

Chapter 2

Government Policies and Institutions for Climate Change Mitigation and Its Monitoring, Evaluation, and Reporting

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Abstract This chapter will introduce climate change mitigation policies and institutions in Indonesia. In September 2009, the president of Indonesia stated that Indonesia would reduce emissions by 26 % unilaterally and up to 41 % with international support by 2020 compared to business as usual emission level. The Presidential Regulation No. 61/Year 2011 on the National Action Plan on GHG emission reduction (RAN-GRK) was issued to achieve this voluntary commitment. In addition, the Presidential Regulation No. 71/Year 2011 on national GHG inventory was issued with the objective of providing regular information on status and trend of GHG emissions and removals. The institutional arrangement related to climate change mitigation, including several funding mechanisms such as the Joint Crediting Mechanism (JCM), has also been developed in Indonesia. These initiatives are linked with international reporting requirements. To comply with the more regular and frequent reporting requirement, Indonesia will need to make a transition from a temporary project-based approach to a more permanent and institution-based approach.

Keywords GHG emissions • Mitigation actions • GHG inventory • NAMA • MRV • REDD+

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2.1 Introduction

While Indonesia is widely recognized as one of largest greenhouse gas (GHG) emitters in the world, it has been making efforts to reconcile sustainable development and climate change policy. The government has legalized the National Action Plan on GHG emission reduction (*Rencana Aksi Nasional Penurunan Emisi Gas Rumah Kaca*, RAN-GRK) and the national GHG inventory as the Presidential Regulations. These progressive national initiatives have a close linkage with international efforts, such as reporting obligation under the United Nations Framework Convention on Climate Change (UNFCCC).

This chapter will give an overview concerning Indonesia's policies and institutional arrangement of climate change mitigation. It will start with presenting the GHG emissions status and trend and provide an overview of policies and institutions related to climate change mitigation in Indonesia. It will then describe international cooperation and funding mechanisms for mitigation actions.

2.2 GHG Emission Status and Trend

A national GHG inventory identifies and quantifies a country's anthropogenic sources and sinks of GHGs to serve as input to developing climate change mitigation policy and tracking its progress. The national GHG inventory adheres to a set of methodologies for estimating sources and sinks of GHGs established by the Intergovernmental Panel on Climate Change (IPCC) and a common and consistent mechanism that enables Parties to the UNFCCC to compare their emission sources and sinks.

The IPCC defines five sectors for the national GHG inventory, namely, energy; industrial processes and product use; agriculture; land use, land-use change, and forestry (LULUCF); and waste sectors. The major gases covered by the national GHG inventory are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and three groups of fluorinated gases: hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆). All Parties to the UNFCCC have an obligation to prepare GHG inventories that cover all sectors and gases to the best of their capabilities.

Indonesia has submitted its national GHG inventory to the UNFCCC in 1999 and 2011, as a part of their Initial National Communications (INC) and Second National Communications (SNC), respectively. The figures in this section are adopted from the Indonesian SNC, which includes emission/removal estimates from 2000 to 2004 for all sectors and emissions for 2005 without LULUCF (Tables 2.1 and 2.2).

In 2004, total GHG emissions were 663,770 gigagrams (1,000 tons) (Gg) CO₂ equivalent (eq.) without LULUCF and 1,721,193 Gg CO₂ eq. with LULUCF (including peat fire). This represents a significant emission increase of 19.3 % compared to 2000 without LULUCF and 24.9 % with LULUCF. In 2004, GHG

Table 2.1 Trend of GHG emissions in Indonesia by sector (Ministry of Environment 2010)

	2000	2001	2002	2003	2004	2005
Energy	280,938	306,774	327,911	333,950	372,123	369,800
Industrial processes	42,814	49,810	43,716	46,118	47,985	48,733
Agriculture	75,420	77,501	77,030	79,829	77,863	80,179
LULUCF	821,254	754,546	1,965,495	591,489	1,057,423	–
Waste	157,328	160,818	162,800	164,074	165,799	166,831
Total GHG emissions (without LULUCF)	556,499	594,903	611,457	623,971	663,770	665,544
Total GHG emissions (with LULUCF)	1,377,753	1,349,449	2,576,952	1,215,460	1,721,193	–

Unit: Gg CO₂ equivalent**Table 2.2** Trend of GHG emissions in Indonesia by gas (Ministry of Environment 2010)

	2000	2001	2002	2003	2004	2005
GHG emissions without LULUCF	556,354	594,758	611,312	623,826	663,625	665,399
CO ₂	291,705	326,111	343,526	351,171	391,648	390,478
CH ₄	236,332	238,815	238,167	241,981	240,151	242,299
N ₂ O	28,317	29,831	29,618	30,674	31,825	32,622
PFCs	145	145	145	145	145	145
GHG emissions with LULUCF	1,377,608	1,349,304	2,576,807	1,215,315	1,721,048	–
CO ₂	1,112,879	1,080,518	2,309,001	942,642	1,449,040	–
CH ₄	236,388	238,955	238,181	241,994	240,173	–
N ₂ O	28,341	29,832	29,624	30,679	31,835	–
PFCs	145	145	145	145	145	–

Unit: Gg CO₂ equivalent

emissions from the LULUCF sector amounted to 1,057,423 Gg CO₂ eq., being the most dominant sector in the Indonesian GHG inventory. GHG emissions from the energy sector amounted to 372,123 Gg CO₂ eq., which represents 56.1 % of total GHG emissions without LULUCF, followed by waste sector (165,799 Gg CO₂, 25.0 %), agriculture sector (77,863 Gg CO₂ eq., 11.7 %), and industrial processes and product use sector (47,9585 Gg CO₂ eq., 7.2 %). In terms of gases, CO₂ was the main GHG emitted with 391,648 Gg CO₂ eq., followed by CH₄ of 240,151 Gg CO₂ eq. and N₂O of 31,825 Gg CO₂ eq. representing 59.0 %, 36.2 %, and 4.8 % of total GHG emissions, respectively, without LULUCF.

The GHG emissions fluctuate over the years mostly due to the LULUCF sector, which is the most uncertain of all the sectors in the Indonesian GHG inventory. High emissions tend to occur when El Niño events are observed (e.g., in 2002–2003, 2004–2005, and 2006–2007). According to the SNC, a 2007 study by Pelangi Energi Abdi Citra Enviro, World Bank, and the United Kingdom Department for International Development estimated land-use change and forestry

(LUCF) emissions to be 2,563,000 Gg CO₂ (approximately twice the amount reported in the SNC), while another study conducted by the National Council on Climate Change (*Dewan Nasional Perubahan Iklim*, DNPI) in 2009 suggested that the total GHG emissions from LUCF in 2005 reached 1,880,000 Gg CO₂ eq. The SNC includes information on these and other studies and acknowledges the high uncertainty of the GHG inventory. An important challenge for Indonesia is to improve the quality of emission and removal estimation of the LULUCF sector.

While the GHG inventory data submitted to the UNFCCC is considered the “official” dataset for a country’s GHG emissions and removals, international organizations and research institutions independently estimate GHG emissions of countries. The International Energy Agency (IEA) is one such agency that estimates GHG emissions from countries on an annual basis. In IEA (2013), GHG emissions and removals are estimated using IEA energy databases, as well as the default methods and emission factors provided by the IPCC. Figure 2.1 shows the GHG emissions in Indonesia estimated by the IEA for the years 1990, 2000, 2005, 2008, and 2010. In 2010, total GHG emissions including LULUCF were 1,926,000 Gg CO₂ eq., increasing by 75 % and 33 % compared to 1990 and 2000, respectively. Like the results of the Indonesian SNC, a significant fluctuation can be observed due to the LULUCF sector. According to the IEA, the GHG emissions from the LULUCF sector in 2005 were almost three times that of 1990 and over twice the amount of 2000 (from 731 Gg CO₂ eq emissions in 1990, 920 Gg CO₂ in 2000, and 2188 Gg CO₂ eq. in 2005).

According to the IEA, in 2010, Indonesia was the fifth largest GHG-emitting country in the world, higher than developed countries such as Japan, Germany, and Canada (Table 2.3). In a year where there were high emissions from the LULUCF sector in Indonesia, like in 2005, it was the third highest GHG-emitting country in the world, only behind China and the United States. As a fast growing economy with increasing trend of total GHG emissions, it is important for Indonesia to enhance its mitigation actions. However, a better understanding of GHG emission levels, specifically in the LULUCF sector, is critical, as this data is the fundamental input into projection and mitigation models.

2.3 Policies and Initiatives Regarding Mitigation Actions

2.3.1 National and Local Mitigation Action Plans

Climate change issue has been recognized as one of the critical challenges to be prioritized in national development in Indonesia since the 1990s, as shown in Table 2.4. A significant momentum was built at the thirteenth Conference of Parties (COP13) of the UNFCCC, which was hosted by the government of Indonesia in December 2007. In September 2009 at the G20 meeting in Pittsburg, the president

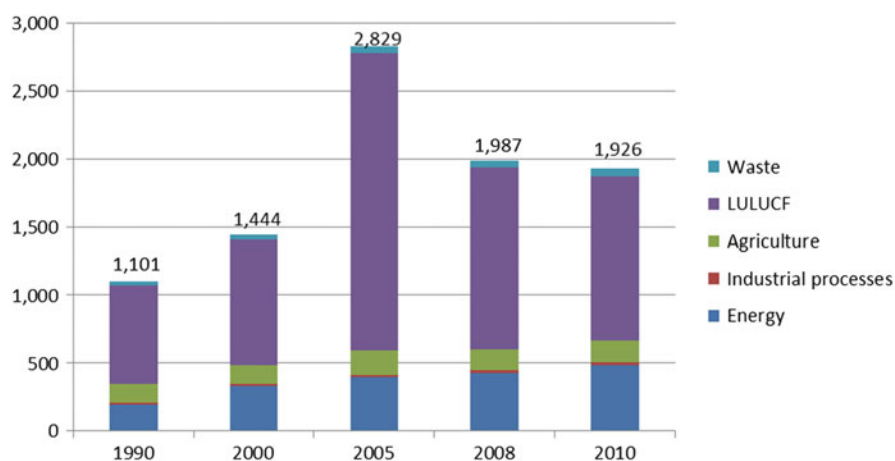


Fig. 2.1 GHG emissions in Indonesia (IEA 2013)

Table 2.3 Top 10 GHG-emitting countries (IEA 2013)

		1990	2000	2005	2008	2010
1	People's Republic of China	3873	5271	8074	9627	10,756
2	United States	6101	6926	7031	6872	6715
3	India	1354	1854	2104	2443	2776
4	Russian Federation	3517	2598	2528	2520	2481
5	Indonesia	1101	1444	2829	1987	1926
6	Brazil	1604	1451	2548	1464	1604
7	Japan	1298	1399	1431	1369	1351
8	Democratic Republic of Congo	1377	1037	949	1072	1113
9	Germany	1231	1037	995	991	949
10	Canada	597	730	781	740	717
	Other countries	15,947	16,496	18,051	19,330	19,441
	World total	38,000	40,242	47,321	48,415	49,829

Unit: Gg CO₂ equivalent

stated that Indonesia would be committed to voluntarily reduce its GHG emissions by 26 % by the year 2020 compared with business as usual (BAU) level with its own national efforts and 41 % with international support. This target was submitted in January 2010 to the UNFCCC in responding to the Copenhagen Accord adopted at COP15 in December 2009. Seven nationally appropriate mitigation actions (NAMA) were specified in order to achieve 26 % emission reduction by 2020: (1) sustainable peatland management, (2) reduction in deforestation and land degradation, (3) development of carbon sequestration projects in forestry and

Table 2.4 Chronology of climate change policy in Indonesia (by the authors)

August 1994	Ratification of the UNFCCC (signature in 1992)
October 1999	Submission of the First National Communications
December 2004	Ratification of Kyoto Protocol (signature in 1998)
January 2005	National Mid-term Development Plan (RPJMN 2004–2009)
February 2007	National Long-Term Development Plan (RPJPN 2005–2025)
November 2007	National Action Plan for Climate Change (RAN-PI)
December 2007	National Development Planning: Indonesia Responses to Climate Change UNFCCC COP13 in Bali
July 2008	Establishment of DNPI
September 2009	Indonesia Climate Change Trust Fund (ICCTF) Announcement of 26 % emission reduction target at G20 meeting in Pittsburg
December 2009	Indonesia Climate Change Sectoral Roadmap Announcement of 26 % reduction target at UNFCCC/COP15 in Copenhagen
January 2010	Submission of Indonesia NAMAs to the UNFCCC
March 2010	Revision of National Development Planning: Indonesia Responses to Climate Change (Yellow Book)
May 2010	RPJMN 2010–2015
November 2010	Submission of the Second National Communications
September 2011	Presidential Regulation No. 61/Year 2011 concerning RAN-GRK
October 2011	Presidential Regulation No. 71/Year 2011 concerning GHG Inventory

agriculture, (4) promotion of energy efficiency, (5) development of alternative and renewable energy sources, (6) reduction in solid and liquid waste, and (7) shifting to low-emission transportation mode.

To follow up this target, RAN-GRK was established to provide a policy framework to guide the central government, local governments, private sector, and other key stakeholders. It was issued as the Presidential Regulation No. 61/Year 2011 in September 2011. The Presidential Regulation No. 71/Year 2011 was also issued in October 2011 to regulate regular submission of national and regional GHG inventories developed by respective line ministries, agencies, and local governments. RAN-GRK includes sectoral target as shown in Table 2.5.

According to the Presidential Regulation No. 61/Year 2011, the provincial governments should develop their Local Action Plan for GHG emission reduction (*Rencana Aksi Daerah Penurunan Emisi Gas Rumah Kaca*, RAD-GRK). Most of the provinces have finalized respective RAD-GRK.

Table 2.5 Target by sector under RAN-GRK (Drawn from Presidential Regulation No. 61/Year 2011)

Sector	Emission reduction target (Giga ton CO ₂ e)		Core activity
	26 %	41 %	
Forestry and peatland	0.672 (87.6 %)	1.039 (87.4 %)	Forest and land fire control, network system management, water management, forestry and land rehabilitation, industrial plantation forest, community forest. Illegal logging eradication, deforestation prevention, community empowerment
Agriculture	0.008 (1.0 %)	0.011 (0.9 %)	Introduction of low-emission paddy varieties, irrigation water efficiency, organic fertilizer use
Industry	0.001 (0.1 %)	0.005 (0.4 %)	Energy efficiency, utilization of renewable energy
Energy and transportation	0.038 (5.0 %)	0.056 (4.7 %)	Biofuel use, engines with higher fuel efficiency standard, improvement in transportation demand management, improvement of public transportation and road, demand-side management, energy efficiency, renewable energy development
Waste	0.048 (6.3 %)	0.078 (6.6 %)	Use of final landfill site, 3R, urban integrated wastewater management
Total	0.767	1.189	

2.3.2 Monitoring, Evaluation, and Reporting of Mitigation Actions

The mechanism for monitoring, evaluation, and reporting (MER) of mitigation actions at both national and regional levels has been developed by the National Development Planning Agency (*Badan Perencanaan Pembangunan Nasional*, BAPPENAS), with support by donors. In this respect, BAPPENAS has been utilizing the existing monitoring and reporting system for the implementation of development plans. In 2013, BAPPENAS published the MER guideline, which consists of general and technical elements. It has also developed “MER online” as an effort to achieve effective and efficient coordination between central and local governments (RAN-GRK Secretariat 2014).

The general guideline is intended (1) to serve as a reference for ministries and other institutions in implementing MER of RAN-GRK at the national level, (2) to serve as a reference for local governments in implementing MER of RAD-GRK, and (3) to harmonize report on mitigation actions and GHG inventory. The guideline also contains information on goals, approach, and timeframe of MER. The

template is provided by the guideline to accommodate information on a mitigation action, such as its reduction target, BAU, schedule, cost, and so forth.

The technical guideline is aimed at providing a reference especially for local government and other relevant institutions to identify and collect information about the implementation of RAD-GRK and providing instructions for the formulation and implementation mitigation actions as well as the calculation of GHG emission reductions. It is divided into (1) land-based sector including agriculture, forestry, and peatland; (2) energy sector including energy, transportation, and industry; and (3) waste management. The activities are also categorized into (1) core activities with direct impacts on emission reductions and (2) supporting and enabling activities with indirect impact on GHG emission reduction.

The MER online is based on the templates from the general and technical guidelines, as described above. The guideline for the MER online was also produced to support reporting by provincial governments and line ministries. This online system is also used for the evaluation of the progress of RAN-GRK and RAD-GRK.

2.3.3 *GHG Inventory*

Along with the GHG emission reduction's target of 26 % by 2020, the government also issued Presidential Regulation No. 71/Year 2011 regarding "Conducting National GHG Inventory" with the objective of providing regular information about the level, the status, and the trend of GHG emissions and removals, including carbon stock at national, provincial, and district levels, and to provide information on GHG emission reduction achievements of national climate change mitigation actions. Presidential Regulation No. 71/Year 2011 is the legal basis for the annual development of national and regional GHG inventories in Indonesia. The scope of the GHG inventory as described in Presidential Regulation No. 71/Year 2011 are the same as the UNFCCC inventory scope in terms of the sectors covered, the gases covered, and other requirements such as quality control/quality assurance activities, uncertainty analysis, and key category assessments. The Presidential Regulation No. 71/Year 2011 stipulates that the GHG inventories shall be prepared annually by relevant stakeholders. It also sets out general roles and responsibilities for the key stakeholders, as shown in Table 2.6. Indonesia has prepared two national GHG inventories to be submitted to the UNFCCC as part of its National Communications.

Table 2.6 Stakeholders and their roles and responsibilities in preparing the GHG inventory (Drawn from Presidential Regulation No. 71/Year 2011)

Stakeholder	Roles and responsibilities
Minister of Environment	Coordinate the preparation of GHG inventory Prepare guideline for the development and implementation of GHG inventory Monitor and evaluate GHG inventory processes and results
Relevant minister and/or non-ministry government institutions related to the GHG inventory	Prepare the relevant sectors of the GHG inventory Arrange GHG emission and removal of a trend of GHGs including carbon stock in accordance with the scope of roles and responsibilities Develop inventory methodologies and emission factor or removal of GHG in coordination with the stakeholders. The respected minister and/or head of non-ministry government institution assign responsible party to conduct the GHG inventory in the institution working unit
Governor	Prepare the GHG inventory at the provincial level; and coordinate the implementation of GHG inventory at the district and municipal levels. The governor appoints a local technical implementing unit to carry out the tasks
Regent and mayor	Responsible for GHG inventory implementation at the district and city. The regent or the mayor appoints local technical implementing unit to carry out the tasks

2.4 Institutional Arrangement for Climate Change Mitigation

2.4.1 Institutional Arrangement on Mitigation Actions

The institutional arrangement for climate change mitigation, including GHG inventory reporting, has evolved in Indonesia. This section presents roles and responsibilities of relevant ministries and institutions, including those related to reducing emissions from deforestation and forest degradation (REDD+).

Role and responsibility of relevant ministries/institutions were stipulated in the Presidential Regulation No. 61/Year 2011 regarding RAN-GRK and defined further in the subsequent relevant guidelines, as illustrated in Fig. 2.2. BAPPENAS is designated as a leading coordinating ministry. It is responsible for reviewing RAN-GRK in coordination with line ministries on the relevant sectors including forestry, agriculture, peatland, energy, industry, transportation, and waste. The review results shall be reported to the Coordinating Ministry for Economic Affairs. BAPPENAS is also responsible for setting the guidelines concerning RAD-GRK,

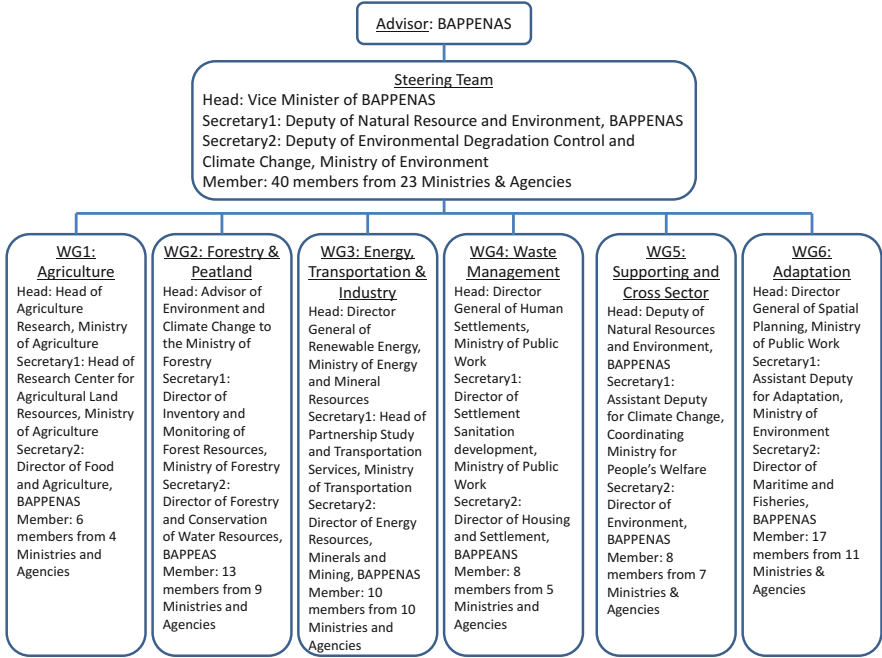


Fig. 2.3 Climate Change Coordination Team and Working Groups (BAPPENAS 2012)

The MOHA supports coordination between central and regional governments in developing and implementing RAD-GRK. Line ministries are responsible for mitigation actions under their respective jurisdictions. Progress report should be submitted periodically to the Coordinating Minister for Economic Affairs. The Presidential Regulation states that governors are responsible for developing RAD-GRK for their respective provinces in line with RAN-GRK and regional development priorities. The Regulation stipulates that funding of RAN-GRK is derived from state budget (*Anggaran Pendapatan dan Belanja Negara*, APBN), regional budget (*Anggaran Pendapatan dan Belanja Daerah*, APBD), and other sources. The Ministry of Finance is in the process of developing financial and fiscal incentive in order to ensure effective and efficient implementation of mitigation actions.

Indonesia has the second largest forest area in the world, which functions as carbon sinks in absorbing CO₂. Due to active forest exploitation, illegal logging, peatland fire, and other problems, however, LUCF is the biggest emission source in Indonesia. The Government of Indonesia and Government of the Kingdom of Norway signed a Letter of Intent (LoI) in May 2010 to establish a partnership for REDD+. Norway is committed to contribute up to 1 billion USD toward Indonesia's REDD+ efforts, and actual funds will be disbursed based on verified emission reductions. REDD+ Task Force was established by the Presidential Regulation No. 19/Year 2010. It is chaired by the Head of Presidential Unit for

Development Monitoring and Oversight (*Unit Kerja Presiden Bidang Pengawasan dan Pengendalian Pembangunan*, UKP4) and comprises high-level officials from key ministries and agencies as well as nongovernmental experts. The 2-year moratorium on the “Suspension of New Permits and Improvement of Governance on Primary Forest and Peatlands” (Presidential Instruction No. 10/Year 2011) was issued on 20 May 2011. In the meantime, the efforts for improvement on forest and peatland strategies and governance, including an initiative on a unified “One Map” of forests, are taken. REDD+ Agency was launched by the Presidential Regulation No. 62/Year 2013 in order to achieve emission reduction from deforestation and forest degradation and peatland and to ensure that these efforts are managed in an effective, efficient, equitable, and sustainable manner (Cabinet Secretariat 2013).

DNPI was established through the Presidential Regulation No. 46/Year 2008 in July 2008, to serve as a national focal point of the UNFCCC. In addition, DNPI also serves as focal point of Article 6 of the UNFCCC concerning educational and training on climate change. Before the above Presidential Regulation was issued, KLH had served as the national focal point for the UNFCCC as well as the designated national authority (DNA) under the Clean Development Mechanism (CDM), which is one of the flexible mechanisms under the Kyoto Protocol. Since 2008, however, DNPI has served as both a national focal point and DNA.

2.4.2 Institutional Arrangement on GHG Inventory

Since the enactment of the Presidential Regulation No. 71/Year 2011, KLH, relevant ministries, and provincial governments have taken steps to institutionalize the GHG inventory and implement the requirements set out in the Regulation. In December 2012, the National GHG Inventory System (*Sistem Inventarisasi Gas rumah kaca Nasional*, SIGN) Center was established under KLH. The members of the Center are mandated to lead all GHG inventory activities within KLH. In 2012, KLH drafted GHG inventory guidelines, along with a step-by-step manual for completing emission/removal estimation worksheets. Interministerial working groups, made up of technical experts from the relevant ministries, have met to discuss the process of preparing the sectoral national GHG inventories. In addition, KLH has held numerous workshops and seminars in Jakarta and the provinces to present the Presidential Regulation No. 71 requirements and to train staff of line ministries and provincial government agencies on the methods to prepare the GHG inventory.

At the time of this writing, many provinces have submitted their regional GHG inventories. However, a national GHG inventory has yet to be compiled by KLH, due to several challenges described in the section below.

The Presidential Regulation No. 71/Year 2011 provides legal basis for developing the annual regional and national GHG inventories. However, the inventory alone is not sufficient for the agencies’ partnership to take place. Many organograms, like Fig. 2.4, have been developed to show the flow chart of Indonesian GHG Inventory National System. The challenge, however, is how to clearly define

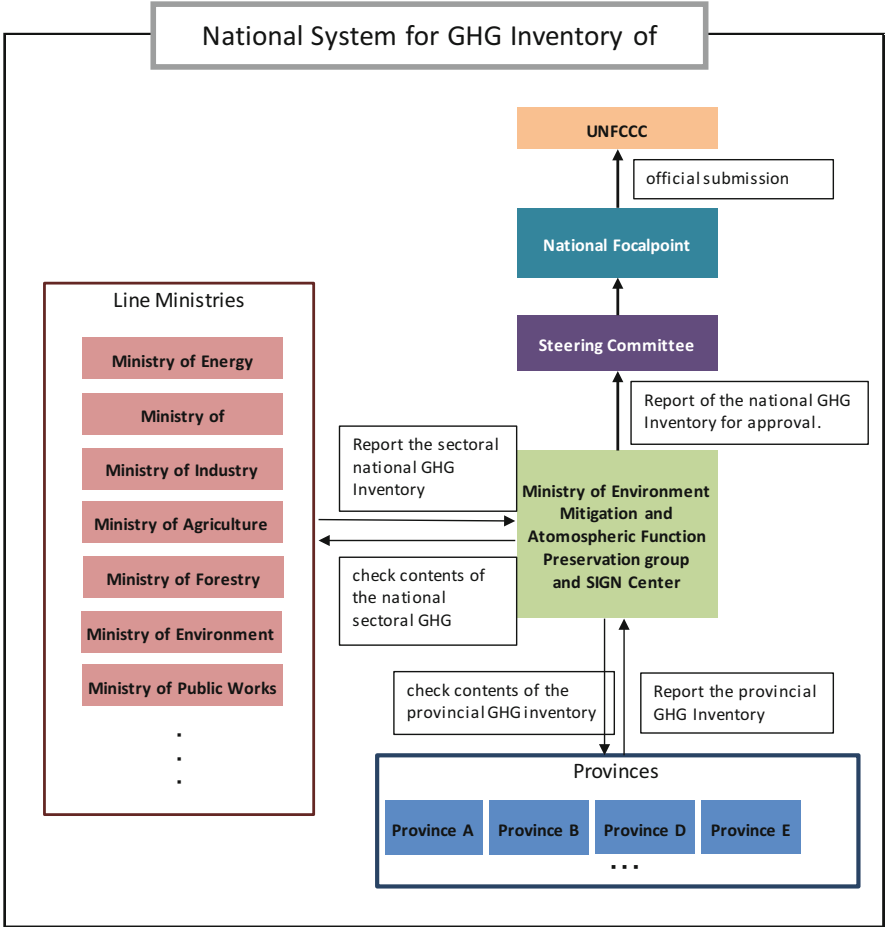


Fig. 2.4 Organizations of the GHG inventory preparation for the UNFCCC (Drawn from Presidential Regulation No. 71/Year 2011 “Conducting National GHG Inventory”)

the elements in the institutional arrangements and formalizing them. For example, the Regulation No. 71/Year 2011 stipulates that KLH coordinates the preparation of GHG inventory. However, the Regulation does not clearly define what kind of coordinating activities that KLH is to undertake, especially for the activities that require collaboration with other relevant ministries. In addition, the Regulation does not specify which ministries are responsible for which categories. The GHG inventory contains several hundred emission/removal categories, many of which require coordination among ministries so that there is no duplication of emissions/removals’ estimation.

The Presidential Regulation No. 71/Year 2011 is often described as two national GHG inventory preparation processes: a top-down (national level) approach and a bottom-up (subnational level) approach. However, there are many technical and

practical challenges in developing a national GHG inventory as a sum of regional inventories. The role and purpose of the two inventories will need to be clarified so that relevant agencies can properly allocate resources for the two approaches. Although the SIGN Center was established in KLH, reliance on the advice of consultants is inevitable in the first stages of developing the GHG inventory system. It is necessary, however, to establish sustained national technical teams and retain their capacity and expertise. One way to address this is to prioritize the documentation of all methods and data sources used in the GHG inventory process to maintain a consistent process and institutional memory.

As GHG inventory preparation is relatively a new process in Indonesia, technical challenges like the lack of reliable activity data and emission factors are expected to be issues in the process. However, it is important to keep in mind that one of the key principles of the IPCC is “continuous improvement.” A GHG inventory that is fully transparent, accurate, comparable, complete, and consistent (the TACCC principles of the GHG inventory) is desirable, but the key priority in developing a good GHG inventory preparation cycle is to develop the national arrangements that serve as the foundation for all relevant work. Indonesia has several LULUCF estimates from different entities. The key is not for Indonesia to produce another LULUCF emission/removal estimate, but to efficiently coordinate with the existing experts to produce the best results using the resources available.

2.5 Linkage with International Efforts

All Parties to the UNFCCC have an obligation to report about the steps they are taking or envisage undertaking. Based on the principle of “common but differentiated responsibilities” in the Convention, the required information to be reported and the timetable to be submitted are different between Annex I and non-Annex I Parties. However, the provisions for reporting have evolved in recent years, resulting in enhanced reporting and more frequent reporting to be submitted by all Parties. This section presents main reporting requirements for non-Annex I Parties under the UNFCCC and describes the implications in Indonesia.

2.5.1 *National Communications*

Article 4, paragraph 1, and Article 12, paragraph 1, of the UNFCCC state that each Party should report to the COP about the emissions by sources and removals by sinks of all GHGs which are not included in the Montreal Protocol, the national or, where appropriate, regional programs that contain measures to mitigate climate change and to facilitate adequate adaptation to climate change and any other information that the Party considers relevant for the achievement of the objectives of the Convention. This report is known as the National Communications (Table 2.7). In 2010 in Cancun, the COP decided that non-Annex I Parties would

Table 2.7 Reporting elements for the National Communications (Drawn from UNFCCC 2003)

Elements	Details
National circumstances	Description of national and regional development priorities, objectives, and circumstances
	Description of existing institutional arrangements relevant to the preparation of their NCs on a continuous basis
National GHG inventory	Information on GHG emissions and removals
	Year: 1st NC=1994 or 1990, 2nd NC=2000
	Methodologies: Revised 1996 IPCC good practice guidance
General description of steps taken or envisage to implement the Convention	Gas: CO ₂ , CH ₄ , N ₂ O (shall), HFCs, PFCs, SF ₆ (encourage)
	Adaptation measures
	Vulnerability assessment
Other information considered relevant to the achievement of the objective of the Convention	Mitigation measures
	Technology transfer
	Research and systematic observation
	Education, training, and public awareness
	Capacity-building activities
Constraints and gaps and related financial, technical, and capacity needs	Information and networking
	Constraints and gaps; financial, technical, and capacity needs; and activities for overcoming the constraints and gaps
	Financial resources and technical support provided by GEF, Annex II Parties, or multilateral/bilateral institutions
	Proposed project for financing
	Information on implementing adaptation measures
	Country-specific technology needs and assistance received from developed country Parties and the financial mechanism of the Convention
Other information	Additional or supporting information

submit their National Communications every 4 years (Decision 1/CP.16) (UNFCCC 2011a). The reporting elements of the National Communications have not changed since 2002, but an update of the required information can be expected in the near future.

Indonesia submitted its INC to the UNFCCC in 1999. The INC provided information on GHG inventories for the years 1990–1994, a preliminary assessment of the vulnerabilities, policies, and measures to reduce GHG emissions for four sectors, energy, agriculture, forestry, and waste, including a proposed timeframe for their implementation. During the preparation of the INC, the involvement of the key sectors was still very limited. In 2011, Indonesia submitted its SNC to the UNFCCC. According to the SNC, a number of gaps in the INC were filled, thanks in

part to an increased involvement of stakeholders in the process. Indonesia is currently preparing its Third National Communication with a view of submission in 2016.

2.5.2 *Biennial Update Report*

The Cancun Agreements stipulate that developing countries, consistent with their capabilities and the level of support provided for reporting, should submit biennial update reports (BURs), including a national inventory report and information on mitigation actions, needs, and support received. This additional reporting requirement for non-Annex I Parties is a product of intense negotiations on how the COP can understand how the mitigation actions in developing countries were being implemented and monitored, how they were being funded, what the results of the actions were, and so forth. The BUR is a tool to explain the extent of the “measureable, reportable, verifiable (MRV)” manner of developing countries’ NAMAs, as originally described by the Bali Action Plan. The first BUR deadline for non-Annex I Parties is December 2014, with an exception for Small Island States (SIDS) and Least Developed Countries (LDCs) which may submit BURs at their discretion. The details of the reporting elements for the BUR are as shown in Table 2.8.

As the name of the report suggests, the BUR is a report that contains updated information from its previous report (the National Communications or the BUR) and does not contain new reporting elements. However, some of the information that is required for the BUR is more specific in nature than that of the National Communications. Also, unlike the National Communications, the BURs will undergo a process where the reported information will be analyzed and discussed. The following are some elements that may be viewed as additional or more specific than that of the National Communications.

2.5.2.1 REDD+

Although not mandatory, non-Annex I Parties may report sector-specific information including information on REDD+ in a technical annex to the BUR as additional or supplemental information. This is especially important for non-Annex I Parties seeking to obtain and receive payments for result-based actions. These Parties are requested to report the following data and information as part of a technical annex of the BUR: estimation of anthropogenic forest-related emissions by sources and removals by sinks, forest carbon stocks, and forest carbon stock and forest-area changes. The information and data should be transparent and consistent over time and with the established forest reference emission levels and/or forest reference levels.

Table 2.8 Reporting elements for the biennial update report (Drawn from UNFCCC 2011b)

Elements	Details
(a) National circumstances	Information on national circumstances and institutional arrangements relevant to the preparation of the NCs on a continuous basis
(b) National GHG inventory, including a national inventory report	Update of national GHG inventories according to the guidelines for the preparation of NCs Inventory years: calendar year no more than 4 years prior to the date of submission or more recent years. Consistent time series back to the years reported in the previous NCs Methodologies: Revised 1996 IPCC guidelines and IPCC good practice guidance
(c) Mitigation actions and their effects	(a) Name and description of the mitigation action (b) Methodologies and assumptions (c) Objectives of the action and steps taken or envisaged to achieve that action (d) Progress of implementation of the mitigation actions and the underlying steps taken or envisaged and the results achieved (e) Information on international market mechanisms
(d) Constraints and gaps and related financial, technical, and capacity needs	Updated information on financial resources, technology transfer, capacity-building needs Updated information on financial resources, technology transfer, capacity building, and technical support received from GEF, developed country Parties, and multilateral institutions
(e) Information on the level of support received to enable the preparation and submissions of BURs	Information on support received for the preparation of the BURs
(f) Information on domestic measurement reporting and verification	—
(g) Any other information	Any other information that the non-Annex I Party considers relevant to the achievement of the objective of the Convention and suitable for inclusion in its BURs

2.5.2.2 Domestic MRV

Developing countries are encouraged to utilize existing domestic processes, arrangements, or systems, including domestically available information, methodologies, experts, and other aspects, or voluntarily establish these for domestic MRV for domestically supported NAMAs. Developing countries may indicate the general approach adopted: (1) to establish, when appropriate, and/or recognize, where relevant, inter alia, the institutions, entities, arrangements, and systems involved

in the domestic MRV of NAMAs; (2) to measure domestically supported NAMAs, including the collection and management of relevant and available information and the documentation of methodologies; and (3) to verify domestically supported NAMAs, including the use of domestic experts using domestically developed processes, thereby enhancing the cost-effectiveness of the verification process. There are no specific reporting requirements regarding domestic MRV of domestically supported NAMAs; this is up to the Party to determine the information best suited for reporting.

2.5.2.3 International Consultation and Analysis

In 2011, the COP decided that all BURs would undergo an international consultation and analysis (ICA) process. The ICA will be nonintrusive, nonpunitive, and respectful of national sovereignty and has the objective to improve the transparency of mitigation actions and their effects of non-Annex I Parties. The ICA will be made up of two stages, the technical analysis of the BUR, and a facilitative exchange of views. During the technical analysis stage, a team of technical experts will conduct an analysis of the BURs and any additional technical information provided by the Party, if any. The output of this process is a summary report, drafted by the experts and reviewed by the Party, which will serve as input to the second facilitative sharing of views stage. In this stage, an open-to-all-Party workshop will be held under the Subsidiary Body for Implementation (SBI). During the workshop, an oral presentation will be delivered by the non-Annex I Parties to explain the contents of the BUR, followed by an oral question and answer among Parties. The ICA process is new to non-Annex I Parties, in that information reported by them to the UNFCCC has never been under any analysis or scrutiny by a team of experts under the UNFCCC, and it has never had to explain the reported information in an official workshop.

2.5.3 Implications to Indonesia

To comply with the more regular and frequent reporting requirements, Indonesia will need to make a transition from a temporary project-based approach to a more permanent institution-based approach to support the new cycle of activities related to reporting under the UNFCCC. This is especially important for GHG inventories, which needs a strong institutional arrangement as a basis for collecting data, estimating emissions/removals, carrying out QA/QC procedures, and approving the results. National arrangements will also be important in addressing the ICA process, where a technical team of experts may request Indonesia for additional information and draft a summary report for their review. More importantly, a government official will need to orally present the BUR and participate in a discussion during the SBI workshop. For addressing the voluntary reporting of

REDD+ and domestic MRV, Indonesia will need to establish an entity or department which will determine the country's positions on each of the issues, establish necessary arrangements, implement plans to carry out the country positions, and finally compile a paper to be included in the BUR. The roles and responsibilities of the abovementioned tasks need to be clarified in addition to the actual compilation of the reports. These are some major challenges that must be addressed in the near future in Indonesia.

2.6 International Cooperation for Mitigation Actions

Various activities and initiatives related to climate change mitigation are supported by multilateral and bilateral cooperation agencies, as introduced in section below.

2.6.1 JICA

JICA has been working with Indonesia through comprehensive financial cooperation “Climate Change Program Loan” and technical assistance “Project of Capacity Development for Climate Change Strategies in Indonesia,” among others. The former was a pioneering approach to coordinate several donors' financial sources with policy dialogue, where a so-called Policy Matrix, a list of policy actions in each sector, was set based on agreement between Indonesia and the relevant donors, including Japan, in line with the Indonesian development plan. The latter contains three subprojects which cover, among others, supporting RAN-GRK and RAD-GRK as well as capacity development for national GHG inventory (JICA 2014).

2.6.2 GIZ

Climate change is one of the priorities. It covers policy advice under the programs “Policy Advice for Environment and Climate Change (PAKLIM)” and “Forests and Climate Change Programme (FORCLIME),” as well as sector-specific technical cooperation (e.g., “TRANSfer” for transport sector and “V-NAMA” for building and waste sectors (ECN and Ecofys 2013; GIZ and Ecofys 2013; ECN 2009; GIZ 2014; GIZ PAKLIM 2014; GIZ SUTIP 2014)).

2.6.3 USAID

USAID is supporting Indonesia through the global partner partnership programs: “Enhancing Capacity for Low Emission Development Strategies (EC-LEDS)” and “Low-Emissions Asian Development (LEAD) Program.” LEDS is country-specific national strategic analysis and planning process, and LEAD is a capacity building program using LEDS in four interrelated areas: (1) analysis and modeling of economic development pathways, emissions trajectories, and technology options; (2) GHG inventories and accounting; (3) carbon market development; and (4) regional cooperation (USAID 2013; USAID 2014a, b, c).

2.6.4 UNDP

“Low Emission Capacity Building Programme (LECB)” is the global partnership program. LECB Indonesia aimed to formulate finance-ready NAMAs and credible MRV system in the transport sector and industrial subsector (European Union and UNDP 2011; UNDP 2014a, b).

2.6.5 World Bank

“Partnership for Market Readiness (PMR)” is a worldwide partnership program for sharing experience on market-based mitigation measures. In its first year (2011), PMR was participated by 11 donor countries (Australia, European Commission, Denmark, Germany, Japan, Netherlands, Norway, Spain, Switzerland, United Kingdom, United States). In Indonesia, energy sector programs, such as “Reducing emissions from fossil fuel burning” (REFF-burn program), and stakeholder consultations on market instruments are supported (World Bank 2014a, b, c).

Apart from the abovementioned activities focused on NAMA, MRV, and LEDS, there are many REDD+ support projects and programs. The World Bank and Australia are providing readiness process (reference emission level, MRV system, etc.) at the national level. UN-REDD program is supporting provincial and district levels. Norway is also playing significant role for national policy coordination and capacity building through the establishment of REDD+ Agency as well as MRV system (IGES 2012; Mitigation Partnership 2014; Norway 2010) (Table 2.9).

Table 2.9 List of projects and programs related to GHG mitigation in Indonesia (Mitigation Partnership 2014; IGES 2012)

Title	Activity	Additional sectors	Implementing organization	Funding source	Budget	Duration
Climate Change Program Loan	General	General	JICA, AFD, World Bank	JICA, AFD, World Bank	–	–
Capacity Development for Climate Change Strategies	General	General	JICA	JICA	–	October 2010–October 2015
ASEAN-German Programme on Response to Climate Change: Agriculture, Forestry and Related Sectors (GAP-CC)	General	Forest, agriculture	GIZ	German Federal Ministry for Economic Cooperation and Development (BMZ)	–	2012–2015
Policy Advice for Environment and Climate Change (PAKLIM I)	LEDS, NAMA	Energy, education	GIZ	BMZ	–	2009–January 2013
Bringing a Range of Supported NAMAs to the Next Level	NAMA	General, buildings, waste	Ecofys, Energy Research Centre of the Netherlands (ECN)	Germany – International Climate Initiative (ICI)	1,914,207 EUR	March 2012–December 2014
Enhancing Capacity for Low Emission Development Strategies (EC-LEDS)	LEDS	Capacity building	USAID, US Department of State	USA	1,459,359 EUR per country	January 2010–2013
Feasibility Study for Sustainable Peatland Management in Indonesia under NAMAs	NAMA	Agriculture, forests	Ministry of the Environment, Japan; Global Environment Center Foundation (GEC)	Ministry of the Environment (Japan – MOE); Global Environment Center Foundation (GEC)	–	–
Forest and Climate Change Programme (FORCLIME)	REDD+	Forest	GIZ	BMZ	13.05 million USD	2009–2020
Forest Investment Programme (FIP)	REDD+	Forest	FIP	FIP	80 million USD	2010–2012

(continued)

Table 2.9 (continued)

Title	Activity	Additional sectors	Implementing organization	Funding source	Budget	Duration
Global Support Project for the Preparation of Intended Nationally Determined Contributions (INDCs)	General	General	GIZ	BMU; Federal Ministry for the Environment (Germany – BMU)	2.500.000 EUR	June 2014–August 2015
IFCA and Support for REDD+	REDD+	Forest	International Forest Carbon Initiative (IFCI, Australia)	IFCI, Australia	3 million USD	2007–2012
Improving Governance, Policy and Institutional Arrangements to REDD	REDD+	Forest	Australian Centre for International Agricultural Research (ACIAR, Australia)	ACIAR	4.1 million USD	September 2008–December 2011
Indonesia Climate Change Trust Fund (ICCTF)	General	General	UNDP (interim fund manager)	DFID, AusAID, SIDA	5.5 million USD	2010–
Indonesia Sustainable Urban Transport Program Indonesia	NAMA	Transport	GIZ	BMU	14,000,000 USD	January 2014–2018
Indonesia's National Carbon Accounting System	MRV	Forest	AusAID	AusAID	2 million USD	June 2008–2012
International Climate and Forest Initiative	REDD+	Forest	Norway	Norway	1000 million USD	2010–2016
Kalimantan Green Growth Planning	LEDS	General	Global Green Growth Institute (GGGI)	GGGI	–	January 2011–December 2011
Low Carbon Development Country Studies	LEDS	General	Energy Sector Management Assistance Program (ESMAP)	World Bank	–	January 2009–December 2020

Low Carbon Growth Project	LEDS	General	DFID	DFID	1,500,000 GBP	July 2010–March 2012
Low Emission Capacity Building (LECB) Programme	LEDS, other	Capacity building	UNDP	Australian Government; European Commission; German Federal Ministry for the Environment Nature Conservation Building and Nuclear Safety (BMUB)	32,000,000 EUR	Duration: January 2011–December 2016
Low-Emissions Asian Development (LEAD) Program	LEDS, MRV	General	USAID	USAID	–	October 2011–2016
Mitigation Action Implementation Network (MAIN): A Multi-National Climate Change Initiative to Advance NAMAs	NAMA	General	Center for Clean Air Policy (CCAP)	Environment Canada, BMU (Germany), Ministry of Foreign Affairs (Denmark)	–	January 2011–September 2013
NAMA-Programme for the Building Sector in Asia	NAMA	Buildings, energy	UNEP	BMU	4,999,642,96 EUR	January 2013–August 2017
Partnership for Market Readiness (PMR)	General	Capacity building	World Bank	World Bank and others	–	April 2011–2015
TRANSFER – Towards Climate-Friendly Transport Technologies and Measures	NAMA	Transport	GIZ	Federal Ministry for the Environment (Germany – BMU)	1,471,804 EUR	November 2010 – September 2013
UN-REDD	REDD	Forest	UN-REDD	UN-REDD	5.6 million USD	2010
V-NAMAs – Involving Sub-National Actors into National Mitigation Strategies Through Vertically Integrated NAMAs	NAMA	Buildings, waste	GIZ	BMU	1.8 million EUR	May 2012–April 2015

2.7 Funding Mechanisms for Mitigation Actions

2.7.1 Funding Mechanisms in Indonesia

Two funding mechanisms, the Indonesia Climate Change Trust Fund (ICCTF) and the “Fund for REDD+ Indonesia” (FREDDI), are presented in this section.

The ICCTF is operated by the government aiming to pool and coordinate funds from various financial sources, both from public and private, for Indonesia’s climate change policy actions. Three windows are open for the priority areas: land-based mitigation, energy, and adaptation and resilience. UNDP, an interim fund manager, had received from 2010 to 2012 about 11.7 million USD in total (9.5 million USD from DFID, 1.4 million USD from AusAID, 309,000 USD from SIDA, 180,000 USD from UNDP, and others). In 2010–2013, total allocated budget amounted to about 8.9 million USD, out of which 72 % was allocated for project funding and 28 % for indirect costs. 33.3 % of the project funds were spent on Energy Conservation with the Ministry of Industry, 31.9 % on Sustainable Peatland Management with the Ministry of Agriculture, 18.7 % on Public Awareness and Education with Agency for Meteorology, Climatology, and Geophysics (*Badan Meteorologi, Klimatologi, dan Geofisika*, BMKG), 8.8 % on Health Vulnerability Assessment with the Ministry of Health, and 7.3 % on Community Forest Management with the Ministry of Forest (ICCTF Secretariat 2014).

The FREDDI is a trust fund for REDD+, which has been developed in accordance with the Presidential Decree No. 80 in 2011. It aimed to promote the financing paradigm from budget to investments, to expand the sources of funding including private investments. The subsequent Presidential Regulation No. 62/Year 2013 (regarding REDD+ Agency) suggested direction and mandate of the FREDDI as “transparent, accountable and effective” management and as “REDD+ funding safeguards” (Sari 2013b). There are three modalities for financing. Modality 1 is pure grant mainly for readiness, infrastructure, and capacity building. Modality 2 is performance aggregator. Modality 3 is investment. The funds may be mobilized in the form of fund placement through joint corporate or project financing. The target amount of fund mobilization is assumed to be about 10 billion USD, mainly from private sector. Currently four funding windows are prepared: national initiatives and emergencies, subnational initiatives, competitively selected initiatives, and small grants (Sari 2013a). It is equipped with the “Principles, Criteria, and Indicators for REDD+ Safeguards in Indonesia (*Prinsip, Kriteria, Indikator Safeguards Indonesia: PRISAI*)”, a safeguard protocol to consider potential social and environment impacts. The protocol has been already in pilot stage by the REDD+ Task Force in four project sites (Indonesia REDD+ Task Force and United Nations Development Programme 2013).

2.7.2 Joint Initiative Between Japan and Indonesia: Joint Crediting Mechanisms

The Joint Crediting Mechanism (JCM) is one of the most materialized activities among “various approaches,” which is developed in line with the Decision 1/CP18 (UNFCCC 2012). JCM is an innovative mechanism for carbon offsetting, being expected to mobilize further involvement of private sector as well as financing and transfer of advanced technologies. Japan has been working on consultations for JCM since 2011. As of August 2014, 12 countries have signed the agreements with Japan (Mongolia, Bangladesh, Ethiopia, Kenya, Maldives, Viet Nam, Lao PDR, Indonesia, Costa Rica, Palau, Cambodia, and Mexico).

The JCM scheme is operated by a joint committee, which is established based on an agreement between Japanese government and each developing country. Its mandates are (1) to develop/revise the rules, guidelines, and methodologies, (2) to register projects, and (3) to discuss on implementation of JCM. The project submitted by a project participant will be validated and verified by third-party entities who are accredited under ISO 14065 or Designated Operational Entity (DOE) under the CDM. The certification body is called “Third Party Entity” (TPE). The main character of JCM is its decentralized structure. It is operated by the concerned governments, unlike the CDM which is guided by the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP). The eligibility criteria are established based on the two principles. One is to accelerate the deployment of low-carbon technologies, products, and services, which will contribute to achieving net emission reductions; and the other is to facilitate NAMAs in host countries. The eligibility criteria include the requirements for the project registration and methodologies. The eligibility criteria are provided in a checklist format in each methodology. Methodologies also provide monitoring and calculation parameters as well as default values, such as emission factors, for specific countries and sectors.

The Japanese Ministry of Economy, Trade and Industry (METI) and the New Energy and Industrial Technology Development Organization (NEDO) provide three support schemes: JCM demonstration projects (six projects in three countries for FY2013), JCM feasibility studies (30 projects in 13 countries for FY2013), and capacity building programs. The Japanese Ministry of Environment (MOE) also operates several schemes: feasibility studies (37 projects in 10 countries for FY2013), an outreach program called New Mechanisms Information Platform (New Mechanisms Information Platform 2014), and capacity building programs. In addition, “Financing Programme for JCM Model Projects” and the program called “Leapfrog Development” started in 2014. The former is intended to finance a part of investment costs. The latter is aimed at supporting transfers of advanced - low-carbon technologies with funding support by the Japanese government as well as ADB trust fund.

The bilateral document between Indonesia and Japan was signed in August 2013, and the first Joint Committee was held in October 2013 in Jakarta. The

Rules of Implementation (a fundamental framework), project cycle documents (project cycle procedure, as well as guidelines for methodologies and project design documents), documents for a third-party entity (guidelines for designation of TPE and for validation and verification), and the Rules of Procedures for the Joint Committee have been documented. The first proposed methodologies “Power Generation by Waste Heat Recovery in Cement Industry” and “Energy Saving by Introduction of High Efficiency Centrifugal Chiller” were in the public hearing process in May 2014. The further development of methodology will be expected based on the agreement between the two countries.

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