UN CC: Learn Pilot Project in Indonesia

NATIONAL Climate Change Learning STRATEGY

CAPACITY BUILDING OF HUMAN AND INSTITUTIONAL RESOURCES TO ADDRESS CLIMATE CHANGE AND ACHIEVE LOW EMISSION AND CLIMATE **RESILIENT DEVELOPMENT**



One UN Training Service Platform on Climate Change: UN CC:Learn



Schweizerische Eidgenossenschaft Swiss Agency for Development Confédération suisse Confederazione Svizzera Confederaziun svizra

and Cooperation SDC

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PREFACE



Assalamu'alaikum warahmatullahi wabarakatuh.

The National Council for Climate Change (Dewan Nasional Perubahan Iklim-DNPI) was established in 2008 by the Presidential Decree No 46 (Perpres 46/2008) to coordinate, synergize and facilitate the national efforts to address climate change. One of the most important mandate of DNPI is it's role as national focal point of *United Nations Framework Convention on Climate Change* (UNFCCC). This mandate is essential considering the Indonesian strategic position in the global arena of social, economy and politic of climate change

The future challenges to achieve climate resilient low emission national development encompass building the capacity and skills of human resources and efforts to improve public awareness and capacity building especially in the disaster prope

institutions. The efforts to improve public awareness and capacity building, especially in the disaster prone regions and sectors, are determinants in effectively addressing climate change.

Indonesia successfully hosted the 13th Session of the Conference of the Parties to the UNFCCC and the 3rd Session of the Conference of the Parties serving as Meeting of the Parties to the Kyoto Protocol (COP 13/CMP 3) in 2007 in Bali. Through these events, Indonesia gained global trust on its capability in supporting global action to address climate change.

This national learning strategy is a long waited document to contribute to the efforts in reducing national GHG emission around 26-41%. As we are all aware, the implementation of such goals will fail without support from the skilled human resources working in the area of climate change. I thank and appreciate all parties who have been actively involved in the process of preparing this document. May God Almighty always grant us with blessing to achieve our noble goals.

I wish this document could become a valuable guidance and information which helps many parties, especially ministries/agencies in developing programs and activities related to capacity building in addressing climate change.

Wassalamu'alaikum warahmatullahi wabarakatuh.

Executive Chairman, DNPI,

Wocean

Ir. Rachmat Witoelar



Executive Summary

Climate change that occurred in the last century has become a global issue as well as a national development challenges. However, climate change can be addressed through mitigation and adaptation actions. The success in implementing mitigation and adaptation programs rely heavily on the quality of human and institutional resources. Availability of skilled human resources in planning, implementation and evaluation the impact of programs is crucial in achieving the objectives of addressing the impacts of climate change. Moreover, the vision and objective of Indonesian national strategies aimed to addressing the challenges of climate change in the future is an "adequate number of qualified human resources to implement climate change mitigation and adaptation actions".

The capacity assessment of human and institutional resources associated with the development of this national strategy document; show that various efforts to improve the capacity of individuals and institutions have been conducted by Indonesian stakeholders in both government agencies and non-governmental organizations. However, these activities require greater coordination and synergy to obtain the integrated activities to address climate change impacts. The activities indicate that the capacities of individuals and institutional still need to be strengthened in implementing the learning activities on climate change.

Strategies and actions particularly in the priority areas of mitigation and adaptation of climate change are required to improve:individual skills; institutions and the education system; the quality of climate change training and broader public awareness programmes. The formulation of strategies and priority actions are based on existing individual and institutions capacities associated with climate change in Indonesia's, also taking into account future needs. The result of assessment and important information has been obtained from four (4) Focus Group Discussions (FGD) and three (3) national workshops involving seventeen (17) ministries/government institutions, non-governmental organizations, universities and the private sector.

- 1. The strategies to strengthen human resources and skills to achieve environmentally friendly, low-emission and climate resilient development are:
- 2. Building individual and institutional capacity for the top five national priority areas on climate change and cross-sectors;
- 3. Improving learning ability on mitigation and adaptation as part of the national education system;
- 4. Increasing public awareness and developing knowledge related to climate change.

In order to implement the national learning strategy and to address some potential barriers raised by stakeholders during the preparation process, an implementing strategy is needed. The National Strategy will be implemented simultaneously and gradually including: (1) a formal legal process (2) institutional coordination, (3) financial planning (4) implementation of short-term and long term action plans. This national learning strategy (on capacity building of human and institutional resources to address climate change) will be implemented through a Presidential regulation which will regulate the process of strengthening the capacity of individuals, institutions and systems. It will also encompass the strengthening of individual and institutional processes, in accordance with the mandate of the UNFCCC and its ratification. This National Learning Strategy also should be part of the policies and programs of each sector and institution relevant to the priority areas in the RAN-GRK and RAN API that has been set by the government, through training programs, education, research and public awareness programs.

The National Council on Climate Change (DNPI) has the primary task of coordinating mitigation and adaptation actions in Indonesia, including assisting in improving human resources capacity in each sector. DNPI will act as the centre of cross-sector coordination for capacity building related to climate change. The proposed program activities from the ministries / agencies for capacity building funded by the national budget or the regional budget will be implemented in association to the mechanisms and the regulation in place. To accelerate the implementation of program activities funded by partners / donors, DNPI will form the secretariat that serves as the implementing unit of the action plans on capacity building activities based on the National Learning Strategy.

GLOSSARY

- Atmos-: Is a layer of gases surrounding a phere material body of sufficient mass that is held in place by the gravity of the body. An atmosphere is more likely to be retained if the gravity is high and the atmosphere's temperature is low. Most of the gasses are nitrogen and oxigen and also smalla mount of other gasses such as carbon dioxide and metane.
- Bio fuel : Is a fuel that uses energy from a carbon fixation. These fuels are produced from living organisms. Examples of this carbon fixation are plants and microalgae. These fuels are made from a biomass conversion. Biomass refers to recently living organisms, most often referring to plants or plantderived materials.
- BLH : Environment Agency
- COP : Conference of Parties is an international environmental treaty negotiated at the United Nations Conference on Environment and Development (UNCED), informally known as the Earth Summit, held in Rio de Janeiro from 3 to 14 June 1992. The objective of the treaty is to "stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system
- CO,e : Carbon Dioxide Equivalent is a quantity that describes, for a given mixture and amount of greenhouse gas, the amount of CO₂ that would have the same global warming potential (GWP), when measured over a specified timescale (generally, 100 years). Carbon dioxide equivalency thus reflects the timeintegrated radioactive forcing of a quantity of emissions or rate of greenhouse gas emission—a *flow* into the atmosphere-rather than the instantaneous value of the radioactive forcing of the *stock* (concentration) of greenhouse gases in the atmosphere described by CO₂e.

- DAS : Watershed area is the area of land where all of the water that is under it or drains off of it goes into the same place. It is also that area of land, a bounded hydrologic system, within which all living things are inextricably linked by their common water course and where, as humans settled, simple logic demanded that they become part of a community.
- Emission : Green House Gasses and other pollutants release due to human activities.
- Green : Is a gas in an atmosphere that absorbs House and emits radiation within the thermal Gases infrared range. This process is the (GHG) fundamental cause of the greenhouse effect. The primary greenhouse gases in the Earth's atmosphere are water vapor, carbon dioxide, methane, nitrous oxide, and ozone.
- Peat : is an accumulation of partially decayed vegetation. One of the most common components is *Sphagnum* moss, although many other plants can contribute. Soils that contain mostly peat are known as a histosol. Peat forms in wetland conditions, where flooding obstructs flows of oxygen from the atmosphere, slowing rates of decomposition
- Kyoto : Is an international treaty that sets Protocol binding obligations on industrialized countries to reduce emissions of greenhouse gases. The UNFCCC is an environmental treaty with the goal of preventing "dangerous" anthropogenic (i.e., human-induced) interference of the climate system. There are 192 parties to the convention, including 191 states (all UN members, except Andorra, Canada, South Sudan and the United States) and the European Union. The United States signed but did not ratify the Protocol and Canada withdrew from it in 2011. The Protocol was adopted by Parties to the UNFCCC in 1997, and entered into force in 2005

- MDGs : Millennium Development Goals is a paradigm of global development, delared in the high level millenium conference by 189 member nations of the United Nations (UN) in New York in September 2000.
- Mitigation : Actions to reduce Green House Gasses concentration in the atmosphere. For example: developing lower emission power plant or saving electricity needs.
- PLTB : Wind Power Plant (Pembangkit Listrik Tenaga Bayu)
- PLTMH : Hydro Power Plant (Pembangkit Listrik Tenaga Mini / Hidro)
- PLTS : Solar Power Plant (Pembangkit Listrik Tenaga Surya)
- RAD-GRK: National Action Plan-GHG Emission Reduction (Rencana Aksi Daerah Penurunan Gas Rumah Kaca)
- RAN-API : National Action Plan-Climate Change Adaptation (Rencana Aksi Nasional Adaptasi Perubahan Iklim)
- RAN-GRK: National Action Plan-GHG Emission Reduction (Rencana Aksi Penurunan Gas Rumah Kaca)
- REDD : Reducing Emissions from Deforestation and Forest Degradation is emissions reduction from deforestation in developing countries. The issue raised in COP 11 in Montreal. Some parties discussed the proposal by Papua New Guinea to give incentives to developing countries for its ability to avoid deforestation.
- REDD+ : Is the extended Reducing Emissions from Deforestation and Forest Degradation framework by including forest conservatio, sustainable forest management or increase carbon stock to appreciate countries that protect its forests.
- Rio+20 : Is a convention organized by the United Nation (UN) as a follow up form of the UN convention on Environment and Development or the Earth Summit have been conducted in 1992.

- UNDP : United Nations Development Programme
- UNFCCC : United Nations Framework Convention on Climate Change is an international environmental treaty negotiated at the United Nations Conference on Environment and Development (UNCED), informally known as the Earth Summit, held in Rio de Janeiro from 3 to 14 June 1992. The objective of the treaty is to "stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system
- UNITAR : United Nations Institute for Training and Research



TABLE OF CONTENTS

Prefaceiii					
Executive Summaryv					
Glo	ossary	vii			
Tal	ole of	Contentsix			
Lis	t of T	able, Figures, and Annexes x			
СН	[APT]	ER 1 Background and Scope 1			
1.1	Intro	troduction			
1.2	Interr	national Agreements			
	1.2.1	UNFCCC			
	1.2.2	Article 6 UNFCCC			
	1.2.3	Education for Sustainable Development			
	1.2.4	The United Nation Conference on Sustainable Development (UNCSD Rio+20)6			
	1.2.5	Paris Declaration6			
1.3	Natio	nal Policy6			
	1.3.1	Plan and Development Strategy6			
	1.3.2	Mainstreaming Concept of Sustainable Development in RPJMN7			
	1.3.3	Cross Sector Climate Change Policy in RPJMN8			
	1.3.4	National Policy on Climate Change9			
	1.3.5	Important Initiatives on Climate Change12			
СН	[APT]	ER 2 Vision and The Objectives			
		of Strategy 13			
2.1	Visio	n and the Objectives of Strategy15			
2.2	The P	rocess of Strategy Development15			
	2.2.1	Survey and Assessment16			
	2.2.2	Focus Group Discussion (FGD)16			
	2.2.3	Workshops16			
	2.2.4	Analytical framework17			
СН	(APT)	ER 3 The Result of Capacity Assessment 19			
3.1	The A Learn	assessment of Individual Capacity and ing Needs			
	3.1.1	The Relevance of Climate Change Learning21			
	3.1.2	Mandatory Sectors23			

3.1.3	Competencies required and Staff's Job Description23			
3.1.4	Climate Change Training: Participants, Results and Relevance24			
3.1.5	Assessment of Skill Development and Learning Needs			
3.1.6	Human Resource Capacity24			
3.1.7	The Priority of Learning Needs25			
3.2 The Assessment of Institutional Capacity for Learning Delivery				
3.2.1	Provision of Learning Activities/ learning Relevant to Climate change25			
3.2.2	Financing Learning Activities/ Training Relevant to Climate Change25			
3.2.3	Number of Participants on Learning/ Training Offered by Institutions26			
3.2.4	Topics covered in the Learning Activities/ Training Conducted by Institutions			
3.2.5	The Lecturer Expertise in the Institutions26			
3.2.6	The Needs of Institutional Capacity26			
СНАРТ	ER 4 Strategy and Priority			
	Actions 27			
4.1 Strate	egy Formulation29			
Strate	egy Analysis29			
4.2 Program and Action				
CHAPTER 5 The Implementation of				
	Strategy 31			
5.1 The S	tage of Implementation			
5.2 The mechanism of Implementation				
5.3 Monitoring and Evaluation35				
CHAPTER 6 Policy Recommendations 37				
Referenc	es			
Annexes				

LIST OF TABLE, FIGURES, AND ANNEXES

TABLES

- 2. Summary of priority areas, targets, policies and strategies of RAN-GRK (Presidential Decree no 61/2011).....11

FIGURES

1.	The 13 th Conference of Parties, UNFCCC in Bali, December 20075
2.	Indonesian Current Context of Development Planning and Strategy7
3.	Mainstreaming Sustainable Development in RPJMN
4.	Cross Sector Policy on Climate Change in RPJMN9
5.	Multi-sectors and Multi-stakeholders Cooperation15
6.	Methods and Analytical Framework17
7.	Relevance of Adaptation Topics in Indonesia22
8.	Relevance of Mitigation Topic in Indonesia22
9.	Institutional response to the mandatory sectors in climate change in Indonesia23
10.	Staff's Function and assignment related to climate change24
11.	Assessment on learning needs related to climate change
12.	Human resource capacity25
13.	Institutional Proposal on Learning Activities/ Training relevant to climate change
14.	Financing learning activities/training relevant to climate change
15.	Secretariat working mechanism, DNPI and stakeholders

ANNEXES

1.	Short term and Long term Action Plans	45
2.	Proposal or Proposed Activities	52
3.	Stakeholder Analysis	53
4.	Summary fields and sub fields, the action plan/program and the target RAN-API	56
5.	Important policy initiatives to adressed climate change at the Ministry / Agency	(0
	in Indonesia	60



CHAPTER 1 Background and Scope



1.1 Introduction

Climate change is a multi-dimensional, complex and dilemmatic challenge faced by human beings during the 21 century and beyond. Every country and community group in the world must confront to this threat. Studies from the IPCC (*Intergovernmental Panel on Climate Change*) concludes that the intensity of a changing climate in the past 150 years has increased due to human activities and intervention (anthropogenic intervention) in global, regional, national and local levels. The main human intervention are the over exploitation and use of fossil fuels both petroleum and coal, also forest conversion and un-controlled land use change that released Green House Gasses (GHG) emissions to the atmosphere.

The changing climate is caused by global warming and affects the weather including changes in rainfall and temperature patterns causing floods and dry spells; heat waves that cause impacts such as fire and extreme drought; social impacts through affects on livelihoods and increased incidence of disease; and economic impacts such as the decline of productivity and infrastructure damage. Every country and living organisms on the earth suffer from these conditions.

In general, climate change could be addressed by mitigation and adaptation actions. Mitigation actions aim to reduce the GHG release to the atmosphere by reducing the use of energy resources which produce CO2. The source of CO₂ are the burning of petroleum, coal and natural gas in the production and industrial processes, transportation, power plant and other development activities. Moreover, mitigation could also be conducted by adding, strengthening and expanding the earth system to sequester and store carbon naturally, for example by adding the size of forest cover in order to be able to absorb the emission released to the atmosphere back to the trees. The other important action is adaptation which means an effort to adapt to the negative impacts of climate change. Adaptation efforts could be done by reducing risks and handling the impacts immediately and effectively.

A countermeasure of climate change through adaptation action is the priority agenda for almost all developing countries such as Indonesia and to also contribute to the voluntary mitigation action. The geographic locations and social economic conditions of developing countries are already vulnerable to several disturbances such as floods, landslides, tsunami, drought, and forest fire. Moreover, most of these countries have limited resources and capacity to respond the natural disasters and the impacts of climate change. Therefore, it is important for developing countries to integrate adaptation actions to combat the impacts of climate change with other national development programs to improve economic, social and environment resilience. In principle, adaptation program should be in line with the programs to achieve sustainable development.

The success of a mitigation and adaptation programs in one country rely heavily on the quality of human resources. The human resource capacities to design, plan, implement and evaluate the impacts of such programs are essential to tackling the impacts of climate change.

Policies, programs and activities of strengthening human resource capacity that have been compiled in this National Learning Strategy support the goal to reduce GHG emission, particularly in Indonesia. Therefore, this National Learning Strategy has bee specifically designed to support implementation of the RAN GRK and RAD GRK. Similar policies, programs and activities of strengthening human resource capacity are needed to support RAN API policy eventhough the said policy has not been approved by the Indonesian Government.

1.2 International Agreements

1.2.1 UNFCCC

Climate change is a global symptom and issue that is impossible to be addressed solely at the national level. Legally binding international agreement is needed to reduce the GHG emissions and to implement adaptation actions. Therefore the United Nations legitimized the United Nation Framework Convention on Climate Change (UNFCCC) in 1992. The goal of the convention is the "stabilization of greenhouse gas concentration in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system".

Stabilized levels of emission need to be achieved in a certain period of time to allow natural adaptation of the ecosystem and guarantee continuity of food production in order to ensure sustainable economic development. Furthermore, article 3 of UNFCCC mentions that "parties should protect the climate system for the benefit of future and present generations of human kind on the basis of equity and in accordance with their common but differentiated responsibility and respective capabilities. Accordingly, developed countries should take the lead in combating climate change and the adverse effects thereof".

In order to meet the objective of the convention on a committed time frame and target of emissions reduction, the UNFCCC has developed a procedure for the implementation of the convention. One of the important achievements in the negotiation of the global emissions reduction is the Kyoto Protocol Agreement in 1997. Kyoto Protocol regulates developed countries to reduce emission of 5.2% relative to 1990 level by 2012. Developing countries do not have binding targets under Kyoto Protocol to cut their emission level; however, they are encouraged to voluntarily implement low carbon sustainable development.

1.2.2 Article 6 UNFCCC

Improving public awareness and capacity building, especially in the disaster prone regions and sectors are key factors to indicate the effectiveness of the efforts to address climate change. Therefore, UNFCCC created article 6 as one of the 26 articles on the text of the convention which obligates every government in every country to develop and implement the actions.

Article 6 of the convention stipulates the improvement of human resource capacity which is part of a nation's responsibility in reducing GHG emissions. It is undertaken by developing and implementing education programs and public awareness on climate change, opening public access to information on climate change issues and promoting public participation in combating climate changes. These programs could be conducted through the development and delivery of targeted training materials, revisions to the national curriculum, and specific public awareness campaigns on climate change. All these measures require associated investments in capacity development. . Furthermore climate change negotiation related to the article 6 have continuously emphasizes developed countries' responsibility in providing related support implement mitigation and adaptation actions through science, technology and funding.

Article 6 was discussed for the first time in New Delhi in 2002. The negotiation resulted in the New Delhi Work Programme setting out multilateral and bilateral cooperation measures to support the implementation of article 6 and its work plan. Atthe 12th Conference of Parties (COP) held in Nairobi in 2006, the Nairobi Work Plan (NWP) on impacts, vulnerability and adaptation to climate change was agreed. It aims to assist all Parties, in particular developing countries, including the least developed countries and small island developing States to combat the impact and vulnerability of climate change and adapt to it.





Figure 1. The 13th Conference of Parties, UNFCCC in Bali, December 2007

The program of capacity improvement is focused on two work areas: a) improve their understanding and assessment of impacts, vulnerability and adaptation to climate change and b) make informed decisions on practical adaptation actions and measures to respond to climate change on a sound scientific, technical and socio-economic basis, taking into account current and future climate change and variability¹.

At the 18th COP in Doha in 2012, the NWP was officially confirmed as one of the agreements of the Parties. This commitment had the effect of strengthening the commitment of Parties to support the implementation of Article 6 at national level, taking into consideration the specific environment conditions and capacity of each country.

1.2.3 Education for Sustainable Development

The effort to address climate change in one country needs to be integrated with the programs to improve economic, social and environment resilience. At its 57th meeting in December 2002, the United Nations General Assembly proclaimed the UN Decade of Education for Sustainable Development (DESD) 2005 - 2014. It also designated UNESCO as the lead agency to promote and implement the program. DESD aims to give opportunities in fixing and promoting vision and transition towards sustainable development through education, public awareness and trainings. Furthermore, it could improve the important role of education and sustainable development practices.

The objective of DESD are: 1) facilitate networks, exchange and interactions of ESD parties; 2) trigger the improvement of education quality and practices in ESD; 3) support countries to achieve Millennium Development Goals through ESD efforts; 4) give new opportunities for each country to involve in the education reforms.



Nairobi Work Programme was ammened in COP 13 in Bali, Indonesia. The ammendements are : (a) development and implementation of education programs and public awareness to climate change and the impacts; b) trainings for scientist, technicians and management; c) public access to information on climate change and the impact; d) public participation in combating climate change and the impacts and develop efective actions; e) establish cooperation to the international level through several organizations. The cooperations are: i) development and exchange educations materials and public awareness on climate change and the impacts, and ii) development and implementation of education programs and training to strengthen national capacity and exchange or experts supports to train special field officers especially in the developing countries.



1.2.4 The United Nation Conference on Sustainable Development (UNCSD Rio+20)

The United Nation Conference on Sustainable Development in 2012 (Rio+20) agreed the future global development agenda should emphasize the achievement of Millennium Development Goals (MDGs). MDGs sets 8 (eight) agreements on global objectives in the area of poverty reduction, education, gender mainstreaming, health of mothers and children, environment, HIV/AIDS and transmitted diseases reduction and establish global cooperation for development.

One of the goals of Rio+20 is the agreed program of Sustainable Development Goals to be completed in 2015. The program should orient to actions, communicable, concise, inspirational, global and universally implementable at all countries with some considerations on national conditions, capacity and development level and relevant to the national policy and priority.

1.2.5 Paris Declaration

Climate change is a global responsibility which requires mutual cooperation among developed and developing countries. One important support needed by developing countries to tackle climate change is the improvement of human resource capacity. Currently, many aids were distributed through bilateral, regional and multilateral cooperation from developed countries to developing countries. However, the implementation should avoid the Paris Declaration findings including: a) strong direction from donor priority and controlled through aid channels which hamper developing countries to obtain the necessary funding, b) lack of aid coordination, transparency and prediction. Paris Declaration aims to support the effective aid delivery by reinforcing 5 (five) principles: 1) Ownership: Partner countries exercise effective leadership over their development policies, and strategies and co-ordinate development actions; 2) Alignment: Donors base their overall support on partner countries' national development strategies, institutions and procedures; 3) Harmonization: Donors' actions are more harmonized, transparent and collectively effective; 4) Managing for Results: Managing resources and improving decisionmaking for results; and 5) Mutual Accountability: Donors and partners are accountable for development results.

1.3 National Policy

1.3.1 Plan and Development Strategy

The Long Term National Development Plan (RPJPN) 2005-2025 provides guidance of national development for government and citizen to perform the future 20 years development programs. Indonesia is committed in mainstreaming climate change in the national development strategy. This is mainly due to it's vulnerability to the impacts of global climate change that influences the achievements, objectives and quality of development goals. Therefore, Indonesia aims to actively improve the capacity in handling climate change which in line with several sectors and regional development programs that integrate human resources, science and technology, research and development supports from universities and other research centres in all area in Indonesia. This is also relevant with the policy of RPJPN to improve Indonesia's competitiveness level based on science and technology and human resources in the future.

7



Figure 2. Indonesian Current Context of Development Planning and Strategy

Mid Term Development Plan (RPJMN) is a national development plan for the period of 5 (five) years. RPJMN 2010-2014 is a second phase of the implementation of Long Term Development Plan (RPJPN) 2005-2025 which is regulated under Act No 17, 2007. RPJMN is guidance for ministries/agencies to design Strategic Plan of the organizations and strong consideration for local governments in designing their own development planning to meet national development goals.

The National Development Priority in RPJMN (2010-2014) consists of 14 (fourteen) development areas:

- 1. Management of Bureaucracy reform and Governance
- 2. Education
- 3. Health
- 4. Poverty eradication
- 5. Infrastructure
- 6. Business and investment conditions
- 7. Energy
- 8. Environment and Disaster Management
- 9. Disadvantage, foremost, outermost, post disaster and post conflict areas

- 10. Culture, Creativity and Technology Innovation
- 11. Food Resilience
- 12. Politics, Law and Security
- 13. People's Welfare
- 14. Economics

The goals of policy priority are based on four principles: Pro-growth, Pro-job, Pro-poor and Proenvironment. Moreover, sustainable development policy is implemented through internalization and integration of three pillars: economics, social and environment; and support system recovery to support economic growth, creation of job opportunity and poverty eradication.

1.3.2 Mainstreaming Concept of Sustainable Development in RPJMN

Mainstreaming sustainable development in RPJM includes aspects of economics, social and environment is illustrated in picture below:



1.3.3 Cross Sector Climate Change Policy in RPJMN

Cross sector policy related with climate change described in the RPJM is intended to improve capacity to address the impacts and reduce the rate of climate change both effectively and accurately. It consists of adaptation, mitigation and supporting policies. The strategies to achieve the policy goals are: 1) capacity building on adaptation and mitigation of climate change in every development sectors and institution strengthening; 2) provide alternative funding source to implement activities to control climate change; 3) emission reduction in energy, forestry and waste sectors; 4) adaptation capacity building in sectors and regions especially in the area of agriculture, marine and fisheries, health and water resources; 5) development of policy and regulation on climate change.

The cross sector policies related to climate change are:

- 1. Indonesia Climate Change Sectoral Roadmap (ICCSR): supports government's vision related to climate change in the next 20 years.
- 2. Indonesia Climate Change Trust Fund (ICCTF).
- 3. Reduction Emission supports through development of Government Regulation (RAN-GRK).



Figure 4. Cross Sector Policy on Climate Change in RPJMN

1.3.4 National Policy on Climate Change

1.3.4.1 Mitigation Program

The Indonesian government is committed to reducing national emission of GHG around 26% in 2020 on business as usual (BAU) and around 41% emission reduction with international support, as stipulated in Presidential Regulation No 61 in 2011 on National Action Plan in Reducing GHG Emission (RAN-GRK). This is an Indonesian government commitment to address the impact of climate change and to meet the sustainable development goals conveyed respectively in G20 meeting in Pittsburgh in 2009, the 15th COP of Climate Change in Copenhagen and 16th COP in Cancun. The National Action Plan in Reducing GHG Emission contains a strategy to stabilize GHG emission through reducing GHG release to the atmosphere and improving carbon sequestration from the atmosphere into plant's biomass. There are five (5) priorities in RAN-GRK: a) forestry and peat land, b) agriculture, c) energy and transportation, d) industry, e) waste management. The reduction emission actions on five priority sectors are supported by several sectors and fiscal policies.

Contor	Emission Reduction Scenario (Giga ton CO2e)		Rainistains (A sourcise	
Sector	26%	+ 15% (Total 41%)	Ministries/Agencies	
Forestry and Peat Land	0.672	0,367	Ministry of Forestry, Ministry of Environment, Ministry of Public Works, Ministry of Agriculture	
Waste	0.048	0.030	Ministry of Public Works, Ministry of Environment	
Agriculture	0.008	0.003	Ministry of Agriculture, Ministry of Environment	
Industry	0.001	0.004	Ministry of Industry	
Energy and Transportation	0.038	0.018	Ministry of Mineral Resources, Ministry of Transportation, Ministry of Public Works	

Table 1. The GHG emission reduction target in the priority areas

Source: Presidential Regulation No 61 in 2011 on RAN GRK

Local governments led by the Governor should design Local Action Plan in Reducing GHG Emission in each province. The design of RAD-GRK should in line with RAN-GRK and regional development priority. Funding source to implement RAD and RAN GRK is National/ Provincial Budget (APBN/APBD) and other legal and non-binding source as regulated by laws.

In order to meet the reduction of emission commitment target around 26% from business as usual in 2020, government employs net emission approach as a basis to calculate the emission reduction and appoint contributed sectors. Table 3.2 shows the strategy and action of RAN-GRK for reduction emission of GHG as referred in the Presidential Decree no 61/2011.Rangkuman bidang prioritas, target, kebijakan dan strategi RAN-GRK (Peraturan Presiden No. 61/21)

1.3.4.2 Adaptation Program

Aside from mitigation priorities to combatting the impacts of climate change, adaptation action is another essential factor. Normally adaptation actions are in the forms of anticipated steps on the possible time and place, then estimated what, how and how much the impacts will be and how to reduce the risks and overcome the impact immediately and effectively to reduce bigger disasters and losses. Therefore, the first step of adaptation action is to acknowledge location and community groups who live in the certain areas that vulnerable to natural disasters and climate change.

The Indonesian government priorities efforts to combat climate change through adaptation actions. Both Indonesia's geographical and social economic conditions are very vulnerable to natural and man made disasters such as storms, floods, drought, landslides, tsunami and forest fires. Moreover, the resources and capacity of the people to respond to these natural disasters and the impact of climate change are limited. Therefore, it is essential for Indonesia to integrate adaptation program to address climate change to the programs to improve economic, social and national environment resilience. The main objectives of the integration are to reduce poverty, food deficiency and malnutrition, improve education and people's health. In principle, adaptation program should in line with efforts to achieve sustainable development. Moreover, increase of economic growth, welfare and social justice as well as ecological protection and environment protection should be conducted simultaneously and equally with some consideration to measure the impact of climate change in the achievement strategy.

Currently, the government supports the development of adaptation policy at the sector level. Each sector has tried to design vulnerability assessment and map and define the separated adaptation programs or linked existing programs with the adaptation needs. Several ministries who'se mandates and responsibilities are affected by weather related natural disasters, such as Ministry of Marine and Fisheries, have started to develop cooperation with the National Board for Disaster Management and Board for Meteorology, Climatology and Geophysics.

The Indonesian people rely heavily on natural conditions and natural resource based economics. Consequently adaptation actions should focus on *eco-system-based adaptation* and improvement of ecosystem resilience which also meet mitigation targets.

Areas	Targets	Policies	Strategies
FORESTRY AND PEAT LAND	 Emission reduction target (26%) : 0,672 (Giga ton) CO₂e Emission reduction target (41%) : 1,039 (Giga ton) CO₂e 	 Reducing GHG emission and improve environment, disaster prevention, adsorbing labours and increase people and nation's income. Network system management and swamp water management. Maintenance of swamp reclamation (including peat land if available) Improvement of productivity and agricultural production efficiency on peat land with low emission and optimal sequester CO₂ 	 Reducing deforestation and forest degradation rate to reduce GHG emission. Increase trees planting to improve GHG sequestration. Improve the forest protection programs from fire and illegal logging and implement Sustainable Forest Management. Conducting water irrigation and canal blocking and stabilized surface water elevation in swamp. Optimized land and water resources without practising deforestation. Implement technology in managing land and agricultural cultivation with low GHG emission and optimal CO₂ adsorption.
AGRICULTURE	 Emission reduction target (26%) : 0,008 (Giga ton) CO₂e Emission reduction target (41%) : 0,011 (Giga ton) CO₂e 	 Stabilization of national food resilience and improvement of agriculture production and low GHG emission. The improvement of irrigation function and system maintenance. 	 Optimize land and water resource. Implementation technology of land management and agriculture cultivation with low GHG emission and optimal CO₂ absorption. Stabilize surface water and irrigation circulation.
ENERGY AND TRANSPORTA- TION	 Emission reduction target (26%) : 0,038 (Giga ton) CO₂e Emission reduction target (41%) : 0,056 (Giga ton) CO₂e 	 Improvement of energy saving Use of clean fossil fuel (fuel switching). Improvement of new and renewable energy (EBT). Use of clean technology for power plant and transportation means. Development of low emission, sustainable and environmentally friendly national mass transportation 	 Saving end energy through cleaner and technology efficiency and reducing the fossil fuels consumption. Support the use of renewable energy both small and medium scale. Avoid trip demand through regional planning to reduce distance and unnecessary trips. Shift the use of private transportation (transportation means with high energy consumption) to low carbon transportation means, public transport and water transport. Improve energy efficiency and reduce carbon production in the transportation means.
WASTE	 Emission reduction target (26%) : 0,048 (Giga ton) CO₂e Emission reduction target (41%) : 0,078 (Giga ton) CO₂e 	Improve waste and domestic waste management.	 Improve institutional capacity and local regulations. Improve domestic waste management in urban areas. Reduce waste pile (reduce, reuse, recycle). Improve the process of waste management at the landfills. Improvement/ Development/ Rehabilitation of landfills. Re-use waste/rubbish into environmentally friendly energy production.
INDUSTRY	 Emission reduction target (26%) : 0,001 (Giga ton) CO₂e Emission reduction target (41%) : 0,005 (Giga ton) CO₂e 	Improvement of industrial growth with energy use optimization.	 Conduct an energy audit, especially in the energy concentrated industries. Give incentives on energy efficiency program.

Table 2. Summary of priority as	reas, targets, policies and	d strategies of RAN-GRK	(Presidential Decree no 61/2011)
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For example the rehabilitation of damaged peat lands and mangroves meet the target of adaptation and mitigation actions, while also resulting in better functioning ecosystems which improve productivity and economic growth overall. The Agriculture sector relies heavily on the climate and is very vulnerable to climate change. The development and dissemination of planting calendars that area adjusted to the changing climate and the development climate change school programs for farmers are some of the positive and relevant activities in this area. The potential impacts on agriculture are illustrated by International Rice Research Institute (IRRI, 2004) findings which indicate that for every 1^o Celcius increase in mean temperature, rice productivity reduced by an average of 8-10%.

In order to support the implementation of programs and activities of climate change adaptation action, the Indonesian government has designed national action of climate change adaptation (RAN-API). Climate change adaptation programs and actions are integrated with other programs: 1) Economic resilience; 2) Live system resilience; 3) Environmental services resilience; 4) Special region resilience; 5) supporting system. The summary of RAN-API programs is provided on Annex 4.

1.3.5 Important Initiatives on Climate Change

The policy priorities on combating climate change set out in the RAN GRK and RAN API provide a focus for a range of concerned, ministries and agencies that have developed their own follow up policy initiatives. These policy initiatives are integrated with the Strategic Plan and Annual Work Plan of these ministries/agencies. The ministries/agencies that have action programs related to addressing climate change are: Ministry of Forestry, Ministry of Agriculture, Ministry of Energy and Mineral Resources, Ministry of Transportation, Ministry of Public Work, Ministry of Industry and Agency of Meteorology, Climatology and Geophysics.

The initiative of the Ministry of Forestry covers controlling forest conversion, sustainable forest management, synchronizing spatial planning, restoration, rehabilitation of essential ecosystem and watershed management. The initiative has to meet the goals in reducing GHG emissions up to 489 million tonnes of CO₂e (equal with 72.8% of forestry sector RAN GRK target in 2020 of 87.6%). The number is the biggest compare to the goals of other ministries, such as: (1) Ministry of Agriculture with the adaptation and mitigation initiative to reduce GHG emissions in 2020 up to 130.57 tonnes of CO_2e , (2) Ministry of Energy and Mineral Resources together with Ministry of Transportation that are using final energy and efficient technology to save energy has the target up to 26% (0.038 Giga tonnes of CO₂, while 41% is 0.056 Giga tonnes of CO_2 , and for energy (including mining) up to 0.0275 Giga tonnes of CO₂, (3) Ministry of Public Work covers the national and regional environment planning that save, convenient, productive and sustainable with the reduction target of (26%) up to 0.048 Giga tonnes of CO_2 and 0.030 Giga tonnes of CO_2 (41%), (4) Ministry of Industry covers identification of potency to implement energy conversion and focus on two emission sources: energy sources 132.683 Gg CO₂ and industry process source up to 42.993 Gg CO_2 , (5) The Agency of Meteorology, Climatology and Geophysics covers knowledge development for mitigation and adaptation to the climate change with the target to provide data and information and also disseminate the information. The policy initiatives are important to address the impacts of climate change in Indonesia which describes in the Annex 5.

CHAPTER 2 Vision and The Objectives of Strategy



The future challenge to develop climate resilience system, environmentally friendly and low emission development is to strengthen the relevant human capacity and skills. Several things such as improving awareness level, knowledge and skills through individual and institutional capacity building; as well as improving the national education and training systems to accelerate policy intervention and its implementation are needed to be done.

2.1 Vision and the Objectives of Strategy

The national vision and the strategy objectives aim to overcome the climate change challenges in the future, that is: "Adequate number of qualified human resource to implement climate change mitigation and adaptation actions".

The objective of strategy to strengthen human resource and skills are:

 Support climate change mitigation and adaptation policies through human resource capacity building, education and skills development;

- 2. Analyse current programs of human resource capacity building and climate change related skills development and synchronize with the future programs;
- 3. Identify actions/interventions to strengthen education and skills development;
- 4. Determine short and long term education priority actions.

2.2 The Process of Strategy Development

The development process of national strategy was conducted through multi-sectors and multistakeholders collaborative process coordinated by The National Council for Climate Change (DNPI). The activities have been supported by UN CC:Learn, a collaboration of 33 multilateral organisations to strengthen human resources, learning and skills development. This included the design of A Guidance Note to Support Phase 1 of UN CC:Learn Pilot Projects. Figure 1.5 shows work relation and linkage among DNPI, UNFCCC, and UNITAR/UN CC:Learn. Government ministries and bodies were involved in the strategy development in several discussions, interviews and transparent two way consultations processes.



Figure 5. Multi-sectors and Multi-stakeholders Cooperation

The design of strategy programs and action plans were developed in multi stakeholders and multi sectors collaboration that relevant to Paris Declaration principles: a) developed action plans should be in line with the national development priority; b) action plans need to be harmonized with the UN working group action plan in Indonesia to avoid duplication; c) developed action plan need to focus on result.

2.2.1 Survey and Assessment

Survey and assessment were done to obtain information from ministries/agencies, local government, academics, non-government organization, international development agencies, company association, company (private and government) and community. Data collection method was using questioners and interviews with all the parties involved. The information that have been collected are: 1) relation between climate change with the ministries/boards; 2) human capacity and education needs; 3) institutional capacity on learning process.

2.2.2 Focus Group Discussion (FGD)

Several FGDs were conducted to extract information related to capacity building for climate change issues. The discussions involved ministries/ agencies related to the five priority policies in RAN-GRK, non-government organization, community groups, private sectors, research institutions, universities and foreign partners.

2.2.3 Workshops

One of the stages in the process of designing the National Learning Strategy was conducted through national level workshop, which covers national workshop for planning, mid-term national workshop and the launching of National Learning Strategy.

National workshop for plannin was attended by 120 participants from Ministries/Agencies, Non Government Organization, Local Government, Non Profir Organization, Universities and priate sectors. The participants of the national workshop are representatives from the Coordinating Ministry for People's Welfare, the Coordination Ministry of Economic Affair, the Ministry of Forestry, the Ministry of Agriculture, the Ministry of Environment, the Ministry of Manpower and Transmigration, the Ministry of Tourism and Creative Economy, the Ministry of Finance, BAPPENAS, BMKG, BLH of Kalimantan Selatan Province, BLH of Kalimantan Tengah Province, BLH of Kalimantan Barat Province, BLH of Sumatera Selatan Province, BLH of Sulawesi Selatan Province, BLH of Bali Province, BAPPEDA Papua, REDD+ Working Group of Kalimantan Timur Province, UN ORCID, UNODC, WHO, UNICEF, UNOPS, UNDP, UNITAR, UNFPA, UN-REDD, ICCC, CCROM-SEAP IPB, RCCC-UI, Center for Climate Change Studies, Mulawarman University, STTP Bogor, LIPI-ICIAR, Mercu Buana University, Mataram University, Hassanudin University, Nusa Cendana University, Indonesian Institute of Sciences (LIPI), Sriwijaya University, APHI, Sinarmas Forestry, BRIK (Wood Industry Revitalisation Agency), Forest Government Learning Group, PT. Persada Multi Cendikia, RECOFTC, LPTP Solo, WARSI, YAGASU, YBUL.

The workshop have produced several necessary actions:

- Developing national coordination through series of meeting, roadshows to related key parties and further communication through mailing list.
- 2. Conducting series of *Focus Group Discussion* (FGD)
- 3. Conducting presentation to international development partners under UN
- 4. Conducting mid-term workshop
- 5. Planning the National Learning Strategy report
- 6. Launching the National Learning Strategy

The mid-term workshop on Designing Results-based Action to Strengthen Human Resources and Skills to Advance Green, Low Emission and Climate Resilient Development consists of several presentations, working groups and discussions. The meeting was attended by 62 participants who represent 15 ministries/ agencies, UN agencies (UNESCO, FAO, ILO, WHO, UNORCID, UNEP, UNITAR), UN Resident Coordinator Office, 3 universities (University of Indonesia, Sriwijaya University and ITB), non private organizations and private (pertamina). The workshop was discussed about the draft of National Learning Strategy and the priority activities also several steps to accomplish the National Learning Strategy, such as:

- 1. Distribute the action plan related to the implementation of National Learning Strategy to all Ministries/Agencies
- 2. Finish the National Learning Strategy report
- 3. Launch the National Learning Strategy

2.2.4 Analytical framework

The analytical framework in designing National Learning Strategy refers to the UNCC:Learn guidelines as shown in Figure 6, and the steps are:

- 1. **First step**: National workshop for planning
- 2. Second step: Assessment survey on human resource capacity and institutional capacity; and learning needs
- 3. Third step: Strategy formulation based on assessment result, policy analysis and series of FGD with key stakeholders. Strategy covers strengthening individual, institutional and system capacities.

The national strategy consists of background, vision and objectives, relevant priority policies, ministries/agencies and their initiatives, capacity assessment result, priority strategic actions, strategy implementation and policy recommendation. The development of national strategy has framework as follow:



Figure 6. Methods and Analytical Framework



CHAPTER 3 The Result of Capacity Assessment



Indonesia has ratified UNFCCC and has the responsibility to implement the Article 6 of UNFCCC. Mitigation and adaptation actions on climate change need to be supported by policy, sufficient capacity of human and institutional resources and awareness from all relevant stakeholders.

In 2011, DNPI has conducted studies and coordination meetings with several ministries/ agencies, academia, professionals and media on the implementation of Article 6 (education, training and public awareness). The results show some challenges in the implementation actions made by the Indonesian Government. They also indicate the needs to continuously implementing the Article 6. Moreover, the studies recommend some improvement on the implementation in the area of education, training and public awareness on climate change in Indonesia. The studies are relevant with the results from inter-institutional coordination, survey, FGD and national workshop that have been done in order to develop National Strategy to Strengthen Human Resources and Skills to Advance Green, Low Emission and Climate Change Resilience.

The current event of climate change needs to be addressed by improving understanding on the scientific processes both causing factors and the impacts to human and environment. Sufficient understanding will be able to support the planning of adaptation and mitigation actions. Furthermore, the effort to tackle climate change needs adequate individual and institutional capacities. Individual capacity related to the knowledge, skills to implement tasks and participation. Institutional capacity related to the capability to deliver climate change learning process, specifically in the institution's environment and public in general. Both capacities will support the development of the system to strengthen human resources. Therefore, individual and institutional capacity assessments need to be conducted to determine the gap and needs to the education, training and public awareness.

3.1 The Assessment of Individual Capacity and Learning Needs

Individual capacity and learning needs have been assessed to the individuals who work for the key institutions related to climate change in Indonesia such as government institutions, academia, non government organization and private organizations. The objectives of the assessment are to determine the knowledge, skills and individual attitude, also the learning needs to support their assignments and participations in addressing the climate change. The assessment focuses on the relevance aspects of climate change learning topics, the order of mandatory sectors and the gap of human resource capacity and individual skills, and also the learning needs. The results of the assessment on individual capacity and learning needs describe on the following section.

3.1.1 The Relevance of Climate Change Learning

Assessment was also conducted to identify learning priority of mitigation and adaptation in key sectors, such as: forestry and peat land, agriculture, industry, transportation and energy also waste. The orders of the importance are: 1) forestry sector and peat land, 2) energy and transportation, 3) agriculture sector and 50 industry sectors.

The result of the assessment shows most of the respondents (78%) consider that mitigation is relevant to address climate change issues. Meanwhile, a small amount of respondents (22%) consider that mitigation is in the category of "moderately relevant". This means that learning and understanding on climate change related to mitigation aspect is important things to be improved. Respondents also assessed the adaptation; around 87% considered it is important in addressing climate change issues. Only 9% of respondents considered adaptation is not relevant in addressing climate change issues. This survey indicates that learning of adaptation should gain more attention than mitigation.





Figure 7. Relevance of Adaptation Topics in Indonesia



Figure 8. Relevance of Mitigation Topic in Indonesia

3.1.2 Mandatory Sectors

The survey result on the order of mandatory areas in climate change indicates the order from the largest to the smallest, respectively: forestry, environment, education, economic planning and development, industry, agriculture, energy, water, waste and health. The institution respond for climate change mandatory is similar to the priority areas according Presidential Decree No. 61/2011 on RAN-GRK. Respondents recommend that giving special attention to the area/system of education and environment, also economic planning and development is important. The area of water also needs to gain special attention since it related to the people's welfare. The result also shows that all the parties consider forestry as the most important area to address climate change.

3.1.3 Competencies required and Staff's Job Description

At the individual level, capacity building focuses on the process of attitude and behaviour changes with knowledge, skills and attitudes as determinants. The determinants of individual capacity are developed by knowledge and skills development through education and training. It includes learning by doing process, participation, sense of ownership and process related to performance improvement through changes in the management, motivation, morale and level of accountability. Individual gap could be analysed from the functions and tasks, competencies required by individuals who work for certain institution.

The survey result shows that the individual functions and tasks from the institutions related to climate change in Indonesia is considered as quite comprehensive since they cover tasks as follow: a) policy development, b) research and development of the climate, c) education and development of science and technology, d) development of learning and training modules and materials, e) management and monitoring of climate data, f) inventory of GHG emissions, g) identification and planning of mitigation program, h) development of measurement methodology, i) implementation of carbon credit program, j) communication and environmental education, k) monitoring and evaluation, l) finance and funding, m) engineering and operation technology, n) cooperation, o) consultancy, p) community development.

Based on the competency, mainly staffs at related institution have a very diverse competency, from the most relevant to the least relevant to the given assignments. Moreover, based on the position, some staffs have irrelevant competencies with the given assignments, for example: overlapping assignments between functional and structural staffs and the level of position which is irrelevant with the given assignments. Moreover, most of the assignments are not fully described in the job description. Figure 9 shows the percentage of institution's staffs in Indonesia who already have job description related to climate change.



Source: Surveyor Indonesia, 2012

Figure 9. Institutional response to the mandatory sectors in climate change in Indonesia



Figure 10. Staff's Function and assignment related to climate change



Figure 11. Assessment on learning needs related to climate change

3.1.4 Climate Change Training: Participants, Results and Relevance

Institutions related to climate change in Indonesia mainly sent their staffs to participate in the training related to climate change issues. The results of training have relevance ranged from "moderately relevant" to "very relevant", especially for the program development and mitigation and adaptation actions of climate change in their respective areas. The relevance mainly still limited to the task supports in different areas and has not reach the relevance for action activities. The approximately number of staffs from institutions in the main area of RAN GRK are 3-5 people for technical training. Moreover, number of people who attended dissemination/public awareness through seminar/workshop are about 50-100 people.

3.1.5 Assessment of Skill Development and Learning Needs

The assessment of learning needs, education and training program development are important factors to equate the learning with the needs. The survey result shows that 54% respondent institutions have conducted needs assessment of skills development/learning needs and 46% of them have never conducted the assessment. It shows that half of surveyed institutions have given certain attention to the needs of capacity building to address climate change issues.

3.1.6 Human Resource Capacity

In terms of capacity adequacy, the result shows that less than 40% of of institutions with responsibility for climate change in Indonesia consider that they have 'very sufficient' human resource capacities to address climate change issues. The gaps caused by: lack of number of staff working on climate change, limited knowledge and skills and lack of specialty and irrelevant educational background.
3.1.7 The Priority of Learning Needs

The priority of climate change learning topics in several surveyed institutions varies from "less" to "more than sufficient". High priority learning topics include: REDD+, decision making process related to mitigation and adaptation, climate change related to population dynamics, climate change funding, the framework of climate policy, climate change negotiation and green economy. Topics with a lesser priority include:

3.2 The Assessment of Institutional Capacity for Learning Delivery

The effective organization and institution are the important determinant to ensure the optimal and sustainable individual capacity development. In contrary, the individual capacity development might be needed to developed effective institutions. The capacity development at the institutional level focuses on general performance of the organization and the ability to perform institutional function, also the organizational capacity to adapt to a change. It aims to develop institution as a comprehensive system including the individual and group constituents, also the relations with the parties outside the organization. Moreover, the improvements to the physical capital are also needed, such as infrastructure, the development of institutional capacity along with clarification of the mission, structure, responsibilities, accountability and reporting procedures, changes in procedures and communication, and the changes of human resource utilization. Institutional capacity survey was conducted to government institutions (5 ministries which have mandate and also local government), academia and non government organization. The result of the survey related to institutional capacity cover:

3.2.1 Provision of Learning Activities/learning Relevant to Climate change

The provision of training activities is a determinant of individual capacity in strengthening human resource and skills. The survey result shows 58% institutions in Indonesia have learning activities/training relevant to climate change, whereas 42% do not have such activities. It indicates that more than a half of surveyed institutions have the learning facilities and training related to climate change.



Figure 12. Human resource capacity



Source: Surveyor Indonesia, 2012

Figure 13. Institutional Proposal on Learning Activities/Training relevant to climate change

3.2.2 Financing Learning Activities/ Training Relevant to Climate Change

The other determinant of institutional capacity is the budget availability. In terms of funding of learning activities/ training relevant to climate change, around 88% institutions in Indonesia with a mandate for climate change have the funding sources, while 12% do not. These sources are 42% of national budget (APBN), 25% of foresign aids and 21% was from internal institutional budget. It shows that the government provides funding for activities related to climate change.



Source: Surveyor Indonesia, 2012

Figure 14. Financing learning activities/training relevant to climate change

3.2.3 Number of Participants on Learning/ Training Offered by Institutions

The number of participants on learning held by institutions is an indicator of the capacity of training's organization. The survey result indicates that the capacities of the training's organization are varied from tens to thousands participants. In general, the learning participants are dominated by learning participants related to REDD+ which conducted by forestry sector. It shows that forestry sector is advance in working on climate change issues.

3.2.4 Topics covered in the Learning Activities/ Training Conducted by Institutions

Topics covered in the learning/training conducted by the institutions mainly focus on REDD+ for forestry sector and other aspects which generally still in the area of introducing climate change and the impacts to Indonesia and climate change adaptation actions in agriculture. It shows that the government policy framework put forward the REDD+ as strategic issue compared to the other mitigation programs.

3.2.5 The Lecturer Expertise in the Institutions

The survey on the lecturer expertise indicates that institutions in Indonesia have lecturers with diverse expertise yet relevant to the learning skills topics in the area of climate change, for example the expertise of: inventory and GHG emission accounting, REDD+, MRV, National Forest Inventory, Negotiation, Policy, Policy of Natural Resource and Environmental Management, Agronomy, Landscape, Agro-meteorology, Impacts of Climate Change, CDM, environmental finance, strategic planning, GIS, hydrology, IT, soil science, water balance, modelling, ecology, conservation, irrigation, environmental funding and advocacy. It shows that most of the expertise is dominated by the expertise in the area of environmental issues.

3.2.6 The Needs of Institutional Capacity

The institutional strengthening aims to improve institutional capacity in conducting tasks and functions in delivering learning on climate change. The assessments on the needs to strengthen institutional capacity was conducted to government institutions, non government organizations and academia. The strengthening needs assessment is conducted by institutional characteristic analysis, the issues, the institutional needs related to tasks and functions, institution's potentials and the involvement in the actions. The result of the assessment on the needs of strengthening the climate change institutions in Indonesia is showed in Annex 3.

Based on the assessment result to the individual and institutional capacities, some of the efforts to improve individual and institutional capacities have been conducted by stakeholders in Indonesia, both the government and public institutions. The priority of the individual capacity building that need to be done are: (1) the arrangement of tasks and functions of the staffs working on climate change, (2) conducting staff training relevant to their tasks and functions to improve the work performance, (3) strengthening program and budgeting staff to support the planning of human resource capacity building and improve skills related to climate change, (4) improving and strengthening staff's knowledge and skills in the area of climate change to improve their competency in the their particular area of expertise.

Moreover, the steps to strengthen individual capacity in conducting learning activities on climate change are: (1) strengthening the institutional capacity to organize the climate change training, (2) prioritizing the learning capacity on climate change in the priority areas, (3) strengthening the more applicable training program development, (4) optimizing the institutional potentials to supports the learning process of climate change.

CHAPTER 4 Strategy and Priority Actions



4.1 Strategy Formulation

Strengthen capacity of individual and institutional skills, educational and training system and public awareness require strategy and action especially in the priority area of mitigation and adaptation. The strategy formulation and priority action based on the facts of individual and institutional capacity conditions related to current climate change in Indonesia and the future expected condition.

The priority action plan is compiled by considering integration with the national development policy, initiatives and priority policy of key sectors in Indonesia. Therefore, the strategy and action plan provide the comprehensive approach, integration and coordination of all components related to climate change adaptation and mitigation efforts in Indonesia. The action plan has to be clearly compiled and measurable to evaluate several aspects of education management, training and awareness to the climate change, environmentally friendly development and climate resilience to be able to conduct continuous improvement efforts.

In order to give direction in strengthening human resource and skills for the green development, low emission and climate resilience, common vision is developed to be achieved in 2025. Moreover, strategy to achieve the mission has to be made based on the analysis of current conditions both internal and external.

Strategy Analysis

Strategy analysis was conducted through SWOT analysis. The process of SWOT analysis was conducted through internal capacity analyses (institutional and individual) to strengthen human capacity. The analysis was based on series of assessments and literature review and also from identification of external opportunities and threats. SWOT analysis is a simple tool to predict the best way in conducting strategies. The strategy options are based on the objectives of capacity building and internal weakness and strength and also external opportunities and threats. After the internal and external components were identified, clearly explained and agreed, the next step was conducting brain storming of ideas and then the strategy formulation was conducted through FGD.

In conducting analysis to determine the strategy, SWOT method is used. The strategy analysis was conducted on the current condition through identification of strength and weakness, also the external factors as opportunity and threat.

The identification of strength, weakness, opportunity and threat was carried out through a SWOT analysis with the results as follows:

STRENGTH	WEAKNESS
1. Availability of research experts	1. Lack of individual, institutions and system capacity
2. Availability of Research and Training Centre	2. Lack of private and public awareness
3. Competent educational and training institutions	3. Lack of information
4. Program and Funding of capacity building	4. Limited training module for training and raising climate change awareness
5. National commitment on Mitigation and Adaptation Action Plan	5. Unavailability of curriculum for climate change education
6. National Education system able to integrate climate change	
7. Report of <i>Article</i> 6	
OPPORTUNITY	THREAT
1. Global committment to climate change	1. Apathetic respond to climate change
2. Understanding of climate change mitigation	2. Weaker commitment of developed countries
3. International funding sources (bilateral and multilateral)	3. Counter campaign against climate change
4. Knowledge Low Emission Development (LED)	4. Slow implementation of the efforts to address climate change
5. Open information for public	5. Large differences on the perceptions on climate change

Table 3.SWOT Analysis

The strategy is formulated by considering existing measures to strengthen human resources and skills to address climate change, and assesses both internal and external measures. These measures, although relatively weak at this time, hold the potential to be significantly strenghthened and scaled up at all levels: sub national, national and international. Therefore, strategy formulation of strengthening human resource and skills to address climate change and to promote Green Low Emission and Climate Resilience Development consist of 3 (three) elements:

- 1. Individual and institutional capacity buildings for the five priority areas and cross cutting sectors.
- Capacity building on mitigation and adaptation learning program into national education system.
- 3. Awareness improvement and knowledge development of parties related to climate change.

The strategies implementation mentioned above were conducted through several sectors programs (ministries, agencies, local governments, private and public). Program and action are described in the section 4.2

4.2 **Program and Action**

The programs are developed to achieve goals through determined strategies as follows:

Strategy 1: Individual and institutional capacity building for the five priority areas and cross cutting sectors based on RAN GRK (forestry and peat land, agriculture, energy and transporattion, industry and waste)

This strategy is taken by implementing programs as follows:

- a. Strengthening national and sub national capacities to conduct RAN and RAD GRK also RAN API;
- b. Strengthening good governance for the executives and legislative member in the action to address climate change and climate finance.
- **Strategy 2:** Capacity building on mitigation and adaptation learning program into national education system.

This strategy is taken by implementing programs as follows:

- a. The development of climate change learning module and curriculum;
- b. Sustainable promotion on education development related to climate change to support capacity building of technicians and vocational workforce;
- c. Strengthening the centres of climate research and their scientists.
- Strategy 3: Awareness improvement and knowledge development of parties related to climate change

This strategy is taken by conducting programs as follows:

- a. Strengthening bilateral and multilateral networks on exchange experience in conducting mitigation and adaptation actions;
- b. Strengthening information access to obtain knowledge, technology and climate funding for mitigation and adaptation policies;
- c. Public campaign and community empowerment for mitigation and adaptation actions.

Both short term and long term activities are proposed to support the implementation of these strategies and programs. The determinant criteria of priority activities (short term action) to achieve reliable human resource to implement climate change mitigation and adaptation actions are as follows:

- 1. Urgent activities to accelerate implementation of RAN GRK and RAN API;
- 2. Future and existing activities that need to be improved and strengthen;
- 3. The time duration between 6 months to 2 years;
- 4. Proposal/TOR has been proposed by other related ministries/agencies;
- 5. Refers to the national mid-term development plan (RPJMN) and national long term development plan (RPJPN) and other documents.

Furthermore, the criteria for the long term action are determined as follows:

- a. Sustainable activities and support reducing long term emission, for example institutional capacity;
- b. *Time frame* is more than 2 years or occurs until 2015, refers to the RPJPN.

The short term and long term action plan made based on the multi stakeholders' processes through several FGDs and national workshops are provided in Annex 1.

CHAPTER 5 The Implementation of Strategy



The cooperation among stakeholders has formulated vision, strategy, program and action of the human resource capacity building in addressing climate change in Indonesia. The formulation is expected to be the common agenda to be implemented in Indonesia. In order to implement the national strategy and address some potential constraints mentioned by stakeholders during the making processes, an implementation strategy is needed. This national strategy will be implemented simultaneously and gradually cover: (1) formal legal processes, (2) institutional coordination, (3) financial planning, (4) implementation of short term and long term action plans, and (5) communication and outreach.

5.1 The Stage of Implementation

To strengthen the implementation, the national strategy of human resource and institutional capacity building need to be enacted as Presidential Decree. This is needed to obtain formal legal which will become a guiding principle for both government and non-government institutions to improve the capacity of human resource in addressing climate change, both national and sub national levels. The task to assist this process is coordinated by DNPI.

The ministries/ government agencies which follow the development process of national strategy have planned the programs to improve the capacity in the area of climate change which are also supported by other stakeholders including private, non-government organization (NGO), universities and research agencies. DNPI has the main task to coordinate the mitigation and adaptation efforts in Indonesia including supports sectors to prepare the human resource. Therefore, institutional coordination is an important stage in the strategy implementation and conducted through dissemination, cross cutting sectors dialogue and coordination meetings to review programs and updating the national strategy.

The next stage is financial planning on program and action plans which mentioned in the Emerging Priority Action as result of stakeholders consultation meeting in the ministries/agencies as describes in Annex 2. The funding for the activities comes from partners/donors, APBN/ APBD and other legal and non-legally binding agreement; therefore, the climate change funding mobilization both from outside and inside the country is needed. The funding source from inside the country could be derived from the company's CSR fund which specifically meant for human resource capacity building in addressing climate change impacts. The main three action programs have been agreed by stakeholders as pilot programs on national strategy implementation will be funded by UN CC:Learn. The programs are:

- 1. The development and implementation of human resource capacity platform and implementation coordination.
- 2. The human resource capacity building in the forestry area and REDD+ implementation.
- 3. The development of knowledge management module for climate change mitigation and adaptation programs.

The agreed three priority actions could act as catalyst on programs and activities of human resource capacity building in many other areas. Moreover, the successful identification of priority programs could share positive impacts towards enrichment and focusing the existing implementation programs within the ministries/ agencies. More detail information from the proposed pilot activities are described in Annex 2.

The next stage is the implementation of the short term action plan (2013-2015) and long term action plan (2016-2025). The short term working plan will be stressed on the activities of enabling condition and the implementation of priority action programs which coupled with review and monitoring. The achievement and implementation progress of the three programs supported by UN CC:Learn will be analysed, to produce recommendation on the future capacity building. In the short term period, it is expected that the individual and institutional capacity building could be improved to conduct strategic activities related to the RAN GRK and RAN API implementation. The short term programs are also expected to be able to bridge next activities related to the improvement of good climate change governance to produce optimal policy. The result report and dissemination in short term period has to be done as soon as possible to allow policy makers in capacity building area gain learning and direction in policy making.

The implementation of long term action plan is in forms of programs and activities that need more than two years to be completed, mainly covers human resource capacity building through education and institutional capacity building, The institutional capacity building covers ability in managing training, education (formal and informal education) and rising public awareness, improvement of infrastructure and facilities, improvement of financial capacity, improvement of the capacity of climate change knowledge and technology, and the improvement of the information system capacity on climate change learning, climate resilience and environmentally friendly development. Moreover it also covers continuous action programs such as research and campaign through mass media.

Both the short term and long term action plans mentioned above are fully in line with the Mid Term Development Plan (RPJM) and Long Term Development Plan (RPJP).

5.2 The mechanism of Implementation

DNPI has primary task to coordinate the mitigation and adaptation efforts in Indonesia including in supporting all sectors to prepare the human resource. The ineffective coordination has the potential to hamper the process of achieving goals in developing human resource in the area of climate change. Moreover, optimizing the existing learning is in line with the low carbon development program. Therefore, in preparing the human resource, DNPI will act as the centre of coordination in human resource capacity building by conducting several things such as:

1. Iterative review of the relevance of action programs and human resource capacity

building activities by considering the success indicators in terms of helping to reduce emissions, reduce climate change vulnerability and and improve related governance.

- 2. Monitoring and evaluation to the achievements of activities implementation based on the priority areas, especially the availability of skilled human resource in conducting climate change programs.
- 3. Quarterly and annual coordination meetingsto identify important things through ministries/ agencies coordination and with the support of non-government stakeholders.
- 4. Report development and dissemination of the climate change capacity building result in Indonesia including identification of obstacles and challenges also the future needed actions.
- 5. Develop bilateral, regional and multilateral cooperation in the climate change capacity building programs to accelerate the achievement of the goals of reducing emission and adaptation program as part of global effort.

The proposed activities from the ministries/ agencies to improve capacity funded by APBN/ APBD are conducted in line with the mechanism and regulation. To support the program implementation of the activities funded by partners/donors, DNPI will form secretariat which will be functioned as the implementing unit of capacity building action plan. The working relationship between the secretariat and DNPI and other stakeholders is described in Figure 14, which will form the basis of a Presidential Decree.



Figure 15. Secretariat working mechanism, DNPI and stakeholders

The figure above shows that secretariat will manage activities/project with the stakeholders and refers to the national strategy and implement them in line with the applied mechanism and cooperation regulation. To support its functions, secretariat will form program team, monitoring team and evaluation team also rapid response team.

5.3 Monitoring and Evaluation

Monitoring and evaluation for the strategy implementation including general action plan are conducted by DNPI. For the activities funded by APBN, the monitoring and evaluation are conducted by the ministries/agencies refers to the applied regulations, and for the activities conducted by the ministries/agencies funded by partners/donors will be monitored and evaluated by DNPI.

In the implementation of program activities, the quality and time management of the activities implementation are important and tightly supervised. Monitoring and evaluation are the indicators have to be used by all the activities funded by many funding sources to ensure the given input, schedule and activity output are on track, efficient and effective. The monitoring activity aims to gain information on the status of the program implementation. Through monitoring, all the stakeholders obtain comprehensive information on condition and achieved progress in one program/activity conducted by stakeholders.

Besides monitoring, evaluation is conducted based on the monitoring result. Evaluation compares the achieved result with the given target to be able to know whether the goals are reachable and whether the progress of the program/activity is on or behind the schedule. Therefore, monitoring, evaluation and reporting are important to be well conducted to continuously improve the quality of the project implementation from time to time. While the monitoring and evaluation related to the funding transfer from donors are conducted by the donor themselves.



CHAPTER 6 Policy Recommendations





This National Learning Strategy is a guidance for ministries/agencies both government and non government to design capacity building policy, programs and activities to mitigate and adapt to the climate change and also achieve low emission development. In order to support the effectiveness of the program and action implementation describes in this National Learning Strategy on Climate Change, the further recommended actions are:

- 1. The policy and national strategy on the human resource and institutional capacity building for climate change and climate resilience were proposed to be the legal product of Presidential Decree that manage the individual and institutional capacities also the system of individual and institutional capacity building in accordance with the UNFCCC mandate and ratifications.
- 2. The National Strategy need to be part of the policy and working programs in each sectors and institutions in accordance with the priority areas in RAN GRK and RAN API that have been set by the government through training programs, education, research and awareness.
- 3. In the development of human resource capacity to implement the RAD GRK and RAN API, local government should refer to the relevant elements of this National Strategy.

- 4. Related to the national strategy implementation, strengthening the mandate of DNPI is needed including the formation of the secretariat to implement the activities of coordinating human resource capacity building programs.
- 5. The short term implementation has to be the implementation of the urgent action plan and able to be conducted in the period of less than 2 years to bridge the acceleration towards mid-term and long-term activities plans. Whereas for mid-term and long-term focus on education for early childhood, technicians and vocational workforce.
- 6. The in-country funding mobilization for human resource capacity building has to comply with the good governance mechanism.
- 7. As the monitoring and evaluation reports, each ministries/agencies need to develop criteria and indicator of the success achievement on the individual and institutional capacity building programs and actions which could be measured by monitoring and evaluation activities by DNPI.

These recommendations are expected to be well implemented by both government and non government institutions in order to achieve the objectives of national strategy in accordance with the accomplishment time target and global demands.

References

- Den Elzen, M., M. Meinshausen and D. van Vuuren. 2007. "Multi-gas emission envelopes to meet greenhouse gas concentration targets: Costs versus certainty of limiting temperature increase." Global Environmental Change-Human and Policy Dimensions 17(2): 260-280.
- Ministry of Forestry. 2009. Minister of Forestry Decree No.P.30/Menhut-II/2009 on Procedures for Reducing Emissions from Deforestation and Forest Degradation.
- Ministry of Public Works. 2012. Decree of the Minister of Public Works No. 139/ KPTS/M/2012 about Team Building for Mitigation and Adaptation to Climate Change.
- Ministry of Public Works. 2012. Regulation of the Minister of Public Works No. 11/ PRT/M/2012, Official Gazette of the Republic of Indonesia Year 2012 Number 1194 on the National Action Plan for Climate Change Mitigation and Adaptation Ministry of Public Works.
- Niode, A. K. 2012. Enhancement Human Resource Capacity in Facing Climate Change. 3rd Indonesia Carbon Update.
- Government of the Republic of Indonesia. 1994. Act No. 6/1994 on the Ratification of the United Nations Framework Convention on Climate Change (Framework Convention of the United Nations on Climate Change.
- Government of the Republic of Indonesia. 2003. Undang laws of the Republic of Indonesia No. 20 / 2003 on National Education System.
- Government of the Republic of Indonesia. 2004. Law No. 25 / 2004 about National Development Planning System.

- Government of the Republic of Indonesia. 2004. Undang-Law No. 17 / 2004 about Ratification of the Kyoto Protocol to the United Nations Framework Convention On Climate Change.
- Government of the Republic of Indonesia. 2007. Undang laws of the Republic of Indonesia No. 17 / 2007 on National Long-Term Development Plan 2005-2025.
- Government of the Republic of Indonesia. 2009. Law of the Republic of Indonesia No. 32 / 2009 on Environmental Management.
- State secretariat of Republic Indonesia. 2008. President of the Republic of Indonesia Decree No. 46 / 2008 about National Council on Climate Change.
- State secretariat of Republic Indonesia. 2010.
 President of the Republic of Indonesia No.
 5 / 2010 on the National Medium Term Development Plan 2010-2014.
- State secretariat. 2011. Decree of the President of the Republic of Indonesia No. 71 / 2011 on Greenhouse Gas Inventory.
- State secretariat. 2011. President of the Republic of Indonesia No. 25 / 2011 ont REDD Task Force.
- State secretariat. 2011. Regulation of the President of the Republic of Indonesia 61 / 2011 about the National Action Plan for Reducing Emissions Greenhouse Gases (RAN GRK).
- United Nations. 1992. UN Convention on Climate Change (CCC or UN UNFCCC). Government of the Republic of Indonesia. 1994. Act No. 6 / 1994 on the Ratification of the United Nations Framework Convention on Climate Change.





Annex 1. Short term and Long term Action Plans

A. Short Term Action Plan

Strategy 1: Individual and institutional capacity building for the five priority areas and cross cutting sectors

No	Action	Objectives	Target Groups	Institutions
Area 1	: Forestry and Peat Land			
1	The development of REDD+ module for capacity building of the decision makers at the national and sub- national levels	Understanding the materials for the effective module development for decision makers.	Ministry of Forestry, Ministry of Agriculture, Ministry of Environment, Local Governments	Ministry of Forestry
2	Basic training on climate change and REDD+ for the community groups	Improving community capacity in implementing REDD+ program at the community forest	Community groups, Ministry of Forestry, Universities and research Agency	Ministry of Forestry/DNPI
3	Capacity building in the environmental services, biodiversity and ecosystem	Improve the capabilities in the efforts of REDD+ related to conservation through biodiversity protection programs	Ministry of Forestry, Research Agency, Universities, Private sectors	Ministry of Forestry/DNPI
Area 2	: Energy and Transportation			
1	Capacity building to save the energy through the use of a cleaner and more efficient technology and reduce the fossil fuel consumption	Improve the capacity of industrialist through renewable energy	Ministry of Energy and Mineral, Ministry of Industry, Ministry of Environment, Energy providers	Ministry of Energy and Mineral
2	Capacity building in biomass as renewable energy	Improve the capacity of the stakeholders, especially community in the use of biomass as renewable energy	Ministry of Energy and Mineral, Ministry of Environment, Energy providers, Communities	Ministry of Energy and Mineral/Ministry of Forestry
Area 3	: Agriculture			
1	Sustainable agriculture system for the farmers and local community at the marginal land	br Improve the farmer's capacity in improving production sustainably and information distribution on extreme weather and the efforts to overcome the extreme weather		Ministry of Agriculture / BMKG
2	Capacity building to optimize the agriculture land management to adapt to climate change	Improve the capability of the farmers and related parties in implementing sustainable and environmentally friendly agriculture	Ministry of Agriculture, Ministry of Public Work, farmers and related parties	Ministry of Agriculture
Area 4	: Waste Management			
1	Capacity building of the parties and decision makers in urban waste management	Improve the capacity of stakeholders and related parties to reuse waste to improve the environmental quality	Ministry of Public Work/ Ministry of Industry/ Ministry of Environment/ Local government and community	Ministry of Public Work, Ministry of Environment
Area 5	: Industry			
1	Capacity building for government and business practitioners in implementing green industry strategy	Improve the capacity especially for business practitioners in developing low carbon technology innovation and renewable energy	Industrial companies, technicians, R&D and local governments	Ministry of Industry/local governments

Strategy 2: Capacity building on mitigation and adaptation learning program into national education system

No	Action	Objectives	Target Groups	Institutions
A. For	mal Education			
1	Training for kindergarten teachers and providing infrastructure related to climate change education	Enrich the learning materials, strengthen the teachers capacity, optimize the learning infrastructures at the early level education	Children (less than 5 years)	Ministry of Education
2	ToT to improve the student's awareness/ youngsters in the effort to address the impact of climate change	Improve the capacity of young students to access information and knowledge related to mitigation and adaptation of climate change	Students of Elementary school, junior and senior high school and vocational school	Ministry of Education
3	Strengthening the role of universities in implementing the adaptation and mitigation of climate change	Improve the capacity and knowledge of lecturers in the course of mitigation and adaptation of climate change	Lecturers and university students	Universities/ Ministry of Education
B. Nor	n Formal Education			
1	Capacity building of the technicians and workers on the impacts of climate change and the mitigation and adaptation efforts	Develop module related to mitigation and adaptation for the technicians and workers	Technicians and workers	DNPI / Coordinating Ministry of People's Welfare
2	Awareness campaign of the urban youngsters on climate change	Improve the capacity of young communities to address climate change (impacts and solutions)	Urban youngsters (Local Youth Community /Karang Taruna) at different level and culture	Ministry for Youth Affairs and Sports/ Ministry of Internal Affairs

Strategy 3: Awareness improvement and knowledge development of parties related to climate change

No	Action	Objectives	Target Groups	Institutions
1	Capacity building to prepare negotiators in international negotiation forums related to climate change	Improve the capacity of Indonesian delegates in international negotiation related to climate change	Delegation form the ministries/ agencies, NGO, Universities and private sectors assigned by their own institutions as negotiatior	DNPI and related ministries
2	Development of knowldege management module for climate change mitiagtion and adaptation	Improve the capacity in developing knowledge management to the issue of climate change	Related ministries/ universities/ research agency/NGO	DNPI
3	Capacity building local institutions in climate change mitigation	Improve the capacity of local institutions to implement government's commitments to reduce GHG emissions	Ministry of Internal Affairs, local governments	Ministry of Internal Affairs,
4	Capacity building to develop funding proposal related to climate change	Improve the capacity of the planners to develop good proposals to be funded by donors	Related ministries/agencies	BAPPENAS dan Ministry of FInance
5	Capacity building to measure the GHG emissions	Improve the capacity of related parties in GHG emissions analysis and inventory	Related ministries/agencies	Ministry of Enviornment
6	Campaign to improve the public awareness related to waste management through 3 R (reduce, reuse, recycle)	Improve the capacity of relsated parties in GHG emissionMeningkatkan kapasitas pihak terkait dalam menganalisi dan inventarisasi emisi	Related ministries/agencies	Ministry of Enviornment

B. Long Term Action Plan

Strategy 1	Individual and institutional capacity building for the five priority areas and cross cutting
	sectors

No	Action	Objective	Target Group	Responsible Institution
Area 1	: Forestry and Peatlands			
1	Carbon accounting training for REDD+ activities, and methodology in the MRV system	Increase the capacity of forest carbon measurement	Ministry of Forestry, Research Institute, forestry companies and other related parties Local Government	Ministry of Forestry
2	FPC training concept for the application of REDD+ activities	Increase the capacity of the application of the concept of FPIC (Free, Prior and Informed Consent) in connection with the forest folk / right / CMF	Ministry of Forestry, local communities, NGOs, Research Institutions, forestry companies and local governments and other concerned parties	Ministry of Forestry
3	Training sustainable peatland management for farmers	Improve capacity utilization and protection of peat and fire control	Farmers and local communities living around the forest	Ministry of Forestry and Ministry of Agriculture
4	Increased biodiversity conservation capacity as co REDD + benefits	Raising capability in conservation efforts and biodiversity protection in relation to the REDD + program	Ministry of Forestry, local government, local communities and other stakeholders	Ministry of Forestry
5	Capacity building in the area of rehabilitation of degraded lands to increase carbon uptake	Increasing capacity to carry out the rehabilitation, soil and water conservation as well as monitoring and evaluation of the implementation of the program.	Ministry of Forestry, local government, local communities	Ministry of Forestry
6	Awareness raising campaigns related to local communities through the efforts of REDD + schemes	Promote REDD + activities to the local community	Rural communities living around the forest area	Ministry of Forestry / National Council on Climate Change
7	Capacity development in the management of peatlands in the forest	Increase the capacity of local institutions in sustainable management of peatlands	Local government, office of forestry Unit, Private Sector	Ministry of Forestry, Ministry of Agriculture
Area 2	: Energy dan Transportation			
1	Capacity building for the utilization of renewable energy and energy conservation	Human resource development in the production and consumption of renewable energy and environmental sustainability	Ministry of Energy and Mineral Resources, Ministry of Environment, Energy Corporate Users, Society	Ministry of Energy and Mineral Resources
2	Increased capacity for utilization of renewable energy	Increase in the capacity utilization of renewable energy innovation	Ministry of Energy and Mineral Resources, other concerned parties	Ministry of Energy and Mineral Resources
3	Energy management capacity building in particular on industrial energy-intensive industries for climate change mitigation	Contribute to the reduction of GHG emissions on primary industries, construction and property services, manufacturing, mining, oil and gas in order to implement green energy	Ministry of Industry, Ministry of Energy, Ministry of Environment, industrialists, local government	Ministry of Industry, Ministry of Energy,
4	Capacity building in energy efficiency and carbon reduction in spending on transportation	Ensure energy efficiency and carbon emission reduction for quality improvement and environmental sustainability	Ministry of Energy and Mineral Resources, Ministry of Transportation, Ministry of Environment, company, Ministry of Public Works, Energy users, and the public	Ministry of Energy / Ministry of Transportation, and Ministry of Public Works

No	Action	Objective	Target Group	Responsible Institution	
Area 3	Area 3: Agriculture				
1	Increased capacity to optimize land and water resources to improve climate resilience)	mproving sustainable production and utilization of water resources in support of economic development and food security in Indonesia	Ministry of Agriculture, Ministry of Public Works, and Agriculture	Ministry of Agriculture	
2	Capacity building in the implementation of sustainable agricultural systems	Improve the ability of the actors in the effectiveness and efficiency of land use and the emission reduction	Ministry of Agriculture, Ministry of Public Works, Agriculture and Plantation Company, Community / Farmers	Ministry of Agriculture	
Area 4	: Waste management				
1	Sanitation management capacity building for climate change adaptation	Improve the ability to repair water supply, drainage and domestic wastewater management	Ministry of Public Works, Ministry of Health, Ministry of Environment, Local Government, and community	Ministry of Public Works / Ministry of Health	
2	Capacity building in waste management through the 3Rs (reduce, reuse, recycle).	Increase the institutional and individual capacity to make use of waste in order to improve the quality of the environment	Ministry of Public Works, Ministry of Industry, Ministry of Environment, Local Government, community	Ministry of Public Works / Ministry of Environment	
Area 5	: Industry				
1	Development capacity GHG emisssions reductions on manufacturing industries	Contribute to the reduction of GHG emissions in the manufacturing industry	Ministry of Industry, Ministry of Energy and Mineral Resouces, Ministry of Environment, Industrialists, and Local Government	Ministry of Industry / Ministry of Energy and Mineral Resources	
2	Capacity building in machinery and equipment capacity utilization of environmentally friendly industries for climate change adaptation	Encourage the use of machinery and industrial equipment that are environmentally friendly	Ministry of Industry, Ministry of Energy and Mineral Resources, Ministry of Environment, company, Local Government	Ministry of Industry	

Strategy 2 : Capacity building on mitigation and adaptation learning program into national education system

No	Action	Objective	Target Group	Responsible Institution		
A. For	A. Formal Education					
1	Reinforcement learning systems to climate change in the formal education until high school education or equivalent including Islamic schools	Enrich the learning materials, strengthening the capacity of teachers, facilities and infrastructure to optimize learning at all levels of education	Early childhood teachers, kindergarten, elementary, junior high, high school, vocational	Ministry of Education and Culture		
2	Strengthen research activities related to climate change in the class room	Encourage research in the classroom closer to the issues of climate change	Early childhood teachers, kindergarten, elementary, junior high, high school, vocational	Ministry of Education and Culture		

No	Action	Objective	Target Group	Responsible Institution
3	Strengthen research and development related to climate change	Encourage the establishment of a research center for the design, implementation of research and development related to climate change including publication	Researchers and the general public	Ministry of Education and Culture
4	Strengthen program-program higher education (Tri Dharma Perguruan High) which relating with climate change)	Increase the capacity in terms of adaptation and mitigation of climate change in the community	Lecture and students	Ministry of Education and Culture
5	Development of study programs and higher education faculty capacity building on climate change	Developing courses and faculty for strengthening the capacity of knowledge of climate change	Lecture and students	Ministry of Education and Culture
6	Establish environmental education committee on basic education	Contribute to the strengthening of environmental education at the primary level	Teachers and students at the elementary level education, junior high, high school, vocational	Ministry of Education and Culture
7	Conducts seminars, workshops, and conferences worhkshop national, regional and international climate change	Information exchange and dissemination of information relating to the strengthening intervention Policy, the practices of climate change mitigation and adaptation	Lecture and students	Ministry of Education and Culture
B. Non	-Formal Education			
1	Strengthening the capacity of islamic boarding schools (pesantren) in the issue of climate change	Mainstreaming climate change issues into the curriculum pesantren (Islamic Boarding School)	Pupils and teachers at all schools	Ministry of Religious Affairs / National Council on Climate Change
2	Increase youth awareness on climate change by visiting the activities in the field (sekolah alam)	Provide the knowledge and experience of the impact of climate change mitigation	Children, adolescents, youth and parents	National Council on Climate Change / Ministry of Home Affairs, Ministry of Education and Culture
3	Increase women's awareness of the impact of climate change issues in urban and rural areas	Increase women's capacity to undertake efforts to address climate change	Groups of women particularly mothers of urban households	Ministry of Woman Empowerment / Ministry of Home Affairs
4	Development of family programs on climate change	Provide information to parents in providing the knowledge and practice to children about climate perumbahan	Parents and parent associations	National Council on Climate Change / Ministry of Home Affairs, Ministry of Education and Culture
5	Religious broadcasting program development on climate change issues	Increase understanding / understanding of the changes in the climate change point of view of religion	Religious leaders	National Council on Climate Change / Ministry of Religious Affairs
6	Development of broadcast television and radio programs on climate change	Provide information and experiences on climate change	Children, adolescents, youth and parents	National Council on Climate Change / Ministry of Communication and Informatics, Broadcasting Institution

Strategy 3:	Awareness improvem	ent and knowledge d	evelopment of	parties related to	climate change
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No	Action	Objective	Target Group	Responsible Institution
1	Improved governance systems to mainstream climate change	mprove the implementation capacity of key actors in government agencies executive, legislative and judicial branches	Decision makers of the executive agencies, legislative and judicial branches	National Council on Climate Change / State Ministry of National Development Planning
2	Strengthening capacity building of experts and decision-makers to the fields of food security, water, energy, infrastructure, ecosystems and environmental services related to climate change	Strengthening analytical capacity and technical capability of the human resources address areas areas of food security, water, energy, infrastructure, ecosystems and environmental services related changes	Experts and decision makers from government and the private sector related	Coordinating Ministry for People Welfare / Coordinating Ministry for the Economy, Ministry of Agriculture, Ministry of Public Work, Ministry of Environment, Ministry of Energy and Mineral Resources, Ministry of Forestry, State Minister for State Owned Eneterprises, Indonesian Institute of Sciences
3	Training for capacity building to implement low emission development (LED)	Improve individual and institutional capacity to implement LED	Relevant ministries, local governments and other parties	National Council on Climate Change, Ministry of Energy and Mineral Resources
4	Development of modules for mitigation and adaptation programs in key areas	Deepening materials relating to mitigation and adaptation programs to facilitate education, training and awareness raising at the national and sub-national levels	Technical personnel Ministries / Agencies and technical agencies, local governments and non- governmental organizations (private sector, NGOs, the general public)	National Council on Climate Change / Ministry of Forestry
5	Increased ability to build a network of bilateral and multilateral climate change funding	Increase the active participation of relevant actors in the climate finance national and sub-national level in building a network of bilateral, regional and international	Technicians and specialists of international negotiations, public sector finance managers, NGOs, financial analysts and investors in the private sector	State Ministry of National Development Planning / National Council on Climate Change, Ministry of Finance, Ministry of Home Affairs
6	Development of a communication strategy on climate change through the media	Create new initiatives in the socialization of climate change through a variety of media	Journalists, media workers from the print and electronic media	Journalists, media workers from the print and electronic media
7	Increase the role of private actors in the provision of financing climate change	Encourage the private sector through public private partnership	Private sector in the field of extractive industries / natural resource-based industries	Ministry of Finance / Bappenas, Ministry of Industry, Ministry of Environment, Ministry of Forestry, and Ministry of Energy and Mineral Resources
8	Increased awareness and the ability to socialize Climate change impacts on actors, especially at the local level	Creating a superior facilitator in promoting climate change impacts at the local level.	Government officials in vulnerable areas and people's organizations, religious, sports, producer associations, and youth organizations	State Ministry of National Development Planning / Ministry of Home Affairs
9.	Increase the capacity of women's groups in addressing climate change	Increase awareness of women's groups in the clean development in reducing household carbon emissions	Groups of women particularly mothers of urban households	Ministry of Woman Empowerment / Ministry of Home Affairs
10	Mainstreaming global agreement on climate change into the development of key sectors	Increase the capacity of planners internalize global agreements into national policy	Ministries / Agencies associated	Bappenas and National Council on Climate Change

No	Action	Objective	Target Group	Responsible Institution
11	Increased knowledge for farmers, fishermen, and communities in vulnerable areas (rural and urban) to the impacts of climate change	Build resilience to the impacts of the conditions of climate change	Farmers, fishermen, island communities, the urban poor, community organizations	Ministry of Home Affairs / Ministry of Public Works, Ministry of Agriculture, Ministry of Maritime and Fisheries Affairs
12	Development and innovation funding mechanisms Indonesian climate	Build climate financing strategy	Government and private sector	Ministry of Finance
13	Develop the implementation of fiscal policy in the implementation of climate change mitigation efforts	Developing fiscal climate policy	Stakeholders, especially local communities	Ministry of Finance

Annex 2. Proposal or Proposed Activities

No	Emerging Priority Action	Objectives	Lead Organization
1	 Training of Trainer (ToT) REDD+: 1.1 Basic training on Climate Change and REDD+ for Community Leaders in Java 1.2 Development of REDD+ training module/ simple learning tool for decision makers at national and sub-national level 	To increase trainers understanding, knowledge and skill capacity on REDD+ at National and Sub National level	Ministry of Forestry
2	Addressing Climate Change in Technical and Vocational Training and Education	Development of module of climate change at various education level	Ministry of Education and Culture
3	Knowledge Management for Developing Adaptation and Mitigation Capacity	To develop a module for climate change information system to keys stakeholder particularly living in remote areas (Farmers, Fishers)	National Council on Climate Change of Indonesia
4	Strengthening Capacities of Early Childhood Teachers Concerning Climate Change	To increase the teachers skills and capacity to develop childhood awareness at the early stage	Ministry of Education and Culture
5	Development of Public Awareness Modules/Training on Climate Change Adaptation and Mitigation	Climate Change Adaptation and Mitigation Awareness and Module Development in Indonesia	National Council on Climate Change of Indonesia
6	Awareness Raising on Climate Change Adaptation and Mitigation for community living in coastal areas	To increase awareness and community resiliencies against negative impact of climate change	National Council on Climate Change of Indonesia
7	Strengthen Knowledge and Skills to Develop Climate Change Financing Proposals	To develop and increase capacity of planners to formulate sound proposals to be funded by prospective donors	Ministry of Industry and Ministry of Energy and Mineral Resource
8	Enhancing Knowledge and Skills to Calculate Green House Gas Emissions	To increase skill capacity on methodology of carbon emission inventory	Ministry of Environment
9	Strengthening Sustainable Farming System Capacities for Farmers and indigenous people in Sub Optimal Areas	To develop capacity of farmers community to plant agriculture crops on sub optimal areas	Ministry of Agriculture
10	Development of Public Awareness Campaign to Reduce, Reuse, and Recycle Solid and Liquid Domestic Waste	To manage waste and reduce negative impact of emission caused by unmanaged domestic waste	Ministry of Public Work
11	Capacity building of industrial practitioners to increase use of renewable energy	Strengthening human resource for industrialist to increase use of renewable energy	Ministry of Energy and Mineral Resource
12	Human Resource Development for Biomass Production	Strengthening human resource development for biomass production	Ministry of Forestry and Ministry of Energy and Mineral Resource
13	Empowering National Council on Climate Change Indonesia in Human Capacity Building	Strengthening human resources development for key decision maker and community leaders	National Council on Climate Change of Indonesia
14	Mainstreaming Negotiation Result into Sector Development Program	To increase the capacity of planners to internalize the result of UNFCCC negotiation into national development program	National Council on Climate Change of Indonesia and State Ministry of National Development Planning
15	Strengthening University Role for Promoting Climate Change Adaptation and Mitigation In Indonesia	Contributing and improving adaptation and mitigation capacities at national and local level	RCCC, University of Indonesia
16	Increasing the Farmer Capacity to Face Climate Change Impact	To disseminate information related to climate change to the farmers in Cilacap	Indonesian Meteorological, Climatological and Geophysical Agency
17	Institutional Capacity Building in Regional Level on Climate Change Mitigation	To coordinate regional role on anticipating climate change that include adaptation, mitigation, transfer technology and funding	Ministry of Home Affairs

Stakeholder groups	Characteristics	Problems, needs, keen to get involved	Potential	Involvement in capacity building program action plan (based proposals)
Ministries / Agenc	ies associated 5 priori	ty areas of climate change		
Ministry of Forestry	 Implement program of climate change mitigation activities Have the authority to manage state forests 	 Lack of capacity of decision makers at the national and sub-national level in understanding REDD + Lack of capacity of forest communities to participate in REDD + activities Lack of capacity in the methodology / calculations of carbon 	 Available funds allocated from the State for the handling of climate change mitigation Have knowledge / technical expertise in forestry Can be mobilized for the implementation of national and sub-national REDD 	 Development of modules for training related to REDD + program, Technical training of carbon calculation / methodology, payment mechanisms for stakeholders at the national and sub-national levels Basic training to the community for REDD+
Ministry of Agriculture	Implement climate change adaptation programs	Lack of capacity in making development sustainable agriculture on degraded lands in both mineral soil and peat, agricultural intensification and the addition of organic matter), and crop-livestock integration for sustainable crop	Play and available resources in the handling of the issue of climate change impacts on agriculture and food security	Capacity building of farmers and the main actors involved in the mitigation of climate change to increase agricultural production Dissemination of information / dissemination on climate change for farmers
Ministry of Industry	Encourage the creation of green industries that apply the economic, environmental and social	 Lack of institutional capacity of human resources in the control of environmentally friendly technologies Policies and commitment of all stakeholders to support the implementation of green industry Facilitation and development of environmentally friendly technology incentives 	Play a role in increasing the ability of human resources industry, R & D and entrepreneurship; Mastery of energy-efficient industrial technologies and environmentally friendly	Increase the capacity of businesses to create low-carbon technology innovation and utilization of renewable energy
Ministry of Public Works	Policies implemented improve waste management and domestic waste water	Lack of capacity in the waste reduction and application of the 3Rs landfill sanitary landfill operation	 Available resource in waste handling and waste, and increase the percentage of green open space (RTH) to other cultivated areas; Ecocity embodiment, the application of the concept of sustainable construction; green building and green development road, as well as the utilization of hydropower potential in the management of water resources 	 Campaign to increase the capacity of the 3Rs of waste reduction and domestic waste water Increase the capacity of the landfill sanitary landfill
Ministry of Energy and Mineral Resources	Development of policies and increased use of new renewable energy	Lack of expertise in exploring new and renewable energy sources, as well as the rehabilitation of the former mine to reduce emissions	Encourage the movement of energy savings and utilization of renewable energy as well as small and medium-scale rehabilitation of mined	 Develop expertise for the development of production technologies of biomass energy use and biofuels Develop the expertise and skills of application of technology production and use of new and renewable energy Develop the expertise and skills

Annex 3. Stakeholder Analysis

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Stakeholder groups	Characteristics	Problems, needs, keen to get involved	Potential	Involvement in capacity building program action plan (based proposals)
Ministry of Transportation	Policy development use of transportation vehicle which efficient in energy consumption	Lack of expertise in developing efficient means of transport and changing patterns of use of private vehicles to mass transit	 Indonesia has complied with ICAO by sending "State Action Plan" (RAN-GRK Air Transport Division) in June 2012 Already has a program "Sustainable Urban Transport" Transport NAMAs as a program. With 3 cities chosen as pilot / piloting, namely: Medan, Batam, Manado. 	 Develop effective traffic engineering and efficient Campaigns use mass transportation Develop technical skills related to energy efficiency in transportation
State Ministry of National Development Planning	Mainstreaming climate change into sustainable development	Lack of capacity of the individual in planning mitigation and adaptation actions	Coordinate programs needed to address climate change, both for the challenges and opportunities at the national level in line with existing planning strategies.	Increased knowledge and skills in preparing proposals for climate finance climate change financing proposals
Agency for Meteorology, Climatology and Geophysics	Disseminating climate change information	Lack of capacity in disseminating information regarding the potential impacts caused by climate change	Having a resource in making weather forecasts and more accurate climate covers the entire Indonesian	 Observation doing - collecting climate data Research and Modeling Capacity Building in the field of meteorology research The dissemination of information related to climate change on farmers and agricultural extension in Cilacap (Central Java)
National Council on Climate Change	Coordinate activities in the implementation of climate change control duties which include adaptation, mitigation, technology transfer and financing	Increase the capacity of the individual in climate change activities include adaptation, mitigation, technology transfer and financing as well as related international negotiations on climate change	Have the resources to negotiate climate change issues at the international level	 Build capacity in screening major decisions related to program adaptation, mitigation and support of developed countries (funding, advanced and capacity building), especially with regard to national development. References that will be used is the RAN GRK and RAN API. Build capacity in translating the results of the screening decision into sectoral and cross-sectoral interests.
Ministry of Education / Research Institutions / Universities				
Ministry of Education and Culture	Play important role in the educational curriculum for Sustainable Climate Change	Build a culture, climate and behavioral competencies that are environmentally friendly	 Have the educational facilities at all levels Have a budget for research for teachers, dosesn and students 	Develop models of climate change education at all levels and types of education in the national education system of Indonesia
University	Play important Role in research, science and technology in the field of climate change mitigation and adaptation	Lack of capacity to develop a network of national and international universities for exchange of knowledge and technology in the field of climate change	 Develop education in the field of science and technology related to climate change Has study centers and research related to climate change 	• Support the operationalization of cooperation network of universities in contributing to the improvement of mitigation and adaptation capacity at national and sub-national levels through the provision of facts (data and information), education and community care or services

54

Stakeholder groups	Characteristics	Problems, needs, keen to get involved	Potential	Involvement in capacity building program action plan (based proposals)
				 Dissemination of the rate of degradation of mangrove ecosystems, and its contribution to the acceleration of climate change, as well as offering the use of university resources to mitigate the negative impacts of mangrove degradation through best practice fish farming and shrimp.
Local NGOs	Play inmportant role in community development related to climate change impacts, particularly in disaster-prope areas	Lack of human resource capacity and the means to facilitate the empowerment of communities to climate change adaptation	Have knowledge of the socio- economic and cultural	Develop knowledge and skills for climate change adaptation climate change especially in disaster prone areas

Field and Sub-field	Action Plan / Program	Target			
1. Economic resilience					
Food Security	 Adjustment of Food Production Systems Expanding the Area of Agriculture Food Improvement and development of the Agricultural Infrastructure Climate Proof Acceleration Food Diversification Development of Innovative Technology and Adaptive Development of Information and Communication Systems (Climate and technology) Support Program 	 Decline in food production lost due to extreme climatic events and climate change Development of new growth areas of food production in areas with low climate risk and minimum environmental impact (low emission) Development of food security of farmers and communities (micro) with a pattern of healthy and nutritious food and balanced, and the realization of diversification to an optimum level 			
Energy independence	 Improve and conservation of the rain catchment area Expanded use of renewable energy sources Development of innovative and adaptive technology for the cultivation of biofuel sources and forests for energy crops Support Program 	 Development of hydroelectric energy sources (hydropower) and geothermal areas with low climate risk with ecosystem conditions support Development of bio-energy crops (biomass and biofuels) with high productivity and climatic stress resistance Optimizing the use of organic waste for energy production and gas, particularly in densely populated areas to reduce environmental pollution and improve the tolerance interval of the region of high incidence of extreme rainfall. Increased utilization of renewable energy sources in remote villages that drive ecosystem sustainability and availability of sustainable energy 			
2. Resilience System Life					
Health	 Strengthening and updating of database and information related to climate, disease, and public health Improved system health sector response to climate change Strengthening of regulation, legislation, and institutional capacity Research, education, and related technology development and adaptation to climate change-related health 	 Identification and control of factors controlling vulnerability and risk to public health that can be caused by climate change Strengthening vigilance system and utilization of early warning systems for outbreaks of infectious diseases and non-communicable diseases caused by climate change Strengthening of regulation, legislation, and institutional capacity at central and local levels of the public health risks that can be posed by climate change Increased knowledge, innovation, and community participation health related to climate change adaptation 			
Settlement	 Study and socialization of development of stilts house in coastal Infrastructure in response to climate change in urban settlement areas and disaster-prone coastal areas Increase public awareness of climate change adaptation in urban and rural areas Provision of settlement with strong structures decent and affordable 	 Implementation of studies and research on improving the resilience of settlements adaptive to climate change. Development and implementation of integrated management of the settlement with the impact of climate change mitigation and sustainable development. Understanding of stakeholders and the public on a tough settlement to climate change. Increased access to decent and affordable housing 			

Annex 4. Summary fields and sub fields, the action plan/program and the target RAN-API

Field and Sub-field	Action Plan / Program	Target
Infrastructure	 Implementation of research and development on improving infrastructure resilience to climate change adaptive Reduction in the risk of disruption of the function of accessibility to roads and bridges caused by the impact of climate change Submission of information on the infrastructure resilient to climate change has a direct impact on public health Provision of sanitation infrastructure and wastewater treatment systems are resilient to changes in climate change The application of the concept and structure of the city and region based society and infrastructure vulnerability assessment Application of green urban development (Green Cities) 	 Development of the concept of adaptive infrastructure resilience to climate change Reduction in the risk of disruption of the function of accessibility to roads and bridges by the caused by the impact of climate change Increased knowledge about the infrastructure resilient to climate change has a direct impact on public health Layout management infrastructure that is integrated with spatial planning in sustainable development
3. Resilience Environmental Servi	ces	
Resilience of Ecosystems and Biodiversity	 limprovement of spatial and land use Management and sustainable utilization of productive areas Improved governance and ecosystem conservation essential Rehabilitation of degraded ecosystems Reduction of threats to ecosystems Development of information and communication systems Support programs 	 Extensive damage to the natural decline in terrestrial and marine ecosystems caused by extreme weather events and climate change. Increasing the quantity and quality of coral reefs and forest cover in the region priority watersheds Decreased levels keterancaman key species due to climate change System development ecosystem resilience
Resilience of Water Resources	 Development, management and rehabilitation situ / dam (water reservoir) and dams to control the seasonal discharge Development and / or maintenance of coastal structures to cope with the flood / rob the big cities in high-risk coastal areas to climate change Increased water availability in the region is very vulnerable through appropriate technology and the development of local water sources Construction, operation, and maintenance, infrastructure and flood control and drought to high-risk areas on climate change Water saving campaign / GNPA Increased public awareness and revitalization of local knowledge Conservation and utilization of water-based innovation Vulnerability and risk assessment of climate change on natural resources sector at the regional level and strategic areas Support the development of innovative technologies, including the availability of rain water harvesting 	 Implementation of development, management, and rehabilitation of natural resources infrastructure for water balance and strengthening risk control. Increased capacity and community participation in climate change adaptation of water resources sector. Implementation of the study and development of technologies that support climate change adaptation in the water resources sector

Field and Sub-field	Action Plan / Program	Target
4. Special Regional Resilience		
Urban	 Preparation of maps of vulnerability to climate change for urban areas Preparation of spatial planning documents and management plans in urban areas The application of the concept and structure of the city and region based society and infrastructure vulnerability assessment Application of green urban development (Green Cities) Preparation of a strategy of urban settlements and infrastructure are integrated and in accordance with the direction of the development of the city as a "comprehensive" (including adaptation to climate change) and improving the quality of infrastructure in urban settlements Provision of urban drainage systems with environmental Provision of settlement with strong structures decent and affordable Reduction in the risk of disruption of the function which is based on the effects of flooding, sea level rise and other climate disasters Increase the capacity of urban communities associated with the threat of climate change issues Research and quality improvement information related to climate change in urban areas Increased public awareness about adaptation to climate change in urban areas 	 Integrating climate change adaptation efforts into urban spatial planning plans Quality management of sustainable urban environments
Coastal and Small Islands	 climate change impacts in urban areas Increased resistance of agricultural resources and ponds to the threat of climate change Dissemination and public awareness of the phenomenon and the effects of climate change Coastal Resilience Development Village (CRV) or Resilient Coastal Villages Improved transportation and communication networks in coastal areas and remote small islands Identification the existing condition of coastal ecosystems and the small islands Maintenance and rehabilitation of coastal ecosystems and small island Maintenance and rehabilitation of non-structural or natural protective beach and the area behind it Maintenance and rehabilitation of water resources in the coastal and small island Preparation of standards, guidelines and criteria on climate change adaptation in coastal areas and small islands Identification of vital facilities and infrastructure in coastal areas Elevation adjustment and strengthening of vital structures and facilities, such as roads, ports docks, and public housing 	 Increase the capacity of coastal communities and the lives of small islands linked to the issue of climate change threats Management of the environmental quality of coastal and small islands in a sustainable manner Implementation of measures of structural and non-structural adaptation in coastal areas and small islands that are vulnerable to climate change Integrating climate change adaptation efforts into coastal zone and small islands management plans

Field and Sub-field	Action Plan / Program	Target
	12. Selection of climate change adaptation technologies appropriate, effective, and efficient (backward adaptation, accommodation, protection	
	 Construction and maintenance of coastal protection structures (sea walls, groins, breakwaters, beach nourishment, tidal sluice, etc.) 	
	14. Dissemination and application development stilts house in coastal areas	
	15. Development of early warning systems and oceanographic climatology	
	16. Hazard analysis and preparation of maps vulnerable to climate change in the marine, coastal and small island	
	17. Preparation of maps climate change vulnerability in the marine, coastal and small island	
	18. Analysis and preparation of risk maps of climate change on marine, coastal and small island	
	19. Preparation of spatial planning documents and planning of coastal zone management and small islands	
	20. Monitoring and control for spatial planning and zoning of coastal area and small island to climate change	
Disaster Risk Reduction	1. Strengthening of regulation, legislation, and institutional capacity to disasters due to climate change in vulnerable areas	 PRB due to climate change in vulnerable areas are placed as a national and local priority with a strong institutional basis in practice
	2. Disaster planning due to climate change in vulnerable areas	2. Identify, evaluate, and monitor disaster risks due to climate change and improve the utilization of
	3. Early warning of climate change in vulnerable areas	early warning in vulnerable areas
	4. Research, education, and training related to climate change and adaptation in vulnerable areas	 Increased knowledge, innovation, and education to build a culture of safety and resilience in vulnerable areas
	5. Prevention and behavioral adaptation to climate change impacts in vulnerable areas	 Reduction factors of vulnerability to climate change in vulnerable areas
	6. Increased community participation and capacity in DRR in vulnerable areas	 Improved disaster preparedness due to climate change with an effective response in vulnerable
	7. Preparedness to disasters due to climate change in vulnerable areas	areas

Annex 5. Important policy initiatives to adressed climate change at the Ministry / Agency in Indonesia

Ministry / Agency	Initiative	Program/Action	Target
Ministry of Forestry	 Control of Forest Conversion Sustainable Forest Management Synchronization Spatial Plan Restoration and rehabilitation of essential ecosystem and watershed 	 Main Program: Macro Planning of Forestry and Forest Area Consolidation) Improved forestry business, Biodiversity Conservation and Forest Protection Increased Functionality and Capability-Based Watershed Community Empowerment. 	Decrease emissions: = 0.675 million ha / yr x725 tonnes $CO_2e = 0.489$ Giga tonnes $CO_2e = 489$ million tons of CO_2e (equivalent to 72.8% of liabilities forestry sd RAN GRK 2020 at 87.6%)
Ministry of Agriculture	Mitigation and adaptation of agriculture	 Improvement of irrigation networks Optimization program through Region Sustainable Food House, Unified calendar for planting crops in anticipation of climate variability (supported by BMKG), SLI, SL IPM, and SL PTT) Yielding varieties of adaptive and / or hold: (a) drought, (b) inundation, (c) early maturing age, (d) tolerant to salinity, (e) lower GHG emissions, Innovation management of land and water: (a) optimization of land, (b) improvement of soil fertility, (c) water efficiency, (d) the minimum run-off, and (e) local wisdom, Optimization / efficiency of carbon / biomass / organic waste and "zero waste": (a) organic fertilizer / composting, (b) animal feed, (c) biomass, bioenergy, Diversification of alternative carbohydrate sources (corn, breadfruit, sago, canna, cassava, etc. 	GHG Emission Reduction in 2020 = 130.0 57 million tons of CO ₂ e
Ministry of Energy and Mineral Resources, Ministry of Transportation	 Savings of final energy use through more efficient use of technology and energy savings The use of more fuel efficient Increased use of new renewable Energy Utilization of clean technologies (generation, transport) Development of low-emission mass transit, continues and environmentally friendly Mine land reclamation 	 New Renewable Energy: 400 mandatory energy management in energy-intensive industries (10.16 million tonnes of CO₂) Energy conservation partnership in 1303 and the building industry (2.11 million tonnes of CO₂) Efficiency of household appliances by 21.43 GWh (10.02 million tonnes of CO2) MHP 130.4 MW (0.61 million tonnes of CO2) Micro power 692 MW (3.25 million tonCO2) PLTS 326.78 MW (0.29 million tonnes of CO2) S1. 657.83 MW coal-fired plant (0.06 million tonnes of CO2) DME 700 villages (0.18 million tonnes of CO2) OIL and Gas: 657.83 MMSCFD of natural gas for public transport in the city and 21:16 9 tonne LGV / day in 2 cities (3.07 million tonnes of CO2) Pipeline natural gas to 94,500 households in 24 locations (0.15 million tonnes of CO2) Construction of a mini refinery LPG 2.2 MMSCFD (0.03 million tonnes of CO₂) Mineral: Post-mining land reclamation 72,500 ha (2.73 million tonnes of CO₂) 	Emission reduction targets (26%) 0,038 Giga tonnes of CO ₂ (41%) 0,056 Giga tonnes of CO ₂ Especially for Energy (including mining) 0.0275 Giga tonnes of CO ₂
Ministry / Agency	Initiative	Program/Action	Target
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Ministry of Publick Works	 Implementation of national spatial planning and area safe, comfortable, productive and sustainable environment; Improving the quality of infrastructure and facilities of water resources to ensure national food security and reduce the risk of flood vulnerability, landslides, droughts, and coastal abration; Improving the quality and quantity of infrastructure and facilities in urban and rural settlements to reduce the potential for flooding / inundation, water crisis, and sanitation, as well as Improving the quality of infrastructure and roads and bridges to meet the needs of socio- economic mobility and accessibility of public 	 Related to Forestry and Peatlands Upgrading, rehabilitation and maintenance of networks of wetlands (including peatlands that already exist): Activities are being / have been implemented in 23 provinces with an estimated reduction of carbon emissions CO₂ jutaT 2.02 (2012) Increased network 46 061 ha of swamp reclamation target of 10,000 Ha Rehabilitation of networks of wetlands daritarget 450,000 Ha ha 12326 0 & P network reclamation rawa1, 2 JutaHa Presidential determination RTR acceleration Island / Archipelago, RTRW Provincial and Regency / City-based Strategic Environmental Assessment (SEA) 2011-2027: Establishment of a minimum area of protected areas in the regulation function RTR Sulawesi Island (40%), Kalimantan (45%), Sumatra (40%), Java, Bali (30%), Papua (70%), Maluku Islands (30%), and Nusa southeast (30%) Acceleration RTRW provincial and district / city for the development of regional spatial reference (approval of the Minister of Public Works: Provincial Spatial Plan (100%), district (97%) and the State (90.2%), while the Provincial Spatial regulation (14 of 33 prov), Regency (177 out of 398 districts), and the City (52 out of 93 cities) Related Waste Construction of wastewater infrastructure systems off-site and on-site: Activities which are / have been implemented with an estimated 13.85 million carbon emission reduction tCO₂e (up to 2012): Installation of Construction Management 191 The End (TPA) in 33 Provinces Pilot TPS 3R at 327 locations in 33 Provinces Related to Agriculture Related to Energy and Transportation Planting trees along national roads: the activities that are being/have been implemented to decrease carbon emissions: Planting trees along national roads: the activities that are being/have been implemented to decrease carbon emissions: Planting trees along national roads: the activities	Emission reduction targets (26%) of 0.048 and 0.030 Giga tonnes CO2 Giga tonnes CO2

Ministry / Agency	Initiative	Program/Action	Target
Ministry of Industry	Planning, implementation, monitoring and evaluation activities are directly or indirectly reduces emissions in the industry sector aligned with national growth	 Identify potential implementation of energy conservation The awarding of the green industry Implementation of restructuring programs textile machinery and textile products, footwear and sugar Issuance of the Ministerial Decree No. 12/2012 on Guidelines Technical Cement Industry CO2 Emissions Reduction 	GHG Emission Reduction (26%); 0,001 Giga tones CO2e dan GHG emission (41%); 0,005 Giga tones CO2e
Board of Meteorology, Climatology and Geophysics	Knowledge development for mitigation and adaptation to climate change	Observation - Data Collection Research & Modelling Capacity Building Dissemination of Climate Info 	Support the provision of data and information as well as information dissemination

