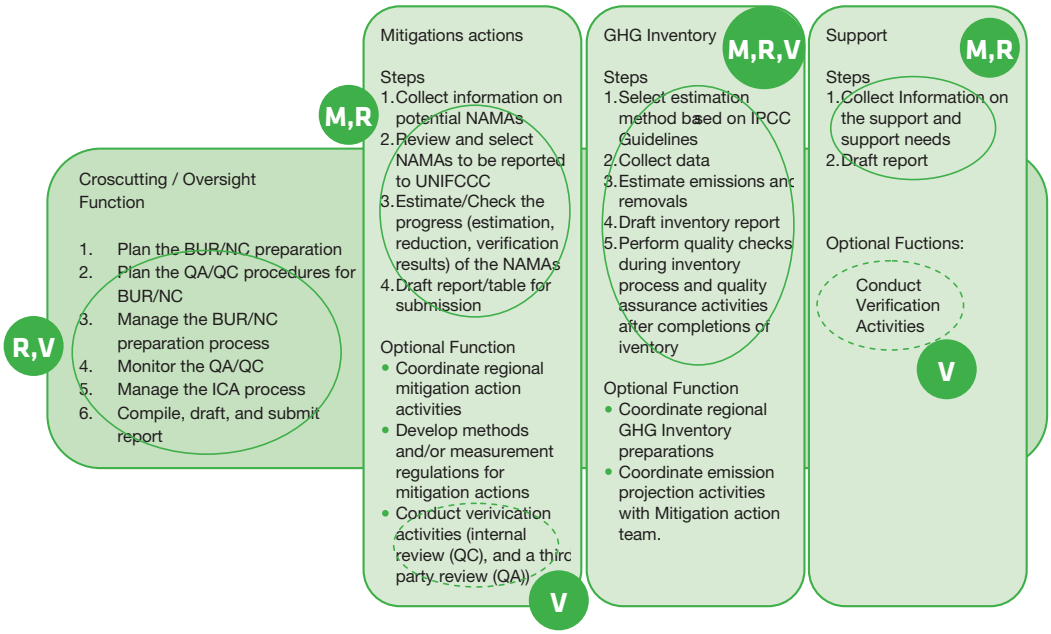
Indonesia views MRV as part of the monitoring and evaluation system to enhance action on mitigation that Parties to the UNFCCC should undertake as part of the implementation of the BAP. In efforts to improve the on-going UNFCCC systems such as compliance and national communication, it is important that MRV be based on the principles of the Convention and its Kyoto Protocol, including "common but differentiated responsibilities" and "respective capabilities." Indonesia shares the views of most developing countries that MRV for mitigation actions undertaken by developing countries should be nationally appropriate by incorporating the country's circumstances and capacities.

The debate on what modalities and procedures would be included in MRV is still a contentious issue in the UNFCCC negotiations. Indonesia made several submissions to the UNFCCC regarding this matter, particularly on how the MRV systems should be established. Essential to the MRV systems are distinctions on the Registry and Verification procedures for actions

undertaken by developed countries and developing countries. While developed countries' MRV should have the same stringent component as the compliance system for Annex 1 Parties to the Kyoto Protocol to ensure that the comparability of efforts are addressed, developing countries' MRV should be based on national capacities and therefore, capacity building should be an integral part of the system. Registry for NAMA is considered to be voluntary and verification should be done nationally but with guidelines of modalities and procedures as defined by the UNFCCC and agreed upon by all parties.

A robust MRV process which promotes transparency with respect to the commitments and actions undertaken by different countries is essential to the generation of national emissions data and the assessment of the effectiveness of country actions against international and domestic commitments and actions. The establishment of MRV systems for mitigation actions undertaken by developing countries and the international support needed for such undertakings has been the subject of debate at the highest level, both domestically and internationally: Internationally supported mitigation actions will be MRVed domestically and will also be subjected to international MRV in accordance with guidelines to be developed under the Convention; Domestically supported mitigation actions, on the other hand, will be MRVed domestically, in accordance with general guidelines also to be developed under the Convention.

In 2011, two important regulations relevant to MRV initiatives were promulgated in Indonesia. These are 1) Presidential Regulation No. 61/2011 for National Mitigation Actions (RAN GRK); and 2) Presidential Regulation No. 71/2011 for National GHG Inventories.



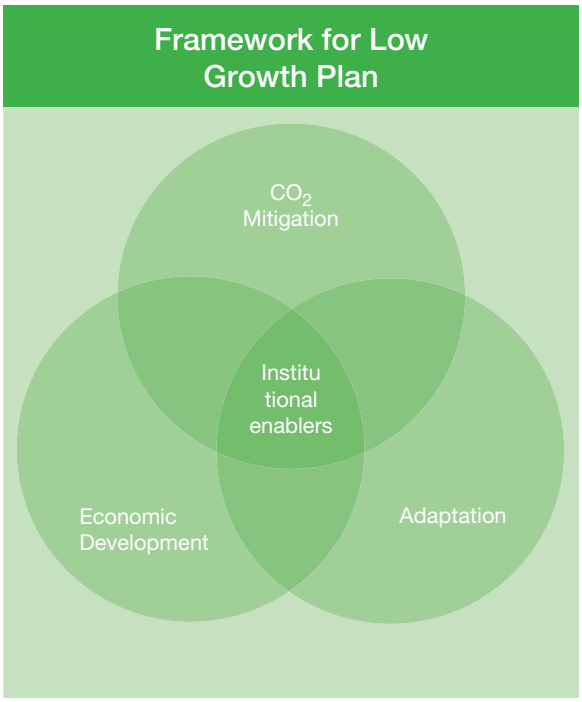
M and R can be ensured by agency in charge of NAMA, inventory, or support. V can also be undertaken by that agency or by a separate oversight agency

Low-Carbon Development: Integrating Mitigation and Sustainable Development

Indonesia is of the view that a strategy built on a paradigm of development growth that minimizes low carbon emissions or embraces "low carbon development policies" would be effective in tackling climate change.

Maintaining a low carbon emission strategy does not mean adopting a position antagonistic to economic development. A country only needs to adopt what is called a triple track strategy: pro-job, pro-growth, and pro-poor under the umbrella of clean environmental conditions. Countries such as Indonesia need to maintain a balance between actions to reduce potential emission (mitigation) and measures to adapt the changing environment (adaptation). A master plan has to be drawn as to what different stakeholders in Indonesia can do to reduce emissions and assist the country in reaching its mitigation goals.

The low-carbon growth plan is the first step in a long process to create sustainable prosperity. It has three core elements: CO_2 mitigation, economic development and institutional enablers. The CO_2 mitigation element aims to estimate the size of current and future emissions; assess the technical abatement potential and the feasibility of abatement levers; and develop an action plan to capture prioritized abatement opportunities. The element of economic development aims to analyze the country's economic strengths and weaknesses, prioritize growth opportunities based on impact (including economic and environmental impact) and develop an action plan to capture priority growth opportunities. The third component, institutional enablers, aims to develop a strategy for critical enablers that will underpin the success of the low-carbon growth strategy, e.g., new institutions, monitoring and evaluation, financial distribution mechanisms, and spatial planning.



Campaign loved the environment, especially for young children as part of the climate change campaign in Indonesia. Photo by Kadek Nata Wirajaya/Denpasar.

Parallel to the development of the GHG mitigation study, selected Indonesian provincial and district governments to help them develop green growth strategies. Three provinces, namely, Jambi, Central Kalimantan, and East Kalimantan were keen to identify green growth opportunities that can boost their economic development while cutting carbon emissions.

Indonesia's GHG emission profile is unique because it is heavily dominated by emissions from forest and peatlands which can be reduced through a more efficient use of the land. Stopping the use of fire as a tool for land clearing, improving logging practices so less timber is left to rot and goes to waste, reforestation of areas degraded by unsustainable logging practices, rehabilitation of previously opened peatlands are but some of the examples of high-impact GHG mitigation initiatives in the green growth strategies. They share the principle that their long-term economic value greatly outweighs the benefits from continuing current unsustainable and high GHG emitting activities. For example, East Kalimantan can increase its GDP growth from a business-as-usual rate of 3% per annum to 5% per annum without increasing emissions by moving to higher value-added activities and promoting less carbon-intensive sectors.

Indonesia is among the first large developing countries that has committed itself to making large absolute cuts in its GHG emissions. Realizing the vital role Indonesia can play in combating global climate change, the international community has offered its support. An important first step was taken in May 2010 with the establishment of a REDD+ Partnership between Indonesia and Norway, in which Norway pledged US$1 billion towards REDD+ readiness programs in Indonesia in return for verified emissions reductions. The Partnership will provide additional capital for a range of investments which could include microfinance programs for local community sustainable development projects, low-cost loans to help plantation crop smallholders increase their yields, and incentives for palm oil growers to use degraded lands for new plantations.

Some ideas that can be appliedin Low Carbon Development are as follows:

- An opportunity to drive growth while mitigating GHG emission reduction
- The importance of low carbon growth framework in the process to revise spatial plans at provincial and district levels
- Inclusion or allowance of a more efficient use of non-forest lands within and without the “kawasan hutan” (non forest areas) in land titling.
- Connect or reconcile spatial and economic development plans to achieve emission reduction and economic development targets Community Engagement
- Create a culture of openness in tackling the issues and mitigation options
- Build a platform of participation through overarching approach:(1) policy dialogue, tools, community engagement and public awareness
- Encourage dialogue and continual improvement

Indonesia, which has approximately 132 million hectares of forest lands is, therefore, expected by international community to play a significant role in stabilizing the climate by utilizing its forests in a sustainable manner.

A mangrove in Kubu Raya, West Kalimantan. Central Kalimantan province became one of the pilot implementation of REDD + schemes for sustainable forest management.
Photo by Sigit Deni Sasmito/ CIFOR

Chapter 4

LULUCF and REDD+

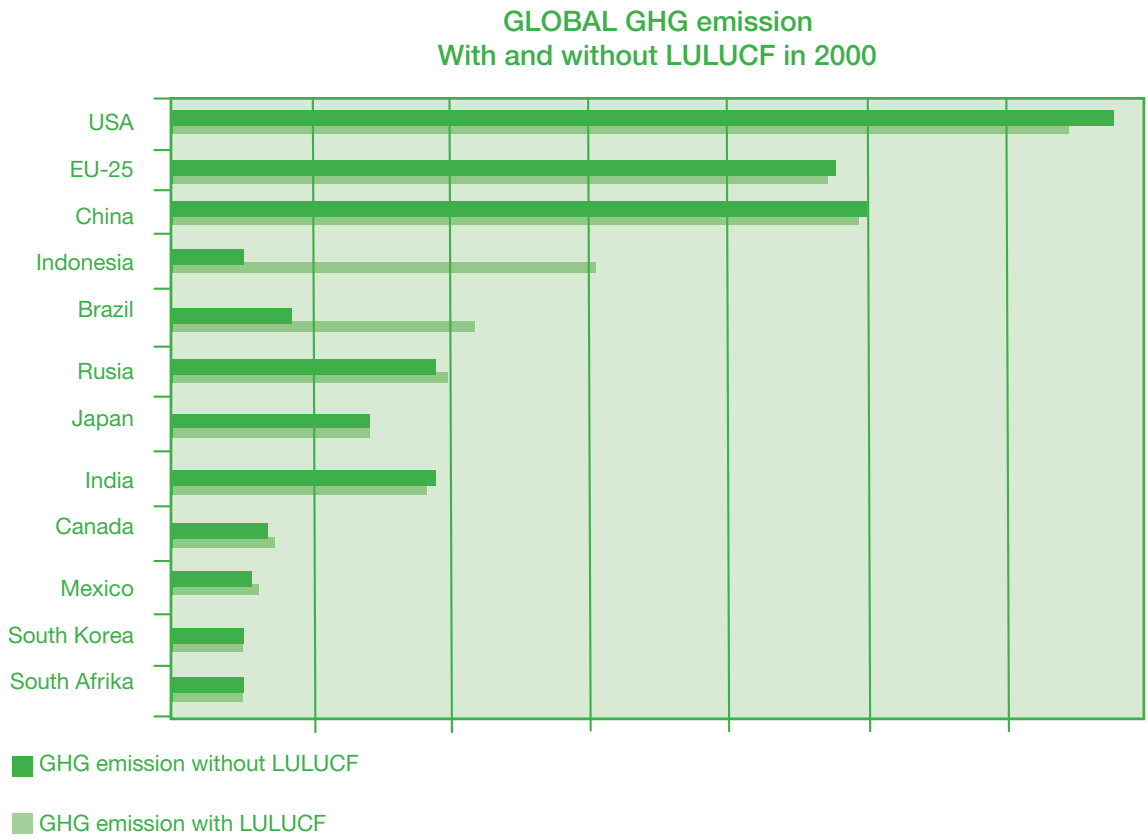
Doddy Sukadri
Agus Purnomo
Eka Melisa

The Intergovernmental Panel on Climate Change (IPCC) divides the word “land uses” into six categories, in which each of its functions keeps changing overtime. Because of its dynamic changes, it is called as Land-use, Land Use Change and Forestry (LULUCF). The six categories of LULUCF are forest land, cropland, grassland, wetland, settlement, and other lands. Pedroni (2007) explained the theory of REDD and REDD Plus when the forest no longer meet its function as carbon sink at a certain point in time, then the land use function will change to one of the five remaining categories.

Nicolas Stern, a well-known economist from UK, stated in his 2006 report that about 17 to 20 percent of the world GHG emission is a result of deforestation and forest degradation. Of this number, about 75 percent originates from tropical forest countries. Brazil, Indonesia, and Democratic Republic of the Congo are the three largest tropical countries in the world.

Indonesia, which has approximately 132 million hectares of forest lands is, therefore, expected by international community to play a significant role in stabilizing the climate by utilizing its forests in a sustainable manner.

From the global perspective, LULUCF also contributes significantly to global emission. The following figure explains the situation:



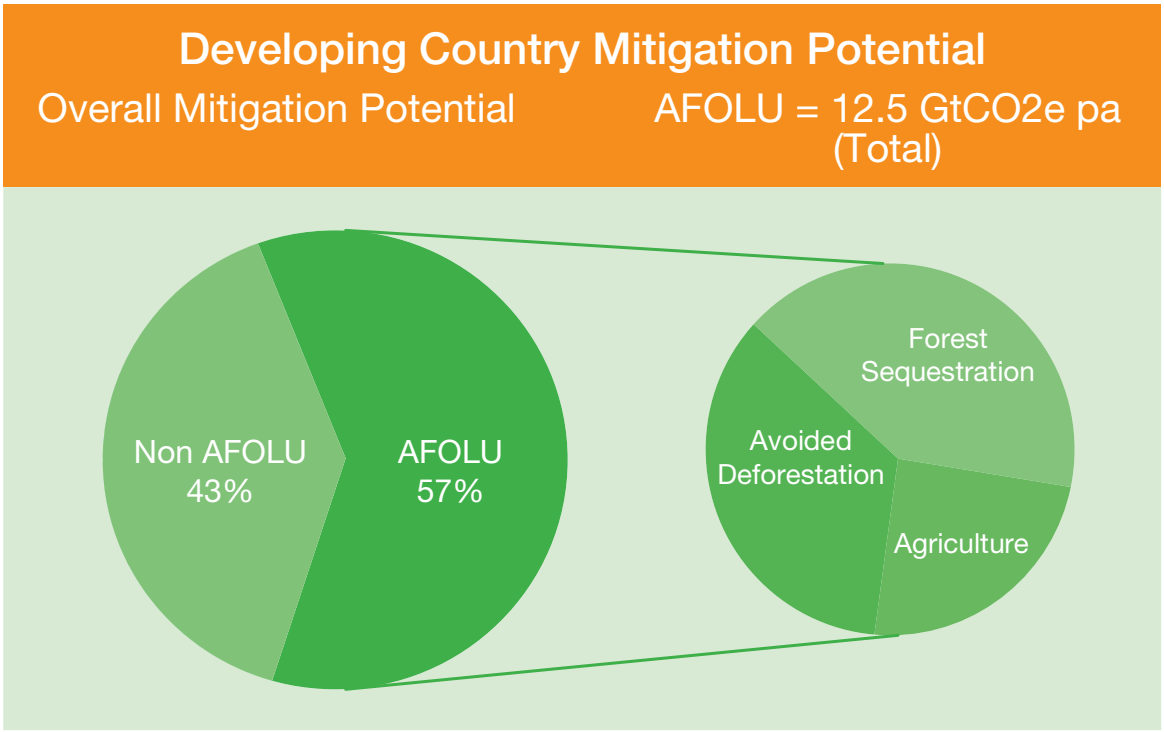
Apparently, LULUCF's contribution to GHG emission is more than double compared to non-LULUCF emission sources. This is particularly true for developing countries like Indonesia and Brazil. The main reason is due to development needs which require forest lands to be converted into agricultural lands, mining areas, settlement, and other land uses.

LULUCF has been heavily discussed by the Ad-hoc Working Group on Further Commitments For Annex-1 Parties under the Kyoto Protocol (AWG-KP) throughout the climate debates but little progress has been made so far. The discussion on LULUCF focused mainly on issues relating to rules and modalities, including definitions of forest, deforestation, reforestation, natural disturbances, harvested wood products, and force majeure. All of the definitions reflect the intentions of Annex-1 parties leading to accounting of emission reduction. Non-Annex-1 parties, on the other hand, are concerned with complexity of methodology of accounting such as determination of Reference Emission Level (REL), consistency, and transparency.

Developed nations receive more advantages from LULUCF activities compared to Non-Annex-1 parties. For Annex-1 countries, LULUCF is just like a "low hanging fruit" if their main target is

emission reduction. As LULUCF activities are included in carbon accounting, part of the Annex-1 countries' responsibility is reduced. This is reasonable since forest lands in Annex-1 countries have generally been managed for a longer time compared to Non Annex-1 countries thus, resulting in significant carbon removal by sink. According to CAN (2010), promotion of forest management accounting by developed countries would result in a 5% total emission reduction mandatory in the first commitment period, which is approximately 400 CO_2e per year.

For Non Annex-1 parties, however, LULUCF provides a greater opportunity to reduce their own emissions. There are three major areas, according to Aston (2010), which have potential for reducing emissions, i.e., avoiding deforestation, low-carbon agriculture practice, and enhancing carbon sequestration. The following figure describes these activities:



Source: Aston, R (2009)

Over half of developing world mitigation potential lies within Agriculture, Forestry and Other Land Use (AFOLU)-related activities. Therefore, AFOLU-related activities need a comprehensive framework that includes REDD Plus and its inclusion in the overall mitigation efforts in developing countries such as Indonesia.

The Status and Role of Indonesia's Forest and Peat in Emission Reduction

In the context of climate change, forests have three main functions, i.e., 1) as carbon sequestered or carbon removal, 2) carbon reservoir, storage or sink, and 3) carbon emitter that releaseCO_2 into the atmosphere. The capacity of forest in absorbing CO_2 would largely depend on the bio-geophysical characteristics of the forest, such as variability of tree species, density, and soil and organic matter content. But in general, forests dominated by young plants generally, have higher capacity in absorbing carbon. On the contrary, overmature forests release carbon when decaying process takes place or when abandoned or felled trees start to rot on the ground. In terms of biomass, tree stands could restore more carbon if there is no human intervention. But when the forest is cleared up and converted into other uses of lands or when forest fire takes place, a significant amount of emission is released. .

Forest lands, according to the Ministry of Forestry (2010), occupies about 71% of total land mass of Indonesia while ,non-forest areas which are called Areal Penggunaan Lain (APL) or Kawasan Budidaya Non-Kehutanan (KBNK) comprise the 29%. Such information and their current status are detailed in the following table:

Current status of forest coverage

FOREST COVERAGE	FOREST AREA		NON-FOREST AREA		TOTAL	
	Extend (ha)	%	Extend (ha)	%	Area (ha)	%
FORESTED	92.328 (Virgin=43.801; LOA=48.526)	49%	8.412	4%	100.740	54%
UNFORESTED	40.071	21%	46.976	25%	87.047	46%
TOTAL	132.399	71%	55.388	29%	187.787	100%

Source: Landsat Imagery 7ETM+ 2005/2006 (217 scenes)

Out of approximately 132 million hectares or 71% of designated forest area in Indonesia, about 40 million hectares is not forested. The rest of the designated forest area is virgin and secondary or logged over forest areas (LOA). The LOA which accounts for 48.5 million hectares is presently under the forest concession permits. There is, so far, no reliable information on how much of the LOA is in

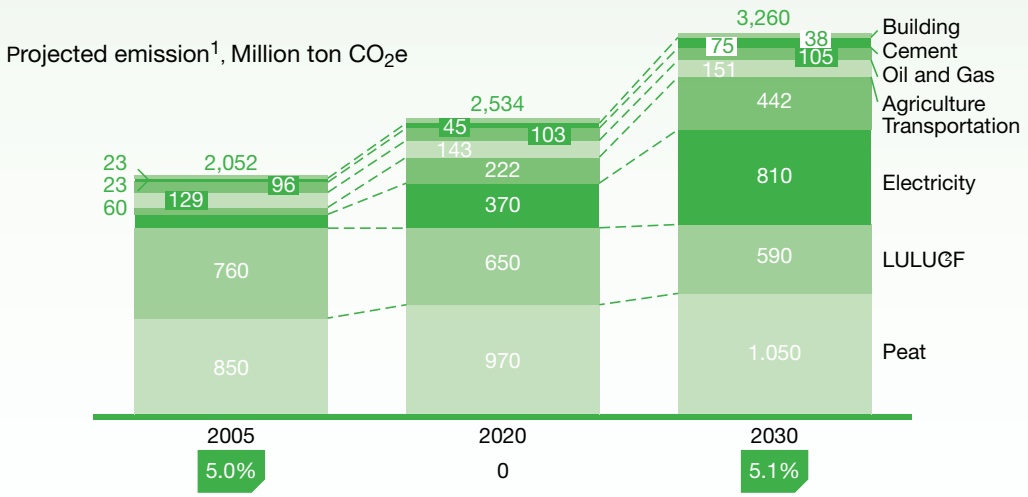
good condition,and how much is in poor or medium quality conditions. This information is actually required to estimate and project the capacity of LOA in terms of carbon removal, carbon sink, as well as carbon emission.

Forest cover can be found not only within forest areas,but also within non-forest areas which are mostly privately-owned. About eight million hectares of forest cover can be found within non-forest areas If this number is added to the forest lands,and assuming 25 percent of LOA is in good shape, Indonesia would have approximately 65 million hectares of forest cover. This figure becomes important when the main reason for keeping the forest. is to maintain a net carbon sink is.

As discussed earlier, forestry and peat are, presently, the two major sources of Indonesian carbon emissions. With 26% emission reduction targeted in 2020,it is estimated that 54% of the total reduction will come from forestry-related activities. These could be realized in the form of mitigation and adaptation efforts. Improvement of silvicultural practices, such as reducing impact logging, intensive silviculture, and fire protection are some of the more realistic and pragmatic actions the government can take. Aside from this, enforcement of forestry laws and good governance should form part of the important policy measures.

A study undertaken by (2010) concludes that in 2005, Indonesia accounted to significant amount of CO_2 emission in 2020 and 2030. The following figure shows detail of the analysis.

Indonesia emission projected to increase from 2.1 to 3.3 $GtCO_2e$ between 2005 and 2030

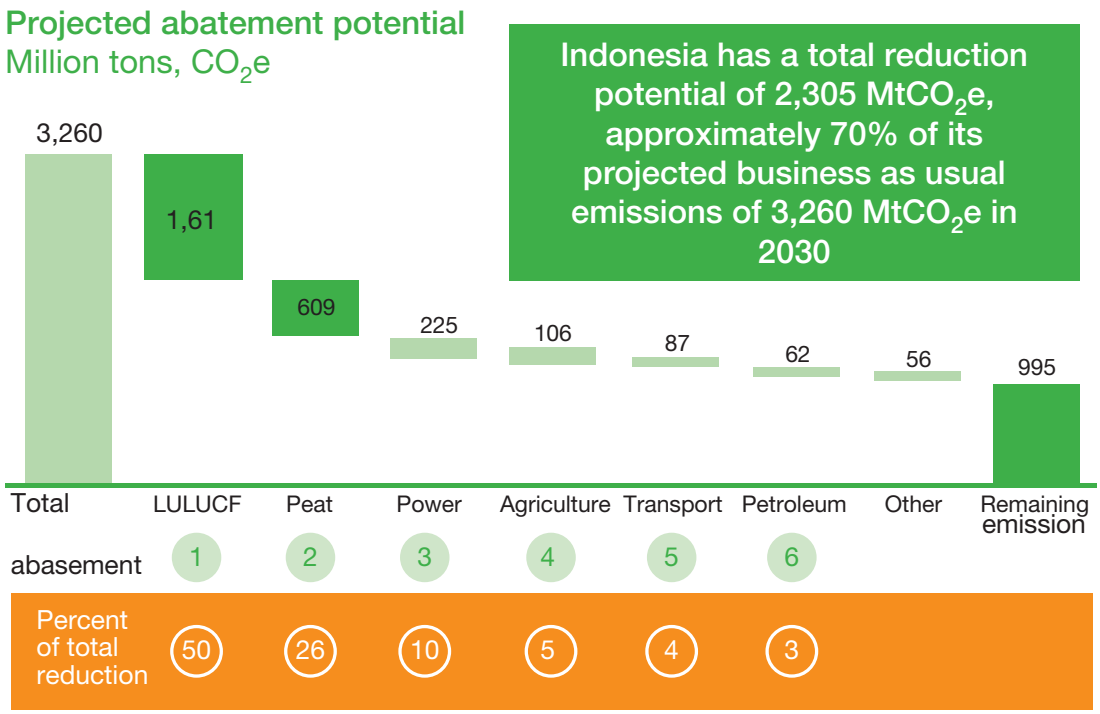


1. Only sector direct emission are included
2. LULUCF emission based on clean emission approximation, including absorbtion

Source: Indonesia Cost Curve Abatement, DNPI (2010)

From the figure it is clear that Land-use, Land-use Change and Forestry (LULUCF) and peat are the most significant sources of carbon emissions and, at the same time, could potentially be a carbon sink, if appropriate measures are undertaken. The study also shows that Indonesia has a potential to reduce its GHG emissions by 2.3 Giga-ton by 2030, representing a reduction of 46% from 2005 levels. Such reduction would equal to 7% of the total global requirement to prevent global warming to increase to more than two degrees centigrade. However, according to the IPCC, with the Business as Usual (BAU) practices, LULUCF and peat would still be the main sources of the country's emissions. It would contribute more than 50 percent of the emissions in 2020 and approximately 50 percent in 2030. This means that about 2.5 percent of the world GHG emissions will be emitted from LULUCF and peat areas in Indonesia.

The potential to reduce our emissions is high



Emission reduction would be more significant if it takes place in peat areas. According to a research undertaken by Hokaido University in Central Kalimantan, the amount of carbon stored in peat areas is approximately 15 to 20 times of the amount of carbon in mineral soil (Osaki et al, 2011). The Indonesia National Council on Climate Change (DNPI) reports that of the 21 million hectares of peatlands in the country, 18 million hectares are located in forest areas while three million hectares are in non-forest areas usually under the auspices of local communities or privately-owned.

Indonesia's peatland story line:

- Globally, peat covers only 2.7% of land area but it stores approximately 30% of terrestrial carbon. Indonesia's tropical peatland occupies only 5% of the global peatland area but it contributes more than 50% of total global emissions originating from tropical peatlands.
- Peatlands are threatened all over the world by drainage and fires but in Indonesia. More than 300,000 hectares of are being degraded annually, resulting in a total area of approximately 10 million hectares of already degraded peat.
- Emissions from Indonesia's peat is caused mainly by decomposition following drainage and peat fires. The emission caused by decomposition is about 600 million tons of CO_2, and from the fire about 650million tons of CO_2 per year. Deforestation due to conversion to other land uses and degradation through timber extraction has resulted in emissions of about 40 and 45 million tons of CO_2, respectively.
- Drivers of peat conversion and degradation are many, ranging from the needs for development and land use change to improper policies such as the mega-rice project, and lack of knowledge and awareness.
- Stopping conversion of peatland to agricultural use would be an achievement for the government and would draw a lot of attention and recognition by other countries. However, it may trigger protests from the business sector, such as palm oil and pulpwood producers, and would be of little interest to small scale farmers.
- Water management has a high feasibility because it would not only result in the emission reduction, but also a lower risk plantation and concession owners due to smaller number of fire occurrence in the dry season and less flooding in the reany season.

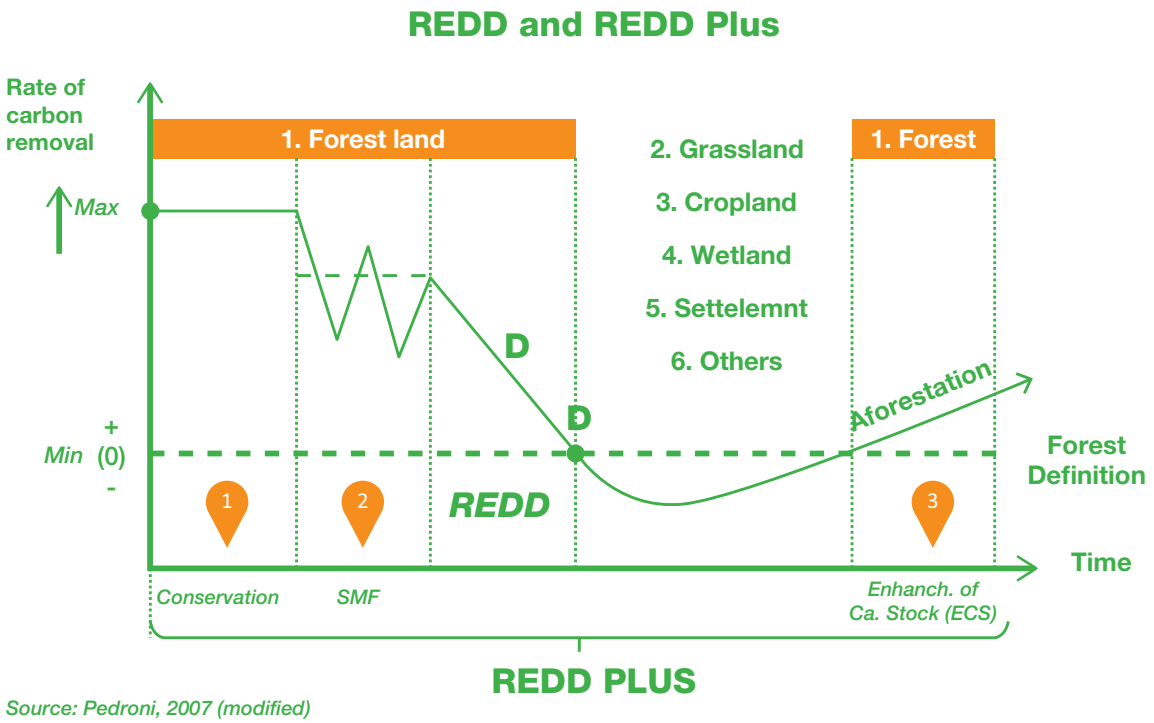
Top 5 mitigation measures and their economic benefits

		Description	Abatement, 2030
1	Reduce Deforestation	Use degreded land Increase agricultural productivity Engage in carbon trading to get credit for forest conservation	570 $MtCO_2e$
2	Zero Burning	Prohibiting fire as a tool for land preparation Establish fire brigades Ensure strong enforcement and large penalties for rule violations	310 $MtCO_2e$
3	Reduce peat decomposition	Peatland rehabilitation Re-wetting of peatland Water management	250 $MtCO_2e$
4	Sustainable Forest Mgmt	Reduced impact logging Silvicultural management	240 $MtCO_2e$
5	Reforestation	Reforest and conserve "slightly critical land" that has been partially degraded	150 $MtCO_2e$

REDD and REDD Plus

An incentive mechanism called REDD (Reducing Emision from Deforestation and Forest Degradation) is perceived to be a realistic way to reduce global carbon emission and thus, increase carbon removal. REDD which is believed by many to reduce forest degradation in many developing countries,was supported by both developed and developing nations. This is due to the fact that REDD is viewed as the easiest and cheapest way to reduce global emissions.

The REDD scheme which was, initially, RED (Reducing Emission from Deforestation) only was first proposed by Papua New Guinea and Costa Rica in 2005. The proposal was supported by many countries. The REDD scheme, basically, grants opportunities to developing countries to reduce their emissions through various forestry activities. REDD was officially accepted during the 13th Conference of Parties in 2007 in Bali. REDD became REDD Plus, with the addition of three areas, i.e., avoiding deforestation and forest degradation, increasing the role and function of forest conservation in increasing the capacity of carbon storage/sink, sustainable management of forest and enhancing the forest carbon stock. Pedroni (2007) explained the concept of REDD Plus through the following figure:



Source: Pedroni, 2007 (modified)

Pedroni, furthermore, clarified that when a forest is no longer capable of removing carbon at a certain point in time, then the land function will change to be one of the five other land categories. Looking at the figure, the Enhanchement of Carbon Stock (ECS), will be complemented by “one billion trees plantation” program launched by the Indonesian President in 2010. Similar activities in Indonesia are the GERHAN (Land Rehabilitation Program), “one man, one tree” program, community forest plantation (HTR), and the privately-owned forest development (HR). In the global context, these activities will help stabilize the micro- climate, and make the forest industry sustainable.

MRV for REDD

IPCC guidelines require the measurement and estimation of two variables to calculate total forest carbon: forest area change and carbon stock change estimation or emission factors (carbon density). These should be based on a common methodology, such as use of remote sensing and ground-based methods. Reference Emissions or Reference Emission Levels (RE/REL) need to be established and verified, taking national circumstances into account. MRV should be based on robust national forest inventories,existing or developed, and subject to periodic external review.

The DNPI, in cooperation with Hokaido University, is now developing a comprehensive MRV system for Indonesia. The system is intended to cover three layers of measurements, i.e., ground-based, air-bone, and satellite approaches. It would also involve a robust measurement for peatland emissions. Hokaido University was chosen because of its experience working in emission measurement for the peatland area in Central Kalimantan for more than 13 years. As discussed earlier, peatland MRV would be very critical for Indonesia in the coming years considering its huge potential for carbon stock as well as emission. However, there are still a lot of MRV-related things that Indonesia need to pay attention to. For instance, how to address forest degradation, how to do an MRV for forest conversion,. the level of accuracy of compliance with UNFCCC requirements, and whether a set of simple indicators or verifiable proxies can be used to assess the performance of REDD action in early stages. But the most critical one is the involvement of local stakeholders in MRV for REDD to help verify permanence. Permanence refers to the fact that carbon stored in trees is only temporarily stored because, eventually, they all die and release the carbon back to the atmosphere.

REDD can have land-use impacts that go beyond forests and the drivers of deforestation will have an effect on national policies. Seventy percent of deforestation in Indonesia is taking place in designated forest areas while thirty percent is occurring in privately owned lands. The development of REDD processes needs to account for and make provisions for an eventual move to broader land use frameworks. Measuring additionality, leakage, and permanence from REDD activities, therefore, should be carried out from landscape perspective, i.e., not only in designated forest area but in privately-owned forest lands as well. The International Center for Research in Agro-forestry (ICRAF)

introduced the concept of REALU (Reducing Emission from All Land Uses). According to this concept, REDD is but a part of the mitigation accounted for from land-based emission reduction activities. Aside from REDD, there are three other mitigation efforts that should be taken into account, i.e., RE-PEAT (Reducing Emission from Peat Area), RESTOCK (Restocking the Emission through Various Land-based Utilization), and REAGG (Reducing Emission from Agriculture GHG Gases). All of these mitigation efforts compose the four main pillars of emission reduction from land-based activities as shown in the following figure:

Indonesia subscribes to national accounting and sub-national implementation for its MRV system. Frameworks for the MRV are being developed at the national level but will require some form of international oversight. A great deal of technical expertise has been developed around the various elements of MRV but more is needed. Existing MRV regimes provide opportunities for lessons learned but also present some streamlining and coordination issues. Due to the complexities of MRV for REDD and as part of its partnership with Norway, Indonesia is now in the process of establishing the MRV Agency. The agency will be the clearing house for REDD data in the future. Existing line ministries and agencies will be part of the task force to be created for this purpose. The agency will be the "onestop shop" for REDD-MRV-related matters in the future.

The LoI on REDD Plus with Norway

The signing of LoI reflects a high commitment on the the part of the government to seriously prevent deforestation and forest degradation in Indonesia. Throughout the history of Indonesia, this is the first time that forestry has been placed under the direct supervision of the President. This demonstrates the strong commitment of the government to arrest forest degradation and to protect the environment. In addition, it embodies Indonesia's direct contribution to global climate change mitigation efforts. It requires the active participation and coordination among key stakeholders including the government, NGOs, private sector, and scientists to prevent social unrest and economic or political risks in the future.

REDD, however, is not a "silver bullet". REDD implementation must be supported by broader sustainable development strategies at the national level. While a number of its challenges has yet to be addressed, REDD remains an innovative and constructive result of international climate change negotiations and is being translated into real action on the ground.

REDD has the potential to produce economic, environmental and social benefits. However, governance and capacity building challenges must both be addressed to ensure that REDD activities result in "development dividend". Lessons learned at the national level can provide useful guidance in this regard and can help identify gaps between policy and action. There is a need to establish minimum standards for ensuring safeguards and co-benefits at the national level. Its

safeguards and co-benefits and the institutional structures needed to support them must be further explored while being mindful of the need not to layer so many things on REDD that its implementation becomes overly difficult. This is where international guidance comes in but the ”pressure point” for addressing co-benefits and safeguards should remain at the country level.

REDD financing comes into play in two key ways: 1) financial benefits from REDD activities need to be managed and distributed; and 2) financial support is needed to ensure robust implementation of REDD. The role of markets remains a contentious issue that is not likely to see resolution in the near term though a mixed approach which includes both market and non-market elements is considered optimal for Indonesia.

For Indonesia, REDD Plus is now becoming the banner program for forestry-related issues after the signing of LoI. It invites compliments and criticisms from all levels of stakeholders. Some critics argue that LoI is nothing more than a new version of ecological colonialism. Their primary reason is because, under the program, Indonesia is no longer free to utilize its own forest resources and that means a limitation on national sovereignty. The supporters of the program, on the other hand, are of the view that the program presents an opportunity for the country to reform its forestry institutional structure, clean up forest governance, and cut procedural red-tape. Neither the supporters nor the critics of the program have proven the soundness of their arguments. Only time can tell who between them is right.

The Indonesia National Council on Climate Change (DNPI) pointed out in 2010 that Indonesia should utilize their lands in a more efficient manner to reduce carbon emission and to increase economic growth. Reducing emission from deforestation and establishing forestry-related business and estate crops within abandoned and degraded lands would increase emission reduction capacity up to 30% by 2020. Furthermore, by preventing fire occurrence and decomposition as well as by

Certified timber in logs pond at West Kutai, East Kalimantan. Timber certification is a mechanism for ensuring sustainable forest management.
Photo by Michael Padmanaba/CIFOR

managing water level on peatland areas, an additional emission reduction of about 13% would be obtained.

Maintaining forest and tree plantations for increasing carbon removal and for conservation and other protection purposes would also help Indonesia's REDD program. According to Verchot et. al. (2010), forest plantation establishments on degraded and abandoned lands covered by bushes could potentially increase carbon removal capacity up to approximately 435 million tons over a 50-year period.

Development of plantation forests for meeting the needs of sustainable wood-based industries in Indonesia is also critical. It would help in pushing the economic growth of the country and in increasing the people's welfare. It may not help reduce the emission but it will protect the remaining natural forests from being converted into other uses of lands such as mining, oil palm, etc. This shows that the most efficient way to increase economic growth, on one hand, and at the same time, reduce emission is by establishing plantation forests in degraded lands. Wood-based as well as pulp and paper industries can be supplied with wood from plantation forests established in degraded lands.

From the discussion above, we can say that the REDD scheme in Indonesia is part of the low carbon economic path which the country wishes to pursue. Therefore, all forestryrelated businesses and forest land utilization, including oil palm development, agricultural crops, etc should be carefully designed and planned so that they remain consistent with the low carbon economic program. However, all of these should be within the framework of increasing the country's production capacity. It would be naïve to view REDD as a bottle neck for Indonesia's economic growth. On the contrary, it should be viewed as something that will enhance forestry-related activities in Indonesia.

Addressing the Safeguards

The inclusion of safeguards under REDD has been hotly debated recently. Safeguards imply policies and procedures aimed at addressing both direct and indirect impacts on social and environmental integrity. REDD is focused on ground practices and thus, involve local stakeholders and environmental issues. The safeguards cover a range of issues including forest governance, transparency, respect for indigenous people and local communities, conservation of natural forests and biodiversity, permanence, and leakage. Policies and mechanisms to address the safeguards, however, have not yet been fully developed so far. Guidance for the safeguards, therefore, will be one of the Subsidiary Body for Scientific and Technological Advice (SBSTA) working agenda over the upcoming climate talks.

Indonesia's position on the safeguard issue is clear. The country supports the inclusion of safeguards into the REDD scheme. Indonesia is of the view that safeguards will be of utmost

importance when REDD comes into the implementation stage. As discussed earlier, REDD involves on the ground practices, and therefore, placing local community and local governance in the front line of REDD implementation would be critical. In this respect, it is fundamental that decision makers shift their mind set so that the local people will be the "subject" rather than the "object" of REDD implementation.

The main issues related to REDD implementation are land tenure, rights of indigenous people, benefit sharing, and prior and informed consent (PIC). The problem with Indonesia's land tenure system is that the existing laws and regulation do not accommodate the interest of local people; and that there is no clear boundary between "ownership" and "bundle of rights" to access the land. The laws say that all forest and natural resources inside the stateowned forest belong to the government while local community is of the view that the forest has been owned by their ancestors long before the law was formulated. The differences in perspective between the law and local customs lead to uncertainties and create long standing conflicts.

Although Indonesia respects the term "indigenous peoples" used by the global community to refer to communities, Indonesia does not subscribe to the term. Indonesia considers all peoples in its country as indigenous. They come from about 300 tribes and speak in more than 350 different languages. Based on Indonesia's law, each of these people is treated equally and has equal rights and responsibilities. The government takes care of the poor and marginal communities and endeavors to empower them socially and economically. The government also respects local wisdoms, cultures and ways of life, particularly those that are dependent on forest lands and resources. Therefore, Indonesia is already practicing such safeguards as local community participation, benefit sharing schemes, and PIC under the REDD Plus mechanism.

The Durban (COP-17) decision on safeguards is clear. It calls for a system to provide information on how safeguards are being addressed and respected in each country. Long before the safeguards were enforced under the REDD Plus, Indonesia has been implementing a policy on social and environmental integration. The policy, called AMDAL or Environmental Impact Assessment (EIA), has been in place for several years. The AMDAL requires that for any activity related to utilization of natural resources, a comprehensive asessment on social, economic, as well as environmental impacts that would be caused by the implementation of the activity will have to be conducted. Such assessment needs to be reviewed to look at its strong and weak points, and in the end to make it work. The following are recognized as the strong points of the AMDAL. Firstly, AMDAL has been an important part of planning integration so that it cannot be separated from the entire development system. Secondly, The AMDAL has been undertaken through a long participatory process which involves the central and local governments, private sector, local community, and the rest of key stakeholders. Thirdly, AMDAL requires an environmental auditing process which requires the project to undergo tight monitoring and evaluation. The weakness of the AMDAL lies in its weak enforcement.

Climate change has been an impetus for the birth of many new initiatives and institutions in Indonesia, including those related to financing.

A farmer are watching their fields at Tanah Datar, West Sumatra. Farmers become vulnerable communities to climate change impacts.
Photo by Suzanty Sitorus/DNPI

Chapter 5

Using the Benefits of Climate Finance for Lasting Reforms

Suzanty Sitorus

Introduction

Indonesia is bearing the brunt of climate change which threatens the nation's development and survival. In a recent survey for provincial vulnerability assessment study, farmers and fisherfolks in far-flung villages of North Sumatera mentioned climate change as a major threat to their livelihoods.9 Changing rainfall pattern and more frequent storms have also been reported in other islands of Indonesia, including Java and Bali, the country's centersof agriculture and tourism, respectively. With increasing proofs of the adverse impacts of climate change being felt everyday and by everyone in the archipelago, Indonesians, by and large, have subscribed to the notion that climate change is an issue of development and survival, not merely of environment.

Over the last five years, the national government has increased the budget allocation to help the poor deal with climate change problems and reduce the country's greenhouse gas emissions predominantly in the forestry and peatland, energy and transportation, industry, agricultural and wastesectors. Inasmuch as the country is still grappling with poverty and basic needs, the government has turned to international partners for support to supplement its climate change financial needs.[10]

The strategy of the Indonesian government in dealing with climate finance has been shaped by at least threefactors: the

9 DNPI, 2010

10 More than 30 million of Indonesia's population still live below the poverty line.

fact that Indonesia is vulnerable to the impacts of climate change and the fact that it is home to a sizeable forest which contributesboth to the world's carbon sink and emission. Other factor is the projected increase in energy related emissions due to the growth of economy and population. The same factors, more or less, have also influenced the way in which international partners,both public and private, have lent their support to the country.

This chapter looks at the trajectory-including issues and lessons learned-of climate finance in Indonesia. It discusses the link between climate change and development finance; how the country's institutions and financial authorities evolved with climate reality; the remaining challenges and way forward to ensure that the benefits of climate finance are well-used; and innovative practices from which other developing countries may learn.

Climate Change Finance: Terminology

In general terms, climate change finance refers to financial resources that are mobilised to support efforts of mitigating climate change and adapting to its adverse impacts. In domestic public finance context, the meaning of this term is more straightforward: the money that is allocated and spent by the government on activities related to climate change. Incentives, fiscal and non-fiscal, and subsidies provided to support such activities are regarded by the Government of Indonesia (GOI) as part of public fund allocation.

In relation to international climate change finance, the term describes the flow of financial resources and technology from developed countries as part of their commitment (traditionally framed under the UNFCCC "common but differentiated responsibility and respective capabilities" principle) to help developing countries meet their needs arising from climate challenges caused by historical emissions of developed countries.Based on its purpose, climate change finance can be divided between finance for mitigation and finance for adaptation with other purposes such as capacity building and technology transfer regarded as cutting across the two main objectives. In reality, there are challenges in making such distinctions and also in monitoring, reporting and verification (MRV) of climate change finance, both for domestic and international sources. For instance, the development of climate policy and governance frameworks is often intended to support both mitigation and adaptation. This situation is not unique to Indonesia. International organizations and think-tank have delved into this matter and proposed marker systems. Relevant government entities have studied the proposals but up to now have not incorporated the new approach into their existing system.

Indonesian analysts and policy makers, as the case in most developing countries, emphasize that climate change finance from developed countries is distinct from international development aid with arguments revolving around ideology and ethical questions. But how to operationalize and incorporate this standpoint into existing systems is no small job. Where does the boundary between

international climate change finance and development aid clearly lie? What kind of marking should be applied when most aid projects and programs funded by donor countries have to be labeled 'climate proof'?

The debate on climate change finance terminology also relates to financial sources, whether it is entirely public or a mix of public fund and private investment. The National Action Plan on Greenhouse Gases Emissions Reduction indicating actions to be taken merely by key government ministries has implications on responsibility of the government to allocate budget for all identified activities.[11]Where the fund will be generated, whether from normal expenditure system or through carbon tax scheme involving private sector contribution, is not covered by the plan. This does not mean that the government will prevent the private sector from providing financial resources and investment flow. The government, in general, supports the active role of the private sector in climate change actions. Emissions reduction projects performed by private companies and supported by government funds and incentives with or without Clean Development Mechanism (CDM) are examples of such support. However, bringing this to ahigherlevel, especially in relation to Nationally Appropriate Mitigation Action (NAMAs) with national baseline and MRV system, will require significant changes in the country's institutional and regulatory frameworks. On the issue of adaptation financing, climate change finance is still dominated by public fund. The following sections on adaptation financing and the private sector's role in it examine the issues in greater detail.

In terms of financial instrument, there is a widespread understanding among key players in Indonesia that climate change finance can mean both grant and loan.[12] For adaptation financing, however, Indonesia follows the "victim perspective"to which most developing countries subscribe: adaptation can only be financed in grants whereas loan for adaptation is ideologically and ethically unacceptable. For government officials who have to make decisions on allocation and use of international funds, this stance offers a vague direction. Questions are expected to arise, for instance, when loan-supported projects for infrastructure contain climate adaptation components.

For mitigation financing, the government is in favor of loan for investment in largescale projects such as geothermal plants but also facilitates emission reduction projects by small-medium enterprises with loans from international development banks.[13] The decision on international loan has been made very selectively in recent years, President SusiloBambangYudhoyonomade instructions to be careful in considering all kinds of external debt. Although the ratio of Indonesia's external debt to gross domestic product has been decreasing—from 50 percent in 2004 down to 32 percent in

11 *The plan outlines key emitting sectors and amount of CO2 to be reduced to achieve Indonesia's voluntary mitigation targets—26% with own resources and up to 41% with international support by 2020 against business-as-usual scenario.*

12 *The financial authorities and the private sector have also shared understanding on guarantee to back up large-scale projects which are also perceived risky in business term, e.g. geothermal development*

13 *Financing facilitation for emission reduction projects by small-medium enterprises has been exemplified by Ministry of Environment's programs onIndustrial Efficiency and Pollution Control (ongoing) and Emission Reduction Incentives (planned) both supported by Government of Germany's development bank (KfW).*

A boy at forest in Central Kalimantan, Ind
Photo by Achmad Ibrahim/CIFOR

2011- and is considered relatively healthy by economists, the figure remains a very sensitive issue in the context of domestic politics.

Defining Financial Needs of Climate Action

Indonesia's involvement in international forum on climate change intensified since its hosting of COP-13 in 2007. Since then there has been a strong domestic call for the country to take concrete actions and to reap benefits from international climate finance. But how much exactly does the country need to address climate change issues?

Prior to determining costs, it is important to understand the country's need to do both mitigation and adaptation. The National Development Planning Agency (Bappenas) issued the Indonesia Climate Change Sectoral Roadmap (ICCSR) just before COP-15 in Copenhagen, Denmark to outline the emerging needs and challenges which Indonesia face as a result of climate change. Nine sectors which are important to Indonesia's development were chosen as the focus of ICCSR: forestry, energy, industry, agriculture, transportation, coastal area, water, waste and health. The analysis in the document was aimed at providing input to the 5-year Medium-term Development Plan (RPJM) 2010-2014 and the subsequent national plans until 2030. The challenges in documenting the issues, e.g.,lack of scientific data, were acknowledged and consequently, ICCSR is now considered a "dynamic"document to be revised in the future.

It is a challenge to obtain precise estimate on the costs of both mitigation and adaptation in Indonesia. Apart from its geographic size, the country has an acute problem with regard to data collection and management on climate, natural resources as well as other issues. For mitigation financing needs, issues arise from the fact that the country's largest emission derives from forest and peatland—thesector that haslong grappled with methodological problems for MRV of CO_2 emissions. Furthermore, efforts to reduce emissions from forest and peatland go far beyond tree planting and land rehabilitation. For instance, Reducing Emissions from Deforestation and Forest Degradation (REDD+) entails the provision of alternative sources of income for both the communities and local governments. The range of options for economic diversification varies from region to region and may not be determined comprehensively by the national government due to the decentralized governance adopted by Indonesia in 1999. The sub-national governments, especially at the district level, have strong influence on resources management and this influence fluctuates depending on local political dynamics.

There are few in-depth studies that present estimate on the costs to do mitigation.The studies were done before the issuance of the National Action Plan on GHG Emissions Reduction which determines the key emitting sectors and the amount of emission reduction goals for each sector. A study conducted by the National Council on Climate Change (DNPI) in 2010 presents GHG abatement cost curve which shows that that under business as usual (BAU) conditions, Indonesia will emit 3.2 $gtCO_2e$ in 2030. The study further indicates that Indonesia has ample opportunities to reduce this emission to 2.3 $gtCO_2e$. The country can use this emission reduction potential as basis for a wide range of financial schemes from public and private funds, through market and non-market mechanisms. The costs of reducing emissions range from relatively low-cost activities in the forestry-peat sector of US$1 per tCO_2e to solar power development of US$80 per tCO_2e.

As elaborated earlier in the Chapter on mitigation, the 2010 DNPI study which uses cost curve analysis has received criticisms, mainly because it failed to take into account transaction costs in delivering programs and activities of mitigation in the forestry and peat sectors. However, the main objective of the study is to present an overview of the range of mitigation options based on the nation's biggest emitting sectors against the costs of the technology involved to reduce the emissions. The range of options are spread out from noregret, "low-hanging fruit" to the most difficult and expensive ones. Thus, the study does not intend to present the exact figure of mitigation cost for each sector but seeks to aid the government agencies concerned on how to prioritize their actions. Nevertheless, the study is hitherto the most cited reference on the subject. Another study conducted by the DNPI (2009) in cooperation with the UNFCCC Secretariat used the same study (in draft, 2009) to identify delivery mechanisms and financial instruments for priority mitigation actions in Indonesia. Other studies by Elson (2011) and Braithwaite and Curban (2011) have used the DNPI's Cost Curve Study as the key reference in estimating the costs of mitigation action in peat and energy sectors which includetransaction costs.

Estimating the cost of adaptation is equally a tall order. Compared to mitigation, it is more problematic methodologically. This situation occurs not only in Indonesia but also in other countries. UNFCCC (2010) concludes that five approaches that have been used to estimate the costs and benefits of adaptation in different countries have significant shortcomings related to the needs to consider socio-economic uncertainties, monetization of adaptation benefits, and distributional impacts of adaptation costs and benefits.[14] DNPI (2011) has tried out some of these approaches and identifies their issues through a case study on adaptation in agricultural sector in a district of North Sumatera. The study points out that to get a reliable estimate, efforts of adaptation costing have to be integrated with bottomup process of development planning. Meanwhile, estimates based on socio-economic indicators from government statistics can be used to provide indicative figures for local governments in developing their medium-term planning. This study is the first of its kind in Indonesia but still in need of further deliberation by providing more case studies in other sectors and or other regions.One of potential actions to fill the gap is by making use of a number of vulnerability studies that have been conducted in major islands of Indonesia by the Ministry of Environment, Agency of Meteorology, Climatology and Geophysics, DNPI and provincial governments in cooperation with international scientific organization and donor countries.[15] These studies offer recommendations on adaptation activities that should be set as priority by local governments which can accommodate the cost of adaptation within their budget. One key issue with regard to costing of adaptation needs in Indonesia is the weakness in the projection of climate change impacts, risks and exposure. Again, this situation is not uncommon among developing countries. DNPI's Adaptation Science and Policy Study (2010) identifies the gaps in the scientific basis for adaptation action and finds shortcomings of climate impact assessment and risks across all adaptation issues. This study highlights that improvement of its scientific capacity will aid the country in planning the mobilization of needed resources and in allocating the resources for the priority adaptation option.

Financing Adaptation

Financing the costs of adaptation can be divided into two: preventionand post-disaster needs. Prevention includes physical and non-physical means to reduce risks, vulnerabilities and exposure. Reducing vulnerability to climate risks involve a wide range of activities, "from addressing underlying drivers of vulnerability through poverty-reduction strategies and economic diversification, to buffering against specific climate change impacts such as by the construction of flood defences" (SEI, n.d.).This posesenormous challenge to the government not only in determining the amount of financial resources needed but also in distinguishing vulnerability reduction activities as part of

14 *The five approaches are: economic integrated assessment model analysis, computerized general equilibrium (CGE) model analysis, investment and financial flow (IFF) analysis, bottom-up impact assessments and economicappraisal methods, including cost-benefit analysis (CBA), cost-effectiveness analysis (CEA) and multi-criteria analysis (MCA).*

15 *As an example, the provincial government of West Nusa Tenggara has carried out vulnerability study aided by its local university (MataramUniversity) and Australia's CSIRO.*

Farmers in Brebes, Central Java were harvesting pakchoi vegetables. Farmers are the most vulnerable population impacts of climate change.
Photo by Suzanty Sitorus/DNPI

adaptation from those activities meant for development in general.In view of limited resources and the urgency of taking immediate action, focusing on key sectors that are central to the needs and situation of the people becomes imperative. This has been reflected in the country's Medium-Term Development Plan (2010-2014) which states that the government shall take concrete steps to adapt food and agricultural systems to climate change.

Although considered a middle-income country, food securityremains to be a pertinent issue in Indonesia's development. The issue relates not only to adequacy, but also to quality and distribution of food for almost 240 million people inhabiting a vast archipelagic area with diverse topography and climate. With a clear focus on food security for climate change adaptation, financing can then be mobilized to support sectors producing staple foods, other food crops, and animal products.The actions to take may range from physical infrastructure such as building and maintenance of irrigation systems and aquaculture production facilities, to provision of microfinance and insurance for farmers and fisherfolks to enhance their productivity and to cover losses due to extreme weather events. Similar priority setting on adaptation action and follow-up steps for its financing are also expected to be factored in the National Action Plan on Adaptation to be issued in late 2012.[16]

The growing impacts of climate change are predicted to increase Indonesia's budget for post-disaster actions. As the country is very prone to natural and human induced disasters, every year the GOI

16 *This plan, along with the National Action Plan on GHG Emissions Reduction, is replacing the 1997 National Action Plan on Climat-eChangeMitigation and Adaptation (RAN-MAPI).*

allocates large sums of money for post-disaster response. In 2012, the budget allocated amounted to Rp4 trillion (approximately US$3.8 billion).This figure excludes budget allocation for the National Agency for Disaster Management and disasterrelated programs carried out by line ministries such as the Ministry of Health, the Ministry of Public Works, etc. Of the 1,546 disasters recorded in 2011, floods top the list by almost 40 percent.[17]

Since the 1980s, the Ministry of Agriculture has considered a plan to provide for special insurance for small-holder farmers to deal with crops loss. The scheme, however, remains inexistent. The idea of index-based insurance has been brought forward as more and more erratic weather patterns cause financial damage to farmers who are already reeling from economic difficulties

The growing impacts of climate change are predicted to increase Indonesia's budget for post-disaster actions. As the country is very prone to natural and human induced disasters, every year the GOI allocates large sums of money for post-disaster response.

caused by the increasing costs of fertilizer and fuel. DNPI's study (2011) shows that insurance companies in Indonesia have great interest in developing weather index-based insurance but perceive it as economically unviable due to the following reasons: 1) problems in getting data on climate change impacts and risk exposure which will aid the insurance companies in estimating the premium for a commercial insurance scheme; and 2) lack of certainty as to government subsidy that will cover the full commercial value of index insurance.

Small Farmers and fisherfolks are among the most vulnerable groups in Indonesia. In general, they are economically vulnerable. A large part of Indonesian farmers-about 25 million in total-are landless or own only 0.25 ha of agricultural land. On the other hand, fisherfolks-3 million in total-operate with small boats and simple equipment and thus, are barred from fishing in the high seas.Any insurance scheme set up to help them, first, needs a focus and priority. In agriculture, paddy rice which the majority of Indonesian farmers work on offers an ideal ground to start. Second, the government needs to allocate public fund to subsidize the basic premium for a certain period of time to enable the private companies to provide insurance schemes which are economically viable both for themselves and the small farmers/fisherfolks.Fully commercial insurance run by private companies can only play a role with certainties regarding regulatory framework and subsidy. On the sources of subsidy, insurance companies have suggested existing mechanisms such as bonds and levy.

17 *Data is sourced from Coordinating Ministry of People's Welfare, 2012.*

In the absence of specific climate insurance scheme for farmers and fishermen, the Ministry of Agriculture and the Ministry of Marine and Fisheries have supported farmers and fisherfolks to cope with the impacts of extreme weather events. The Ministry of Agriculture has allocated funding for irrigation maintenance, research and development of droughtresistant paddy seeds; and extension services to help farmers diversify their crops.[18] Ministry of Marine and Fisheries has supported a wide range of activities to provide fisherfolks with alternative sources of livelihood in times of precarious weather, build storage facilities and improve fishing boat and tools. These activities have been partially financed through local governments.

On international financing sources from UNFCCC, Indonesia is eligible to get funds from Special Climate Change Fund and Adaptation Fund. Indonesia has sought to utilize direct access modality to get funding from Adaptation Fund. Indonesia Climate Change Trust Fund (ICCTF) has applied for accreditation to become Indonesia's national implementing entity for the Adaptation Fund. If it succeeds,ICCTF will coordinate the formulation of proposalsfor adaptation programs and later oversee implementation of a concrete adaptation program to be executed by key stakeholders in the country. From bilateral sources, Indonesia has received funding from developed countries such as Australia, Germany, Japan, United Kingdom, United States and Norway. Most of the projects are preparatory in nature such as vulnerability assessments, scientific capacity assessments, public awareness, and climate training for farmers.

Financing Mitigation

Financing for mitigation and low-carbon development is a crucial issue for Indonesia as the country has become one of the world's major emitters of carbon thanks to emissions from its forest and peat lands. Nowadays the country's emissions from energy, industry and transport sectors are relatively low compared to land-based sectors but these are expected to grow significantly along with the projected growth of Indonesia's economic development and population. Emission reduction activities in these sectors requirenot only financing but also innovations in technology. These two factors have been the subject of a number studies on mitigation financing. The studies on GHG abatement cost curve (DNPI, 2010) and technology needs assessments (DNPI and BPPT 2012; Ministry of Environment and BBPT, 2009) have become the bases in determining the types of technology, financing and incentives for the largest emitting sectors.

DNPI and the Ministry of Finance in cooperation with the World Bank (2010)—under Low Carbon Development Options Study—carried out studies to look at potential mitigation activities and incentive framework in the areas of manufacturing industry, energy, forestry and transport. These studies have been built upon through more detailed studies by the Ministry of Finance, with a focus

18 *Building and rehabilitation of major irrigation systems are the responsibility of the Ministry of Public Works which has also allocated funding annually to sustain the country's food security.*

on public expenditure, for instance on land-based sectors (2012).[19]

Because of its huge potential to help reduce global emissions from land based sectors, Indonesia has become the center of attention of developed countries that have interest in financing Reducing Emissions from Deforestation and Forest Degradation (REDD+) in developing countries. Indonesia has received funding from seven major donor countries: Australia, Finland, Germany, Japan, Norway, UK, and USA. Indonesia has also received commitmentsfor funding from multilateral funds related to REDD+: UN-REDD+, Forest Investment Program and Forest Carbon Partnership Facility.[20]

Most of the REDD+ funds committed to Indonesia is targeted to support Indonesia's eadiness and pilot demonstration activities. Commitment of financing under Letter of Intent between the Governments of Norway and Indonesia is an exception; of the amount committed, US$1 billion, US$200million worth of grant isprovided to strengthen institutional and regulatory readiness and the rest will be paid upon the presentation of proof of verifiable reduction in GHG emissions in the priority provinces.[21]

The amount of financing commitment from Norway is considered by many to be substantial. However, compared with financing needs for implementation activities which include alternative economic activities to prevent local governments and people from clearing forests and peatlands, the amount is likely to be insufficient. One crucial step the government needs to take is to ensure that investment activities in the forest-rich provinces will not contribute to larger emissions but support REDD+ program instead. This will require coordination between economic activities under REDD+ program and those promoted by regional economic development plans, e.g., the recently issued Master Plan on Indonesia Economic Development Acceleration.Such coordination should also be promoted by investing parties and REDD+ contributing countries. After all, the success of economic investments in the future will not prevent the assessment of their environmental impacts.

The payment upon performance scheme under the bilateral partnership with Norway is a breakthrough in mitigation financing framework because it requires a different arrangement than that of a conventional grant under donor-recipient relationship. It is a challenge in terms of preparing existing and future domestic institutions to deliver on such a scheme-the tasks which often entail highly difficult political process. However,italso presents an invaluable opportunity for Indonesia to

19 *Study on Instrument and Mechanisms for Financing of GHG Emissions Reduction in Land-based Sectors was carried out by the Fiscal Policy Office of the Ministry of Finance in collaboration with GIZ of the German Government.*

20 *Indonesia has received financing commitment USD5.6 million worth of grant for the period of 2009-2012 from UN-REDD; USD70 million, consisting grant USD37.5 million and loan 32.5 million, from FIP; and USD 3.6 million worth of grant from FCPF.*

21 *Implementation of Norway-Indonesia LOI on REDD comprises three phases: preparation (start-up) phase, transformation (readiness) phase and contributions-for-verified emission reduction (full implementation) phase. In late 2010, Indonesia received from Norway USD30 million for start-up phase and will receive further grant up to USD170 million upon the achievement of agreed deliverables from the first phase. The last phase is where the large chunk of the money will be flown to Indonesia in return of verifiable emissions reduction. The inital grant is managed by UNDP.*

embark on a partnership with a developed country on a more equal basis.[22] The scheme can also be deemed as an incentive to ensure that projects are run in the most effective manner inasmuch as failure to produce results under the scheme would mean no payment, let alone profit. Improvements in the policy and regulatory frameworks required for the implementation of the LOI are equally recognized to be the catalyst for a more lasting reform in the forestry-peatland management.

Payment for performance scheme is expected to dominate mitigation financing in the future, especially on medium-to large-scale projects, not only for REDD+ activities but also for emissions reduction projects in the energy sector.[23] The Indonesia-Norway partnership on REDD+ also suggests that payment for performance scheme will become a common approach in future international climate change financing not only from public sources but in the form of grants as well. To enable Indonesia to reap benefits from the partnership, its government needs to ensure and strengthen three crucial elements : 1) national baseline for all mitigation sectors concerned; 2) MRV institution and framework; and 3) national registry.[24] These elements are also essential for the implementation of NAMAs (Nationally Appropriate Mitigation Actions), especially creditable NAMAs.[25]

Indonesia is a medium player in the context of Clean Development Mechanism (CDM) of Kyoto Protocol.[26] Nevertheless, the capacity and lessons that have been learned from the CDM experience are very crucial to help the country expand its mitigation actions especially through the involvement of the private sector and carbon market mechanisms. Carbon market is the key incentive to lure the private sector to reduce their emissions and engage in carbon trade with other countries after CDM. The emergence of proposals relating to New Market Mechanisms in the UNFCCC context will open the door for different types of carbon markets for which Indonesia, with its huge potential of supply for carbon trade, need to be ready. Indonesia has engaged in bilateral discussions with Japan and Australia and has also been active in the Asia Pacific regional discussions that explore the possibility of regional carbon trade.[27]

Government budget has, in fact, played an equally important role in mitigation action. The government has allocated large sums of money for reforestation and forest rehabilitation activities

22 *Another compelling factor is the increasing strength of Indonesia's economy which may disqualify Indonesia from being a recipient country for conventional ODA grants in the near future.*

23 *The trend is also growing globally especially for mitigation action in larger developing countries as developed countries expect more quantifiable and verifiable outcome from the supported projects. The governing instrument of the recently established Green Climate Fund include "results-based approach" as important criteria in funding allocation.*

24 *National registry may constitute government entity(ies) authorized to register emissions reduction projects and issue emissions certification to be the basis of request for payment to external partners.*

25 *Creditable NAMAs is mitigation actions that are performed by developing countries and generate emission credits or offsets—because exceeding their agreed baseline—to be made available for sale in the international carbon market.*

26 *By mid 2012, Indonesia Designated National Authority on CDM has approved 181 projects, 76 of which registered by the Executive Board of CDM. Of registered projects, 18 projects have been issued their Certified Emissions Reduction worth of approximately 5 million ton CO2e.*

27 *Indonesia and Japan has engaged in intensive discussion on bilateral carbon offset mechanism (now joint carbon offset mechanism) since September 2010. Asia Pacific Roundtable on Carbon Market was initiated by New Zealand Goverment in 2011 and involves key players in the region, including Australia, China, Indonesia, Japan, South Korea, New Zealand, and Thailand.*

even before REDD-Plus became a trend. Other government programs that can be considered as an effort to reduce GHG emission and was supported with sizeable budget is the kerosene-to-LPG (liquefied petroleum gas) conversion (see Table 1).The budget allocation for key sectors concerned will likely increase with the expected increase in GDP and mandate from the 2011 Presidential Decree on GHG Emissions Reduction Plan.

Table 1. Major government programs related to GHG emissions reduction

	2005	2006	2007	2008	2009	2010*
Reforestation	1.418,2	3.773,1	3.706,9	1.864,0	307,5	
Kerosene-to-LPG conversion				2.196,2	2.357,6	4.751,0

Source: Ministry of Finance
** = in billion rupiah*

Aside from allocating budgets, the government has provided a number of incentives to encourage investments in low carbon development activitiesthrough , among others, exemptions from tax and import duty. The details of ministerial-level regulations on lowcarbon development-related incentives are provided in Box 1.

Box 1. Ministerial Level Regulations on Climate Change related Incentives

Minister of Finance Decree (KMK)

- KMK No. 177/KMK.01/2010 on Direct Government Investment on Environmental Friendly Investment
- KMK No. 231/KMK.03/2001 on Treatment of Value Added Tax and Sales Tax on Luxury Goods of Imported Taxable Goods Exempted from Duties Levied

Minister of Finance Regulations (PMK)

- PMK No.130/PMK.011/2011 on the Facilities of Corporate Tax Exemption or Reduction
- PMK No.139/PMK.011/2011 on the Procedures of Business Feasibility Guarantee Provision for the State-Owned Electricity Company to Develop Energy which Use Renewable, Coal, and Gas Sources Conducted through Partnership with the Private Power Developer.
- PMK No.21/PMK.011/2010 on the Provision of Tax Facility and Custom for Renewable Energy Utilization.
- PMK No.22/PMK.011/2010 on Value Added Tax Borne by the Government over Goods Imported for Upstream Business Activities of Oil and Gas Exploration and Geothermal Exploration for Fiscal Year 2011
- PMK No.24/PMK.011/2010 on Value Added Tax Borne by the Government over Goods Imported for Upstream Business Activities of Oil and Gas Exploration and Geothermal Exploration for Fiscal Year 2010
- PMK No.35/PMK.011 /2010 on the Mechanism of Income Tax Borne by the Government and Calculation of Non-Tax State Revenue over the Earnings from Geothermal Development for Power Generation for Fiscal Year 2010
- PMK No.176/PMK.11/2009 on Exemption from Import Duty over Import of Machinery, Goods and Materials for Development or Industrial Development in the Context of Investment
- PMK No.156/PMK.011/2009 on Value Added Tax Borne by the Government over Domestic Biofuel Delivery for Fiscal Year 2009

- PMK No.242/PMK.011/2008 on Value Added Tax Borne by the Government over Import of Goods for Oil and Gas and Geothermal Exploration.
- PMK No.154/PMK.11/2008 on Exemption from Import Duty on Import of Capital Goods in the Context of the Development of Power Generation Industry Development in the Public Interest, and Its Amendments.
- PMK No.177/PMK.011/2007 on Exemption from Import Duty over Import of Goods for Oil and Gas and Geothermal Exploration

Minister of Finance Regulations (PMK)

- Permen ESDM No. 31/2009: the State Owned Company (PLN)is obliged to purchase electricity generated by small-scale renewable power generation sources with varying prices.
- Permen ESDM No. 32/2009: Purchase of geothermal electricity by PLN with the highest benchmark price of 9.7 cent$/kWh.

Private Sector Participation

In response to climate change, the private sector in Indonesia has played significant role through emissions reduction activities carried out as part of their business strategy to get carbon credit under CDM or international voluntary schemes. With the emergence of REDD+ program with which Indonesia is expected to contribute massive emissions reduction, there has been a surge in the number of local companies that have invested in forest conservation activities. Private companies are expected to play a greater role not only in scaled-up mitigation actions but also in providing resources to help communities deal with climate risks and vulnerabilities and in ensuring their business operations will be climate proof.

On adaptation financing in the form of insurance, as discussed earlier, the private sector has shown their interest but expected government subsidy to enable them to launch a commercially viable scheme. In fact, an example ofpublic-private partnership on postdisaster insurance is existent. A local company, PT AsuransiWahana Tata, in collaboration with the German reinsurance company Munich Re, and supported by the German Technical Cooperation Agency (GTZ) in 2009, pioneered an index-based insurance scheme to help a low-income community inhabiting the riverbank of Ciliwung in Manggarai, Jakarta to cope with the impacts of annual flooding.[28] Such initiative should be further scaled-up for climate adaptation with financial support and climate data from the government agencies concerned.

Insurance is only one of the ways in which the private sector can contribute to climate adaptation while doing business. The private sector can also utilize their financial resources and product development capacity to offer new materials or new designs of vehicles, tools, or appliances that can help people deal with different impacts of climate change. The private sector's reliable

28 *This index-based micro-insurance was developed from historical data on flooding occurences, climate and topography of the targeted area. There are 23 kelurahan (village) covered by this insurance.*

servicesin the provision and distribution of goods could also help reduce people's vulnerability to the impacts and exposure of climate change. To take advantage of this, the government needs to ramp up outreach and public-private partnership efforts.

As a country rich in renewable energy sources, the private sector in Indonesia has a lot to offer to help the government meet its energy diversification goals and reduce its emissions from the use of fossil fuels. Indonesia's investment in clean energy is only 0.1 percent of its GDP, far lower than that of China which has invested US$34.6 billion in the clean energy sector. The development of renewable energy sector needs to be supported by energy pricing policy which is derived from long-term energy security vision.[29]

As discussed in a previous section, the private sector can contribute more through the carbon market. An intense program is needed to educate both the private sector and the government agencies on low-carbon development activities and the use and benefits of carbon market mechanisms. The Designated National Authority of CDM in Indonesia, the DNPI, has conducted a number of trainings for local companies that have interest in becoming developers or verifiers of CDM projects. Japan's Institute of Global Environment Studies (IGES) has provided financial resources and expertise for the workshop training activities. These efforts have been escalated by a series of awareness-raising and consultation activities carried out by the recently established Association of Indonesia Carbon Management (APKI), an independent entity comprised of local companies engaged in CDM project development and individual experts in carbon market.

One of the major hurdles in the expansion of private sector involvement in low carbon development activities is the lack of understanding of local financial institutions about how the carbon market works. Emission reduction projects that seek carbon credit aredeemed high-risk and the credit generated is not considered an asset class.[30] There are very few banks and non-bank financial institutions that have shown understanding and the interest to provide specific credit line for this purpose remains low.[31] Indonesia's Central Bank has considered a new regulatory initiative on "Green Banking" that will have two-fold objectives: a) the national banks will consider sustainable development criteria in their whole operation, including credit provision; and b) national banks will support low-carbon development and environmental protection activities, inter alia, through provision of financing.[32]

29 *Indonesia's target of renewable energy is 17 percent by 2025, whereas Thailand's target is 20 percent by 2022. Subsidy and cheaper price of fossil fuels are considered a major obstacle to development of renewable energies.*

30 *An asset class classification will enable emissions reduction projects to use carbon credit to be generated from the projects as collateral.*

31 *One of the few examples is Bank Mandiri that finances emissions reduction projects seeking CER from CDM; Financing of such credit line worth US$100 million is provided by the French Government's development bank (AFD).*

32 *The Green Banking initiative is promoted by the Bank of Indonesia under partnership with the Ministry of Environment. DNPI also supports the preparation of this initiative.*

A well used for filling water troughs for cattle in the middle of grassland in Sumber Klampok Village, Buleleng, Bali, near West Bali National Park.
Photo by Aulia Erlangga/CIFOR

With its financial capacity, companies can also contribute to reducing vulnerabilities and increasing resilience of low-income Indonesians through their community development activities. The GOI mandates companies, government owned and fully private, to spare a portion of their profit for activities in realization of corporate social responsibility (CSR). The sizeable CSR funds from state owned enterprises—counted from 2 percent of their annual net profit—remain untapped potential for additional financing to tackle climate change issues.[33] State-owned enterprises through their CSR funds have supported economic development by small-and-medium business entities, art and humanities as well as environmental protectionactivities. These well-intention programs would need to be ramped up on climate change considerations, for instance, to help small-and-medium scale industries improve their business operation that will reduce their economic vulnerability to climate change and produce efficient and yet low carbon goods.

Delivery Mechanism

The success of Indonesia's responses to climate change is not only dependent on adequate financing but also on effective delivery mechanism, i.e., financial institutions to manage and channel

33 *For instance, net profit of Indonesia's state owned enterprises in 2011 totaled Rp145 trillion; this means Rp3 trillion (approximately USD 3.3 billion) is spared for CSR funds.*

financial and other resources to targeted projects and beneficiaries.Since the 1970s, Indonesia has accumulated rich experience with bilateral and multilateral institutions in ODA activities. The partnership is one of the factors for Indonesia's success so far in receiving financial commitments from developed countries. Nevertheless, the experience has also raised aspirations that international funds for climate change and low-carbon development will be managed by local entities.

Such aspiration of national entities being in the driving seat is not unique to Indonesia. In many developing countries, climate change has become a catalyst for the growth of climate finance institutions, managed by government and private entities. Indonesia is one of the pioneers in setting up a trust fund specifically to finance climate change programs and projects. Established in 2008, Indonesia Climate Change Trust Fund (ICCTF) aims toachieve Indonesia's goals of a low carbon economy and greater resilience to climate change; and enable GOI to increase the effectiveness and impact of its leadership and management in addressing climate change issues.[34] The initial design of ICCTF is quite ambitious in response to the need of financing through conventional and revolving grants. Given the regulatory frameworks that limit the capacity of government-managed funds, ICCTF has taken evolutionary approach in developing its portfolio. At present, with three funding windows, i.e., on land based sectors (other than REDD+), energy, and resilience, ICCTF supports government-run programs with grant provided by bilateral funds from UK,Australia, Swedish and German Governments.[35] ICCTF's legal status has been strengthened with a Presidential Decree on Trust Fund issued in 2011. Since its inception, UNDP has acted as the trustee of ICCTF. However, this will soon change as the government is in the process of selecting national entities to become the trustee of ICCTF.

Other government financial entities that have shown potentials to help Indonesia achieve its mitigation targets are PusatInvestasiPemerintah (PIP), a sovereign wealth fund, and PT Sarana Multi Infrastruktur (SMI), a state-owned enterprise, both of which are under the Ministry of Finance. The main objective of PIP is to stimulate national economic growth through investments in strategic sectors that require optimum return and measurable risk, including those carried out by local governments.[36] It has planned to set up a subsidiary fund dedicated to financing low carbon development projects, especially in the energy sector.Indonesia Green Investment Fund (IGIF). While PIP focuses on public finance, SMI seeks to blend public and private funds to support infrastructure development in the country.[37] SMI has supported the development of coal gassification power plant in East Kalimantan and microhydropower generation in North and West Sumatera and West Java.[38]

34 *Source: http://www.icctf.or.id*
35 *ICCTF has received financial commitment from bilateral partners amount to approximately USD18.5 millions, comprising USD11 millions from UK and Australia Governments, USD300 thousands from Swedish Government, and 5 million Euro from the German Government (for institutional capacity building of ICCTF covering the period of 2012-2016).*
36 *Source: http://www.pip-indonesia.com*
37 *Although recently PIP also blends public and private financing.*
38 *Source: http://www.ptsmi.co.id*

Domestic market based financial institutions, government and private, can also contribute to finance climate change programs. The most attractive instrument that these institutions can offer is the so-called Collective Investment Contract, a form of mutual fund set up with specific purpose and selected investors whereby a contract is established between Investment Manager and Custodian Bank that binds the participating investors. The Investment Manager is authorized to manage the collective investment.

Many of national financial institutions that have financed climate change or low-carbon development projects are relatively new. These institutions are still undergoing internal evolution to enable themselves to rise as a credible and accountable delivery mechanism. They need to find niche and not crowd out with long-standing financing institutions, especially the banking sector.

There have been criticisms as to the lack of coherence in the management of grants. This is due to the fact that in spite of the existence of ICCTF, many grants from bilateral and multilateral sources continue to be managed unilaterally by line ministries, or by multilateral development banks and UN agencies. The non-governmental organizations have voiced their proposal to the government for a one-stop-shop for the management of international funds that Indonesia raise for climate change action. While coherence of funds management is crucial for program delivery effectiveness, a plan of funds integration might need thorough analysis based on legal and financial considerationsvis-a-vis diverse needs of climate change financing. A single national financial entity for climate change that can do everything that is necessary will need strong legal back-up and political support from all parties concerned.[39]

In light of coherence and coordination in the management of climate change financing, there has been a proposal to revive national development bank. Other benefits of national development bank that have been quoted are, among others: absorp financial risks which are generally averted by commercial banks; reduce transaction costs and hence making credit more attractive to end users; and blend public and private financing through varied instruments. Nowadays very low concessional, sovereign loan from international partners, can reach end users through 2-step-loan or even 3-step-loan schemes, resulting in loan interest which is just slightly lower from that of commercial loan.The Ministry of Finance is studying the feasibility of national development bank vis-a-vis tight fiscal space and effective utilization of existing financing entities.[40]

In addition to government and private financing entities, not-for-profit and non-government organizations can play instrumental role in the management of climate change funds. For instance,

39 *UNDP (2011) identifies four key functions that a national climate change fund have to perform: 1) collect and distribute funds to climate change activities that promote national priorities, 2) facilitates the blending of public, private, multilateral and bilateral sources of climatefinance, 3) coordinate country-wide climate change activities, and 4) supportNational Implementing Entities (NIEs) and other entities using the "direct access" modality to deliverclimate change projectsby strengthening national institutions and financial management.*

40 *The Central Bank has also proposed establishment of national development bank to focus on infrastructure financing.*

Communities around the forest in Central Kalimantan, became the main subject of the utilization of REDD+ scheme in Indonesia.
Photo by Achmad Ibrahim/CIFOR

the Indonesian Biodiversity Foundation (KEHATI)-the largest grantmaking entity for environment and biodiversity conservation—in cooperation with GOI, has managed sizeable, programmatic grants from international development partners. Recently, it has been entrusted to administer the fund from debt-for-nature swap (DNS) with the United States Government totaled USD28.5 million for forest conservation and GHG emissions reduction in three districts in East Kalimantan and West Kalimantan.[41] In fact, the 2011 Presidential Decree on Trust Fund has enabled increased role of non-government, notfor-profit organizations by listing them as one of eligible partners to act as trustee for the government trust funds.

Apart from institutions of climate change financing management, financial authorities in Indonesia have also created entities to support the countries in dealing with climate change. In the middle of 2011, the Ministry of Finance established the Centre of Policy Development for Climate Change Financing and Multilateral Affairs. It is a unit led by director-level official under the Fiscal Policy Office. This is a step forwardinasmuch as previously, the Ministry of Finance handled climate change financing issues through a non-structural unit. The Ministry of National Development Planning (Bappenas) which coordinates international development financing set up an informal forum to facilitate better communication and coordination between donor countries and the government represented by key agencies such as DNPI, Bappenas, Ministry of Finance, Ministry of Environment and line ministries. This forum meet twice a year and is co-chaired by the Vice Minister of National Development Planning and Head of the Secretariat of DNPI.

41 *This program is under the US Tropical Forest Conservation Act (TFCA) and the second phase of DNS scheme in collaboration with Indonesian Government. For the first phase of DNS-TFCA, KEHATI acted as investor as well as fund administrator.*

The Working Group on Finance of DNPI has also been instrumental in supporting DNPI to play its roles as policy coordinator and focal point for climate change negotiation. The Finance working grouplead negotiations on finance for UNFCCC and other international forums related to climate change. It helps Indonesia to bridge the progress and outcome of negotiation at the international level and the inputs and follow-ups at the national level.

While continuing with concrete action, the national climate financing institutions have to gather lessons from the experiences so far. Some calibration and tweaking might be needed to sharpen the focus and ensure the future direction is on track.The performance of these institutions will speak volumes to the potential of international climate change financing as to whether national entities in Indonesia are capable of managing international finance with good fiduciary and effective program management.

Conclusion

Climate change has been an impetus for the birth of many new initiatives and institutions in Indonesia, including those related to financing. This signals not only the country's seriousness in tackling climate change challenges but also enthusiasm for assuming greater, independent role in managing issues central to the national development.

To finance climate change actions-cross cutting in all development dimensions-requires reformed ways and often long, difficult political process to get consensus on solutions from all parties concerned. Furthermore, financing climate change projects necessitates not only adequacy in capital and investment—from domestic and international sources—but also appropriate technical understanding on the supported subjects. Although exact figures for the needs of climate change action are still being worked out, Indonesia's financial need is categorically great because it has to deal with adaptation as well as mitigation problems. Thus, strong leadership and good coordination from national authorities are immensely needed to help the country set priorities, determine the future direction and make effective financial resources, institutions and instruments.

There is a sense of optimism that Indonesia will be able to realize the goals it had set for its carbon emission reduction.

Indonesian President Susilo Bambang Yudhoyono delivers his speech during his visit at Center For International Forestry Research (CIFOR) in Bogor, West Java, Indonesia, June 2012.
Photo by Dita Alangkara/CIFOR

Chapter 6

Conclusion

Agus Purnomo
Tony La Viña

Indonesia has made a strong commitment to mitigation and has led the way for developing countries to make concrete contributions to global GHG emission reduction goals. Domestic policy reforms, especially on forestry and peatlands management, and land-use planning, are intrinsic to the new strategy of economic development that puts importance on environment. Reforms in other sectors such as energy, transportation etc., are also consistent with this track.

There is a sense of urgency to implement these reforms in Indonesia. This is an opportune time to undertake these reforms due to political momentum, high public awareness and support, and willingness to innovate in Indonesia. But there is also the danger of losing momentum because of delays in global agreements, in meeting the targets and in the fund flows that are crucial to domestic incentive system. Domestic climate change policy can be a catalyst for correcting inequities in traditional access to natural resources and benefit sharing, and for realizing complementary goals such as forest management, health services, biodiversity conservation, and poverty alleviation. In the meantime, Indonesia is already experiencing the adverse impacts of climate-induced natural calamities.

There is a sense of optimism that Indonesia will be able to realize the goals it had set for its carbon emission reduction.

A boy canoeing at Danau (Lake) Sentarum, the biggest tidal lake in the world., located in part of the Kapuas River Basin, Central Kalimantan. Danau Sentarum National Park represents lake wetland, freshwater swamp forest, and tropical rain forest ecosystems.
Photo by Ramadian Bachtiar/CIFOR

Indonesia's path to low-carbon economic development has gained momentum and is not likely to be reversed because of public support and political will. However, the level of contribution to global GHG emission reduction can still be increased through international partnerships/agreements. International support is crucial for the success of domestic strategies particularly in setting the readiness phase and in providing incentives for change. Indonesia will continue to push for the appropriate international architecture that will facilitate the process.

However, the level of contribution to global GHG emission reduction can still be increased through international partnership. Such international support plays important role in energizing domestic efforts, particularly in readiness phase and incentivizing change.

Indonesia will continue to play a bridging role in international discussions, building on its membership in ASEAN, G20, and other international fora to push to global action to reduce carbon emissions.

President Yodhoyono, in a speech at the World Economic Forum in 2011 pushed for a new globalism:

"Well, I would like to argue that what we need is a 21st century globalism. The 21st century globalism that we seek should do away with dogmatism. To respond to these challenges, nations, corporations and individuals have to be open-minded, pragmatic, adaptive and innovative.

In the new reality, no single power can shape the world order alone. To resolve the issues of our time, nations must come to common terms and find shared norms. The concerted efforts by G20 countries to avert the Great Depression in 2008 and 2009 attest to this."

"Simply put, without dynamic regionalism growing in all parts of the world, there can be no globalism. This is why the key theme for ASEAN, which Indonesia has the honor to chair this year is "the ASEAN community in the global community of nations". It will be a chance for ASEAN to chart a long-term view of how a 21st century ASEAN Community will continue to transform Southeast Asia and help shape the East Asia regional architecture and global order in the 21st century.

We will need to work together to develop and share the technological innovation, that will enable us to turn problems of scarcity and climate change into new opportunities. We will need plenty of political will and creative collaboration, to promote food and energy security for all.

Selected References

Anonim, 2010.Draft Rencana Aksi Nasional Penurunan Emisi Gas RumahKaca (Draft National Plan for Reducing GHG emission -RAN-PE GRK), Bappenas. Unpublished.

Boer, R. 2009.Potensi Pembangunan Bersih (MPB) di Indonesia(CDM Potential in Indonesia). A presentation during a Panel Discussion on CDM in Forestry in Indonesia, Bogor 23 June 2010. Indonesia National Council on Climate Change, in cooperation with the Ministry of Forestry and International Finance Institution (IFC).

Busch, Jonah, Helmy, Farhan, Farid, M. et.al, 2010, Economic Incentive Policies for REDD+ in Indonesia: Findings from OSIRIS Model, Policy Memo 02/2010.

Dewan Nasional Perubahan Iklim, 2012, Institutional Options of Indonesia's MRV Agency Arrangement.

Dewan Nasional Perubahan Iklim and JICA, 2012, Preliminary Assessment on the Institutional Arrangement of an MRV Agency: International Experiences and Institutional Options for Indonesia, Policy Assessment 1, 2012

Dewan Nasional Perubahan Iklim, BKKBN and UNFPA, 2012, Population Dynamics and Climate Change, Policy Memo..

Dewan Nasional Perubahan Iklim, 2010, Indonesia's Greenhouse Gas Abatement Cost Curve.

Dewan Nasional Perubahan Iklim and Provinsi Kalimantan Timur, 2010, East Kalimantan Environmentally Sustainable Development Strategy.

Dewan Nasional Perubahan Iklim and Provinsi Kalimantan Tengah, 2010, Creating Low Carbon Prosperity in Central Kalimantan.

Dewan Nasional Perubahan Iklim and Provinsi Jambi, 2010, Creating Low Carbon Prosperity in Jambi.

Dewan National Perubahan Iklim, 2011, Pandangan Indonesia mengenai NAMAS (Indonesian View on NAMAs), Kertas Posisi

DNPI-Dewan Nasional Perubahan Iklim, 2010. Emissions, abatement and carbon stock of Indonesia's forests and peatlands. Tidak dipublikasikan.

DNPI and the UNFCCC, 2009.NEEDS Final Report, Indonesia Country Study MOE, 2009. Second National Communication to the UNFCCC

Helmy, Farhan (2012), Low Emission Development (LED): Indonesia's Perspective, a presentation in Bonn Climate Change Conference Side Event: Low Carbon Growth in East Asia and Japan's Effort, Bonn, 15 May 2012.

Helmy, Farhan (2012), Indonesia Climate Change Center (ICCC): Outreach and Knowledge Management Center Development at Regional, National and Sub-national Levels, 2nd Asia Forum on Carbon Update, 15-17 February 2012, Bandung, Indonesia.

Helmy, Farhan and Kuntz, Steffen (2011): Feasible Technology Options to Support the Establishement of MRV for REDD+ In Indonesia. Jakarta.

IPCC National Greenhouse Gas Inventories Programme (NGGIP), 2003. Good Practice Guidance for Land Use,Land-Use Change and Forestry. The Institute for Global Environmental Strategies (IGES).

Ministry of Foreign Affair (MOFA), Japan, 2012, Co-chair's Summary, East Asia Low Carbon Growth Partnership Dialogue, Tokyo, 15 April 2012.

Satuan Tugas Persiapan Kelembagaan REDD+, 2012, Indonesia One Map Experience: Lessons learned from WG Monitoring Moratorium.

Noordwijk, M, et al. 2010. Opportunities for Reducing Emissions from All Land Uses in Indonesia: Policy Analysis and Case Studies. World Agroforestry Centre Southeast Asia.

Pedroni, L. 2007, CATIE publications, inhttp://www.catie.ac.cr/BANCOCONOCIMIENTO/P/PUBLICA_NOVEDADES/PUBLICA_NOVEDADES_ENG.asp?CodIdioma=ENG&CodSeccion=516&CodMagazin=27&Viene=1&NomSeccion=&NomMagazin=Publicaciones

Purnomo, Agus, Saloh, Yani and Melisa, Eka (2012) : Protecting The Forest: Moratorium on Forests and Peatlands, A Radical Policy, KPG Publishing, 2012

Purnomo, Agus and Sukadri, Doddy S. (2011): LULUCF and REDD+. In: Green Review on REDD+. Jakarta.

Osaki, Mitsuru, Helmy Farhan, Hirose, Sukadri, and Kobayashi. 2011. Comprehensive MRV System for REDD Plus in Indonesia. A presentation to the First Meeting of REDD Development Devident Task Force, Manila, Philippines 25-26 January 2011. Unpublished.

Stern, N, 2006.The Economics of Climate Change in http://en.wikipedia.org/wiki/Stern_Review

Verchot, Louis, Elena Petkova, KrystofObidzinski, StibniatiAtmadja, Elizabeth L. Yuliani, Ahmad Dermawan, Daniel Murdiyarso and SalwaAmira, 2010. Reducing Forestry Emission in Indonesia. Center for International Forestry Research (CIFOR).

Summary of important policy instruments and references: (NEEDS study, Indonesia's Country Study (DNPI, 2009)

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 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 containts direction of 5-year policies and programmes from the Medium. Term National Planning (RPJMN) relating to Climate Change, wich is set up for the next 20 years.
2.	NCCC and Mc Kinsey Abatement Cost Curve (Draft) September 2009	Mc Kinsey has developed a global cost curve to determine the most cost-efective measures in mitigating GHG emissions. This study was executed specifically for Indonesia Status: Phase 1 it completed, Phase 2 is on-going	The 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 effective measures according to this syudy 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 recomendations 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 focusses on a few selected sectors. The first stage of phase 2 looks at manufacturing sector. To select manufacturing sub-sectors, it is tested againts 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 Coommunication under the United Nations Framwork convention on Climate Chnge, 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 Develompment Planning Response to Climate Change 2007 National Development Planning Aggency (BAPPENAS)	The project's objective is to prepare climate change programs and factor climate change concerns into the process of national development planning.	Development of analytical work on various key issues including i) adaptation and disaster risk reduction, ii) renewable energy, iii) Reducced emissions from Deforestation and Degradation (REDD), iv) financing of addressing climate change The enteria used to select prioritized sectors in climate change adaptation and mitigation are generation of added value of investmen, synergy between climate change and the Millennium Development Goal (MDG) This study divided key sectors unto 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: intrastructure, 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 building and industries) Transportation Sector (Hybrid vehicles, fuels switching, mass anda 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 Sectors base its mix energy target on the Presidential Regulation No. 5/2006
8.	The Indonesia National Clean Development Mechanism Strategy Study (NSS), 2001 Ministry of Environment (KLH)	Develop priorities of technology as options for CDM projects	NSS CDM in Energy Sector recomanded 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 Development Mechanism. The project-based abatement cos 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.

No	Title of the Study	Purpose	Key Features
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 take stocks of existing less GHGs emission technologies in energy, agriculture and forestry sector. It then compares with the existing technology transfer including institutional establishment regulation development and financial arrangement.
10.	Indonesia: The Firs National Communication under the United Nations Framework Convention on Climate Change, 1999 Ministry of Environment (KLH)	Inventory GHG emission from sectors energy, transportation agriculture, forestry, public health, marine and waste.	The study IPCC Guidlines 1994. The study made projection of CO_2, CH_2 and N_2O emissions from various sectors from various sectors. For energy sector, the projection used Reference Approach and Tierl1. Final energy supply from 1995-2005 was calculated using MARKAL Model
11.	Technology Assessment for Energy, Related CO2 Reduction Strategies for Indonesia 1995 BPPT and GTZ	Review inventories of GHG emission sources and sinks, estimate the status and future projection of CO2 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

Authors and Editors

Agus Purnomo is the President Yuhoyono's Special Staff for Climate Change and Head of the Secretariat of the National Council on Climate Change. Better known as Pungki, he led the organizing commitee of the UN Climate Change Meeting in Bali (UNFCCC COP-13/CMP3) that was successful in producing the Bali Roadmap.

Pungki was also the "man behind the scenes" in the success of negotiations to reach an agreement on Indonesia-Norwegian cooperation which lead to a commitment of 1 billion US dollars through activities to reduce emissions caused by deforestation and forest degradation.

He has been a prominent player in environment and climate change policy development since the days of his duty as Special Staff to the Minister of the Environment from 2004. Before that, Pungki was an environmental activist with various organizations, including as the executive director for WWF Indonesia, Pelangi Indonesia, and Walhi.

AGUS PURNOMO
Lead Author

Dr. Amanda Katili Niode is the Coordinator of the Communication, Information and Education Division at the Indonesian National Council on Climate Change. She is also the Manager of The Climate Project Indonesia, Al Gore's climate change leadership program with a mission is to educate the public about the harmful effects of climate change and to work toward solutions at a grassroots level worldwide.

Her 30 years activities in the subject of environment and natural resources encompass arenas in Indonesian government agencies, multinational corporations, environmental consulting companies, academic institutions, civil societies and international organizations.

AMANDA KATILI NIODE
Author

Eka Melisa is the Assistant Special Staff to President Yudhoyono for Climate Change with speciality on issues related to international negotiations, energy, industry and transportation.

Prior to this, Eka was the Vice Chair for International Negotiation Working Group in National Council on Climate Change and had been leading the issues of international climate change negotiation in NCCC from 2008-2010. She was also the youngest member of the Advisory Team to COP13/CMP3 President Rachmat Witoelar. Before her engagement with public sector, Eka had seven years experiences in international climate change policy area, including to serve as International Climate and Forest Policy Advisor for WWF International and Director of Climate and Energy Programme in WWF Indonesia.

EKA MELISA
Project Editor, Author

DODDY SURACHMAN SUKADRI
Author

Dr Doddy Surachman Sukadri is presently in charge of Secretary, Land Use Land Use Change and Forestry (LULUCF) Working Group of the Indonesia National Council on Climate Change (NCCC or the DNPI).

Doddy had worked for the Ministry of Forestry of Indonesia for more than 25 years, and during his tenure, he posted in various divisions, ranging from forest planning, reforestation and land rehabilitation, foreign cooperation, and forest policy research and development. He also experienced in working with international organizations, including CIFOR and the World Bank, where he was in charge of developing Indonesia wood-based Industry and other policy-related matters.

FARHAN HELMY
Author

Farhan Helmy is a Secretary of Mitigation Working Group at Nationat Council on Climate Change (DNPI). He has experiences in the field of natural resource and environmental policy analysis, with special interests and experiences in forestry governance, land use/spatial dynamics, low carbon growth strategy (LCGS), disaster risk reduction, risk assessment and environmental vulnerability mapping, and the use of open-source based tools for policy analysis and modeling, such as Geographic Information Systems (GIS), remote sensing, and Decision Support Systems (DSS).

Currently the Technical Advisor to the Indonesia Climate Change Center and member of MRV technical team for REDD+ task force, Farhan is also actively involved on the concept development of Mitigation and MRV for national, regional and international network.

SUZANTY SITORUS
Author

Dr. Suzanty Sitorus is currently the Secretary of the Council's Working Group on Finance. She represents her country in international negotiations and meetings pertaining to climate finance and carbon market.

She has served as co-chair and co-facilitator of negotiation on various issues of climate finance in the UNFCCC process since 2011. She has taken part both as presenter and facilitator in the deliberation of climate finance with the Climate Change Expert Group hosted by OECD and IEA, and recently was invited to join the Methane Finance Study Group, an international expert group set up by the World Bank to produce a report on results-based methane financing as commissioned by the G8 governments. In addition to her roles in the public sector, Suzanty is active in the non-profit sector as the Vice-Chair of the Executive Board of the Indonesian Biodiversity Foundation, the nation's largest grantmaking foundation for biodiversity and nature conservation.

Dr. Antonio G.M. La Viña emerged as a national and global environmental leader in the early 1990s, distinguishing himself as a legal and policy expert in forest, watershed, biodiversity and climate change issues. In the Philippines, he is known in government, civil society and academic circles as a champion of environmental advocacy and governance.

Internationally, he is an acclaimed UNFCCC Negotiator, best known for his facilitating the Redd-Plus negotiations. Dr. La Viña is currently serving as Dean of the Ateneo School of Government and a professor at three top universities (UP, ADMU, DLSU). He is also the co-coordinator of G77 & China for the Ad Hoc Durban Platform for Enhanced Action.

ANTHONY LA VINA
Lead Editor,
Contributing Author

James Kho has been both a field practitioner and researcher, working on bilateral and multilateral-funded projects at the intersection of environment, law, and governance in the Philippines.

He is currently the Senior Governance and Institutional Development Specialist of the USAID-supported Ecosystems Improved for Sustainable Fisheries (ECOFISH) Project. Prior to joining ECOFISH, he was Senior Research Associate at the Ateneo School of Government, working on convergence issues in climate change adaptation, natural resources management and biodiversity conservation, to inform international negotiations as well as domesic policies.

JAMES KHO
Editor, Contributing
Author


Rich countries pay your climate debt!