

IGES Climate Policy and Market Mechanisms Status Report

Information on each country's
climate change policies and
market mechanisms

Cambodia



China



India



Indonesia



Korea



Lao PDR



Mongolia



Myanmar



The Philippines



Thailand



Vietnam



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New in this publication version (March 2017):

- Update of Country profiles
- Each country's Intended Nationally Determined Contribution (INDC)

Executive Summary

IGES Climate Policy and Market Mechanisms Status Report aims to foster understanding of climate policy and Market Mechanisms implemented in Asia providing key information country by country.

General information is first provided for each country to provide demographic information on the population and the economy. Data on Greenhouse Gas (GHG) emission levels, taken from national GHG inventories.

National climate change policies of each country and information on countries' institutional structure in charge of climate change, as well as countries' Intended Nationally Determined Contributions (INDCs) are also explained.

This report features market mechanisms implemented by each country. Many countries in Asia already host projects from the Kyoto Protocol's clean development mechanism (CDM), which allows emission reduction projects in developing countries to earn certified emission reductions (CERs).

New market mechanism is also spreading, such as the Joint Crediting Mechanism (JCM). The JCM is a mechanism that the Government of Japan and partner country jointly implementing to disseminate leading low carbon technology while appropriately evaluating GHG emission reductions to meet the country's NDCs.

The update of other market mechanisms such as emission trading scheme (ETS) and offset mechanism are also covered in this report.

Whilst information in this document is believed to be true and accurate at the date of going to press, neither the author nor publisher can accept any legal responsibility or liability for any errors or omissions that may be made.

Abbreviations and Acronyms

ACM	Approved Consolidated Methodology
AM	Approved Methodology
AMS	Approved Small Scale Methodologies
AR	Afforestation and Reforestation
BAU	Business as Usual
BM	Build Margin
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
DNA	Designated National Authority
EB	CDM Executive Board
GEF	Grid Emission Factor
GHG	Greenhouse Gas
INDC	Intended Nationally Determined Contribution
JCM	Joint Crediting Mechanism
NAMAs	Nationally Appropriate Mitigation Actions
OM	Operating Margin
PIN/PCN	Project Idea Note/ Project Concept Note
PDD	Project Design Document
PoA	Program of Activities
UNFCCC	United Nations Framework Convention on Climate Change
VER	Verified Emission Reduction



Kingdom of Cambodia

1. Country Profile

1.1 General Information

Population	15.57 million (2015)
GDP	18.05 billion USD (2015)
Annual population growth rate	1.8% (2010-2015)
Annual urban population growth rate	2.7% (2010-2015)

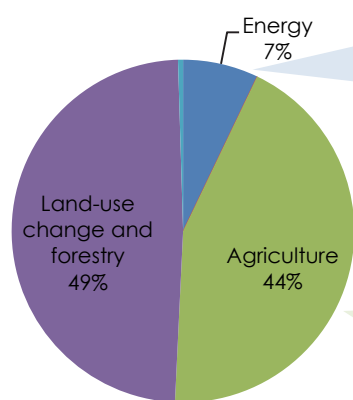
Source: World Bank Country data: <http://data.worldbank.org/country/cambodia>
UNdata: <http://data.un.org/CountryProfile.aspx?crName=Cambodia>

1.2 GHG Emissions

Year 2000

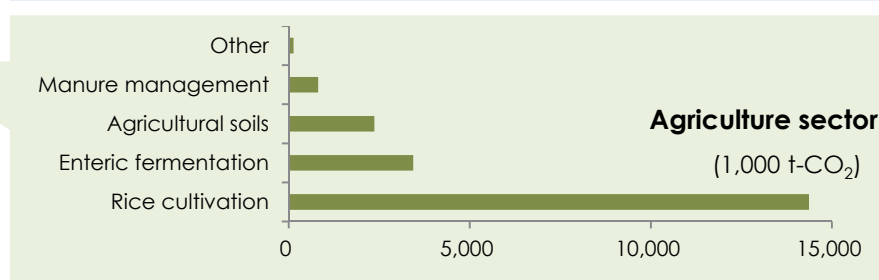
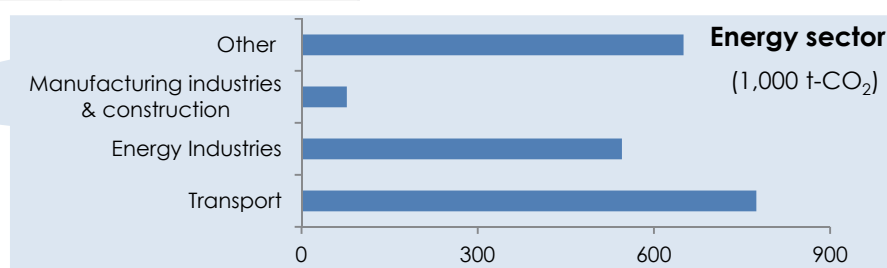
(1,000 t-CO₂)

Total emissions and removals	218
Emissions	48,383
Removals	-48,165



GHG Emissions by Sector

Source: CCD, MoE



2. National Climate Change Policy

2.1 Cambodia's Climate Change Strategic Plan (CCCSP)

Vision

(Launched on 5 November 2013)

Cambodia develops towards a greener, climate resilient, equitable, sustainable and knowledge-based society.

Mission

Creating a national framework for engaging public and private sectors, and civil society in a participatory process for responding to climate change to support sustainable development.

Goals

1. Reducing vulnerability to climate change impacts of critical (natural and societal) systems and most vulnerable groups
2. Shifting towards a green development path by promoting low-carbon development and appropriate technologies
3. Promote education and participation of the public in climate change response actions

Timeframe

2014-2023 (10 years) with 5 years revision in line with the national strategic development plan mandate

Strategic objectives

1. Promote the climate resilience through improving food, water and energy securities
2. Reduce sectoral, regional and gender vulnerability to climate change impacts
3. Ensure climate resilience of critical ecosystems (Great Lake, Mekong River, Coastal ecosystems, highlands etc.), biodiversity, protected areas and cultural heritage
4. Promote low-carbon planning and technologies to support sustainable development of the country
5. Improve capacities, knowledge and awareness for climate change response
6. Promote adaptive social protection and participatory approaches in reducing loss and damage
7. Strengthen institutions and coordination frameworks for national climate change responses

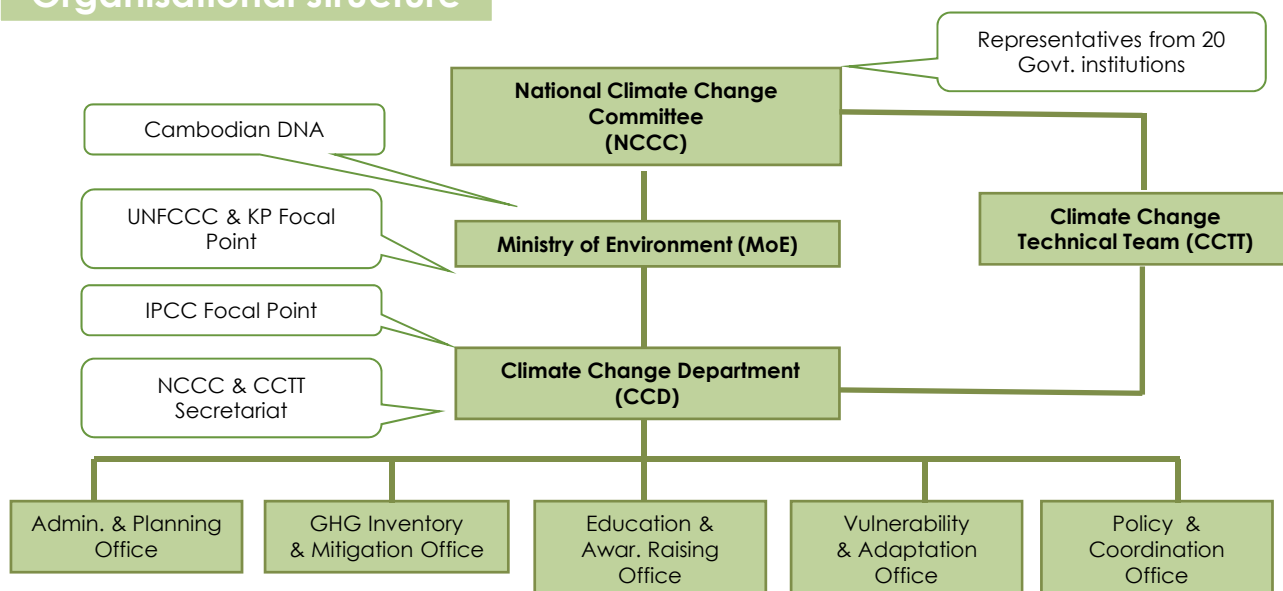
Source: Climate Change Department (CCD), Ministry of Environment, Cambodia (MoE)

2.2 Intended Nationally Determined Contribution (INDC)

INDC submission date	30/09/2015
Mitigation type	Absolute emission reduction
Mitigation Summary	Cambodia intends to undertake actions as listed in Table 1, the impact of which is expected to be a maximum reduction of 3,100 Gg CO ₂ eq compared to baseline emissions of 11,600 Gg CO ₂ eq by 2030.
Adaptation Summary	<ul style="list-style-type: none"> • Promoting and improving the adaptive capacity of communities, especially through community based adaptation actions, and restoring the natural ecology system to respond to climate change • Strengthening early warning systems and climate information dissemination • Developing and rehabilitating the flood protection dykes for agricultural and urban development • Increasing the use of mobile pumping stations and permanent stations in responding to mini-droughts, and promoting groundwater research in response to drought and climate risk • Developing climate-proof agriculture systems for adapting to changes in water variability.
Quantified Financial needs	According to the assessment of financial needs for priority activities up to 2018 included in the sectoral climate change action plans, Cambodia would require 1.27 billion US\$ to support the implementation of these activities.
Market Mechanisms	The support received will be channelled through bilateral and multilateral mechanisms, including market based mechanisms. Cambodia is for example making progress in readiness for direct access to the Green Climate Fund (GCF), which may become the principal vehicle for climate finance in the future.

Source: IGES INDC & NDC Database: <https://pub.iges.or.jp/pub/iges-indc-ndc-database>

Organisational structure



Source: CCD, MoE

Climate change response by sector (Mitigation)

Sector (Ministry in charge)	Objective and action plan /strategy
Manufacturing Industry and Energy (Ministry of Industry, Mine and Energy)	Climate change strategic plan for manufacturing industry and energy sectors Objective <ul style="list-style-type: none"> To adopt, mitigate, prevent and reduce climate change impact from both sectors To share all relevant data, information, knowledge and experiences to relevant sectors Specific action plan Industry sector <ul style="list-style-type: none"> Hot-Spot (to identify, assess and prioritize of pollution in manufacturing industries) and TEST (Transfer of Environmentally Sound Technology in the Cambodian Mekong River Basin) Energy efficiency in industry sector Green Industry Award Energy sector <ul style="list-style-type: none"> Policies development in energy sector Environmentally sound energy development:
Transport (Ministry of Public Works and Transport)	Climate change strategic plan for transport sector Objective The objectives of the strategies are to develop efficient, comfortable and safe transport system, introduce modern public transport system, reduce traffic congestion, enhance inspection and maintenance of vehicles, to enhance traffic management, and enhance the quality of fuel. Strategy <ul style="list-style-type: none"> To raise public awareness about climate change caused by GHG emissions from transport sector To enhance inspection and maintenance of vehicles To promote public transport in major cities Mitigation and low carbon development Capital-intensive urban transport infrastructure development and planning Efficient and proven transport technology Improve petroleum-based fuel Shift long distance freight movement from truck to train Promotion of efficient driving

Source: Ministry of Industry, Mine and Energy; Ministry of Public Works and Transport

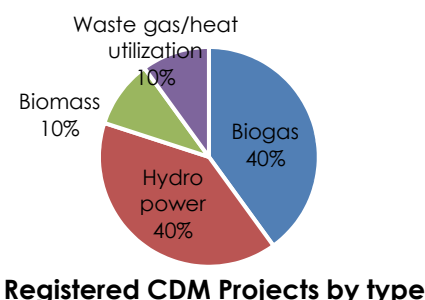
3. Market Mechanisms

3.1 The Clean Development Mechanism (CDM)

CDM projects and PoAs status

Status	Number of projects	Number of PoAs
Registered	10	0
At or after the validation stage	0	1

Source: IGES, IGES CDM Project Database (as of 31 January 2017)
 IGES CDM Programmes of Activities Database (as of 13 February 2017)
<http://www.iges.or.jp/en/climate/database.html>



Registered CDM Projects by type

Approved Standardized Baseline

Title	Sector	Approved methodology	Approval in EB meeting
Standardized baseline : Technology switch in the rice mill sector of Cambodia	Rice mill	AMS-I.B.	EB76, November 2013

Source: UNFCCC http://cdm.unfccc.int/methodologies/standard_base/index.html

Grid emissions Factors

	National Grid	Kampot-Sihnouk grid	Kampong Cham grid
Operating margin (2010-2012)	0.2339	0.5907	0.7239
Build margin (2012)	0.5338	0.6942	-

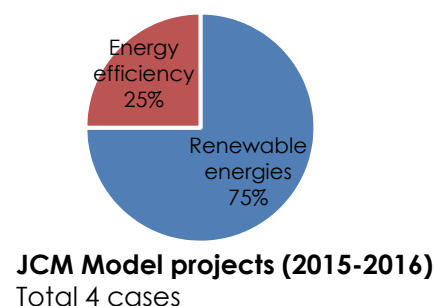
Source: CCD, MoE <https://pub.iges.or.jp/pub/grid-emission-factors-cambodia-2010-2012>

3.2 Joint Crediting Mechanism (JCM)

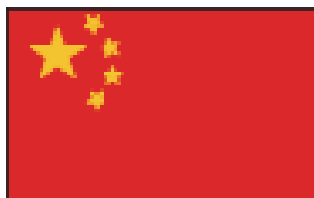
Date of agreement on the JCM	11 April 2014
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Approved methodologies (as of March 2017)

Meth No.	Title	Version	Date of approval/revision
KH_AM001	Installation of LED street lighting system with wireless network control	1.0	26/04/2016
KH_AM002	Installation of Solar PV System	1.0	04/02/2017



JCM Model projects (2015-2016)
Total 4 cases



People's Republic of China

1. Country Profile

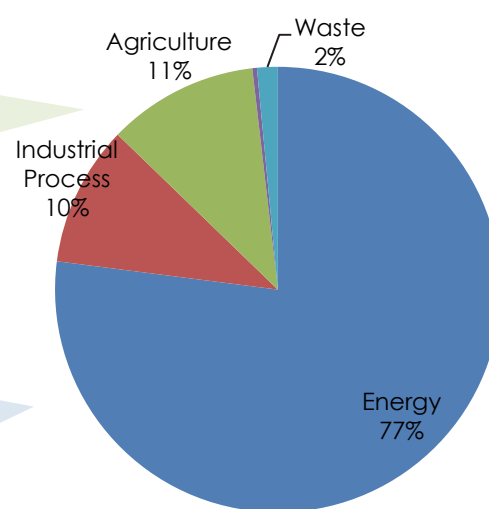
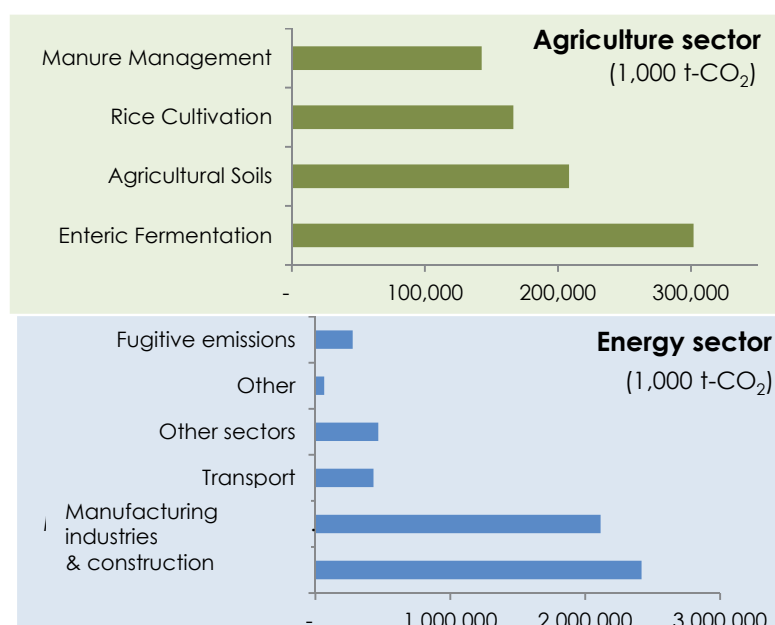
1.1 General Information

Population	1.371 billion (2015)
GDP	11.00 trillion USD (2015)
Annual population growth rate	0.5% (2010-2015)
Annual urban population growth rate	3.1% (2010-2015)

Source: World Bank Country data: <http://data.worldbank.org/country/china>
UNdata: <http://data.un.org/CountryProfile.aspx?crName=China>

1.2 GHG Emissions

Year 2005	(1,000 t-CO ₂)
Total emissions and removals	7,045,044
Emissions	7,491,384
Removals	-446,340



Source: NDRC, The second national communication on climate change of the People's Republic of China
http://unfccc.int/essential_background/library/items/3599.php?rec=j&preref=7666#beg

Submission of National Communications

First	10 December 2004
Second	8 November 2012

Source: UNFCCC
http://unfccc.int/national_reports/non-annex_i_natcom/items/2979.php



2. National Climate Change Policy

2.1 Intended Nationally Determined Contribution (INDC)

INDC submission date	03/09/2015
Mitigation type	Carbon intensity reduction
Mitigation Summary	<ul style="list-style-type: none"> • To achieve the peaking of carbon dioxide emissions around 2030 and making best efforts to peak early; • To lower carbon dioxide emissions per unit of GDP by 60% to 65% from the 2005 level; • To increase the share of non-fossil fuels in primary energy consumption to around 20%; and • To increase the forest stock volume by around 4.5 billion cubic meters on the 2005 level.
Adaptation Summary	China is accelerating the implementation of the National Strategy for Climate Adaptation, and improving its capacity to respond to extreme climatic events and making positive progress in key areas of climate change adaptation. Capacity building on combating climate change is further strengthened.
Market Mechanisms	<p>Promoting Carbon Emission Trading Market</p> <ul style="list-style-type: none"> • To build on carbon emission trading pilots, steadily implementing a nationwide carbon emission trading system and gradually establishing the carbon emission trading mechanism so as to make the market play the decisive role in resource allocation; and • To develop mechanisms for the reporting, verifying and certifying of carbon emissions and to improve rules and regulations for carbon emission trading to ensure openness, fairness and justice in the operation of the carbon emission trading market.

Source: IGES INDC & NDC Database: <https://pub.iges.or.jp/pub/iges-indc-ndc-database>

2.2 Nationally Appropriate Mitigation Actions (NAMAs)

Status of NAMA Submission

Publication Date	28 January 2010
Emission Reduction Goal	Reduce 40-45% Per GDP GHG emission by 2020
Baseline year	2005

Source: UNFCCC http://unfccc.int/meetings/cop_15/copenhagen_accord/items/5265.php

2.3 Low carbon provinces and cities

First Phase: 5 Provinces and 8 Cities (Announced on July 2010)

Provinces: Guangdong, Hubei, Liaoning, Shaanxi, and Yunnan

Cities: Baoding, Chongqing, Guiyang, Hangzhou, Nanchang, Shenzhen, Tianjin and Xiamen

Second Phase: 1 province and 28 cities (Announced on November 2012)

Provinces: Hainan

Cities: Shijiazhuang, Qinhuangdao, Jincheng, Hulunbeier, Jilin, Daxinganling, Suzhou, Huaian, Zhenjiang, Ningbo, Wenzhou, Chizhou, Nanping, Jingdezhen, Ganzhou, Qingdao, Jiuyuan, Wuhan, Guangzhou, Guilin, Guangyuan, Zunyi, Kunming, Yanan, Jinchang and Urumqi

Strategic Goal

To promote the low carbon development and economy restructuring, and to achieve the goal of control greenhouse gas emissions by 2020.

Measures

- (1) Prepare low carbon development plan.
- (2) Measures and policies on the support for low carbon development
- (3) Establish the industry system with the characteristic of low carbon society
- (4) Establish the Greenhouse gas emissions data statistic and management system.
- (5) Promote the low carbon life style and consumption style.

Source: 1st Phase notification: http://www.sdpc.gov.cn/zcfb/zcfbtz/2010tz/t20100810_365264.htm

2nd Phase notification: http://qhs.ndrc.gov.cn/gzdt/t20121205_517419.htm

3. Market Mechanisms

3.1 Domestic market mechanisms

China voluntary offset credit scheme*

Policy	The regulation for the voluntary offset credit scheme* (adopted on 13 June 2012)
Competent authority	National Development and Reform Commission (NDRC)
Scope of gas	CO ₂ , CH ₄ , N ₂ O, HFCs, PFCs and SF ₆
Trading Participant	National and international organizations, enterprises and individuals
Requirements to the projects	1) Projects that adopt the methodologies announced by NDRC. 2) Projects that are approved as CDM by NDRC but not registered by CDM EB 3) Projects that are approved as CDM by NDRC and generate emission reductions before registration by CDM EB. 4) Projects that are registered by CDM EB but not issue CERs.
Type of project	Renewable energy, Energy efficiency, Biogas, HFC reduction/avoidance and N ₂ O decomposition etc
Credit	China certified emissions reduction (CCER)
Methodology	Methodologies announced by NDRC http://cdm.ccchina.gov.cn/nDetail.aspx?newsId=39507&TId=20

*The literal translation of this scheme is a voluntary greenhouse gas emission trading scheme. Words of "voluntary offset credit scheme" was applied here, because this scheme is categorized as a baseline and credit scheme (offset scheme) rather than a cap and trade scheme (emissions trade scheme).

Source : NDRC http://qhs.ndrc.gov.cn/zcfg/t20120621_487133.htm

Carbon Emissions Trading Pilots in 2 provinces and 5 cities (2011-2015)

The notification for launching pilot greenhouse gas emission rights trading scheme (2011)

Provinces: Guangdong and Hubei

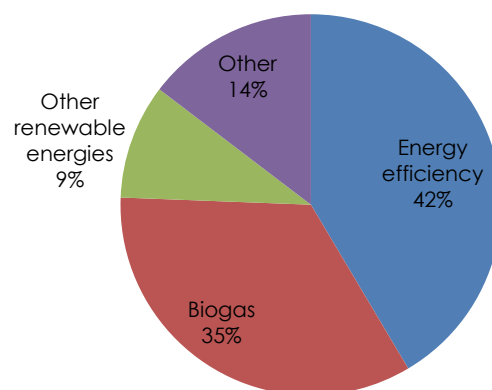
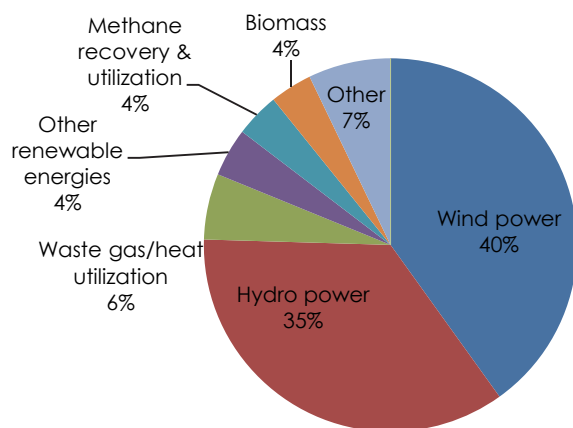
Cities: Beijing, Chongqing, Shanghai, Shenzhen and Tianjin

City/Province		Beijing	Shanghai	Tianjin	Shenzhen	Guangdong	Hubei	Chongqing
Scope	Entities	1,000	191	114	635	242	138	240
	Threshold	5,000tCO ₂ /y	20,000tCO ₂ /y for industry sector 10,000tCO ₂ /y for other sector	20,000tCO ₂ /y	3,000tCO ₂ /y or building area 10,000 m ²	10,000tCO ₂ for industry sector 5,000tCO ₂ for other sector	60,000tce	20,000tCO ₂ /y
	Gas	CO ₂	CO ₂	CO ₂	CO ₂	CO ₂	CO ₂	CO ₂
Allowance	Coverage ratio	50%	50%	NA	38%	58%	35%	40%
	Allocation methods	Free and auctioning	Free and auctioning	Free and auctioning	Free and auctioning	Free(90%) and auctioning (10%)	Free(90%) and auctioning (10%)	—
		Annual allowance	Allocate all at once	Annual allowance	Allocate all at once	Allocate all at once	Annual allowance	Allocate all at once
	Adjustment	adjust every year	—	adjust every year	adjust every year	adjust every year	adjust every year	—
Performance of duties	Methods	—	Surrender substantial amount of allowances based on actual emissions	Surrender substantial amount of allowances based on actual emissions	—	Surrender substantial amount of allowances based on actual emissions	Surrender substantial amount of allowances based on actual emissions	—
	Use of external credit (upper limit)	CCER (5%)	CCER (5%)	CCER (10%)	CCER (10%)	CCER (10%)	CCER (10%)	CCER (8%)
	Banking	Allowed	Allowed	—	Allowed	Allowed	Not allowed	—

3.2 The Clean Development Mechanism (CDM)

CDM projects and PoAs status

Status	Number of projects	Number of PoAs
Registered	3,763	43
At for after the validation stage	102	16



CDM projects

PoAs

Registered projects and PoAs by type

Source: IGES, IGES CDM Project Database (as of 31 January 2017)
 IGES CDM Programmes of Activities Database (as of 13 February 2017)
<http://www.iges.or.jp/en/climate/database.html>

Grid emission factor

: (t-CO₂/MWh)

Regional Grid	Covered Region	2010 BM	2012 BM	2013 BM	2010-2012 Average OM	2011-2013 Average OM
North China Grid	Beijing, Tianjin, Hebeim Shanxi, Shandong, Inner-Mongolia	0.5940	0.5410	0.4780	1.0580	1.0416
Northeast China Power Grid	Liaoning, Jilin, Heilongjiang	0.6104	0.5537	0.4315	1.1281	1.1291
East China Grid	Shanghai, Jiangsu, Zhejiang, Anhui, Fujian	0.6889	0.6861	0.5945	0.8095	0.8112
Central China Power Grid	Henan, Hubei, Hunan, Jiangxi, Sichuan, Chongqing	0.4733	0.4737	0.3500	0.9724	0.9515
Northwest China Power Grid	Shaanxi, Gansu, Qinghai, Ningxia, Xinjiang Uyghur	0.5398	0.4512	0.3162	0.9578	0.9457
Southern China Power Grid	Guangdon, Jiangxi, Yunnan, Guizhou, Hainan	0.3791	0.4367	0.3648	0.9183	0.8959
Hainan Province China Power Grid	Hainan Province	NA	NA	NA	NA	NA

Source: IGES, List of grid emission factor (as of January 2017) <http://www.iges.or.jp/en/climate-energy/mm/publication.html#03>



Republic of India

1. Country Profile

1.1 General Information

Population	1.311 billion(2015)
GDP	2.074 trillion USD (2015)
Annual population growth rate	1.2 (2010-2015)
Annual urban population growth rate	2.5 (2010-2015)
Energy consumption per capita	440.0 (kilograms oil equivalent, 2010)

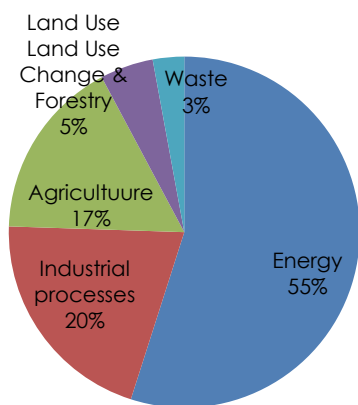
Source: World Bank Country data: <http://data.worldbank.org/country/india>
UNdata: <http://data.un.org/CountryProfile.aspx?crName=India>

1.2 GHG Emissions

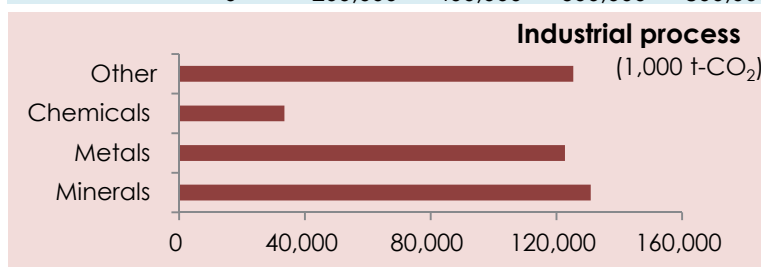
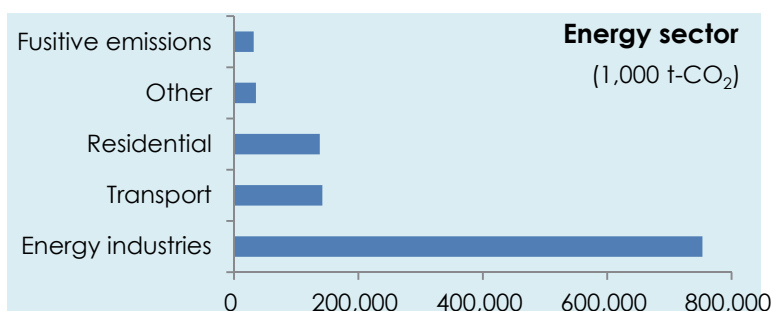
Year 2007

(1,000 t-CO₂)

Total emissions and removals	1,727,706
Emissions	2,003,064
Removals	-275,358



GHG Emissions by sector



Source: India: Greenhouse Gas Emissions 2007 http://moef.nic.in/downloads/public-information/Report_INCCA.pdf

Submission of National Communications

First	22 June 2004
Second	4 May 2012

Source: UNFCCC. Non-Annex I national communications.
http://unfccc.int/national_reports/non-annex_i_natcom/items/2979.php

2. National Climate Change Policy

2.1 National Action Plan for Climate Change (NAPCC)

(Announced in 2008)

Objective

To achieve a sustainable development path that simultaneously advances economic and environmental objectives

Principles

- Protecting the poor and vulnerable sections of society through an inclusive and sustainable development strategy, sensitive to climate change
- Achieving national growth objectives through a qualitative change in direction that enhances ecological sustainability, leading to further mitigation of greenhouse gas emissions
- Devising efficient and cost-effective strategies for end use Demand Side Management
- Deploying appropriate technologies for both adaptation and mitigation of greenhouse gases emissions extensively as well as at an accelerated pace
- Engineering new and innovative forms of market, regulatory and voluntary mechanisms to promote sustainable development

National Missions

	Mission name	Target
Mitigation	National Solar Mission	• 20,000 MW of solar power by 2022
	National Mission for Enhanced Energy Efficiency	• Energy saving of 23 million tones of oil equivalent by 2015
Adaptation	National Mission for Sustainable Habitat	• EE in residential & commercial buildings, public transport, solid waste management
	National Water Mission	• Water conservation, river basin management
	National Mission for Sustaining the Himalayan Ecosystem	• Conservation & adaptation practices, glacial monitoring
	National Mission for a Green India	• 6 mn hectares of afforestation over degraded forest lands by the end of 12 th Plan
	National Mission for Sustainable Agriculture	• Drought proofing, risk management, agricultural research
Overall	National Mission on Strategic Knowledge for Climate Change	• Vulnerability assessment, Research & observation, data management

Source: National Action Plan for Climate Change http://pmindia.nic.in/climate_change.htm

2.2 Intended Nationally Determined Contribution (INDC)

INDC submission date	01/10/2015
Mitigation type	Carbon intensity reduction
Mitigation Summary	<ul style="list-style-type: none"> • To reduce the emissions intensity of its GDP by 33 to 35 percent by 2030 from 2005 level. • To achieve about 40 percent cumulative electric power installed capacity from nonfossil fuel based energy resources by 2030 with the help of transfer of technology and low cost international finance including from Green Climate Fund (GCF). • To create an additional carbon sink of 2.5 to 3 billion tonnes of CO₂ equivalent through additional forest and tree cover by 2030.
Adaptation Summary	Out of the eight National Missions on Climate Change five mission focus on adaptation in sectors like agriculture, water, Himalayan ecosystems, forestry, Capacity building and Knowledge management. Climate plans at the sub national level also focus significantly on adaptation.
Quantified Financial needs	India would need around USD 206 billion (at 2014-15 prices) between 2015 and 2030 for implementing adaptation actions in agriculture, forestry, fisheries infrastructure, water resources and ecosystems. An Asian Development Bank Study on assessing the costs of climate change adaptation in South Asia indicates that approximate adaptation cost for India in energy sector alone would roughly be about USD 7.7 billion in 2030s.
Specific technology transfer needs	In its pursuit of low carbon growth, India would be focusing on technologies that need to be moved from lab to field and those that require targeted global research along with those that are still in the realm of imagination. One of the important areas of global collaborative research should be clean coal and fossil fuel, energy management and storage systems for renewable energy.
Market Mechanisms	Policies to promote actions that address climate concerns also include fiscal instruments like coal cess, cuts in subsidies, increase in taxes on petrol and diesel, market mechanisms including Perform Achieve and Trade (PAT), Renewable Energy Certificates (REC) and a regulatory regime of Renewable Purchase Obligation (RPO). At the same time India is not relying solely on budgetary resources and is experimenting with a careful mix of market mechanisms together with fiscal instruments and regulatory interventions to mobilize finance for climate change.

Source: IGES INDC & NDC Database: <https://pub.iges.or.jp/pub/iges-indc-ndc-database>

2.3 Nationally Appropriate Mitigation Actions (NAMAs)

Status of NAMAs Submission

Publication Date	28 January 2010
Emission Reduction Goal	Reduce GHG emissions intensity of its GDP by 20-25% by 2020
Base year	2005

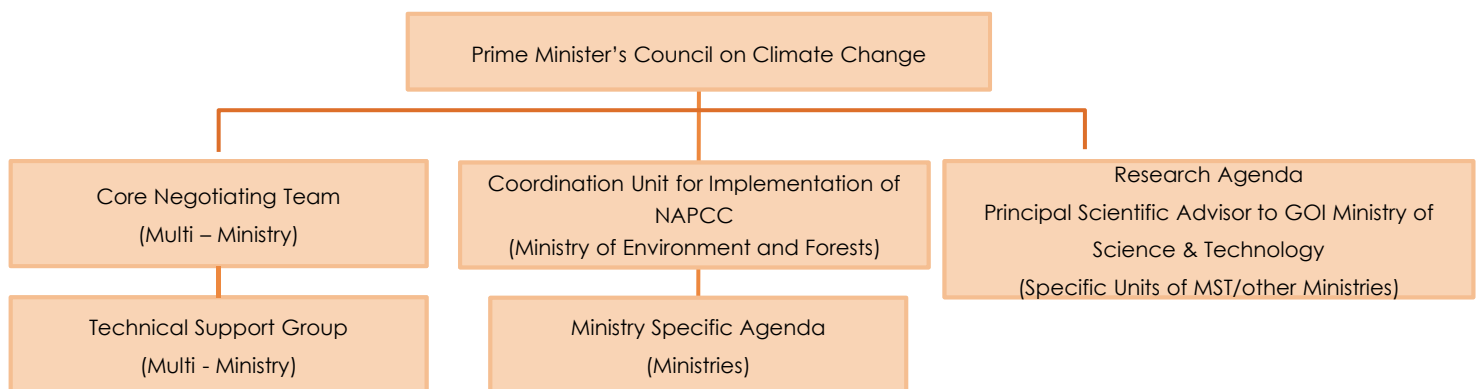
Source: GOI (2010) http://unfccc.int/files/meetings/cop_15/copenhagen_accord/application/pdf/indiacphaccord_app2.pdf

Estimated benefits and costs of some of the mitigation actions (NAMAs)

Action	Brief Description	Estimated Benefit (Mt-CO ₂ /yr in 2020)	Estimated Additional cost (\$ billion/yr)
National Solar Mission	22,000 MW of solar by 2022 (600 MW constructed in 2010)	31	5.1
Nuclear Energy	20,000 MW by 2020	99	8.2
Renewable Energy	72,000 MW by 2022	104	4.3
Green India Mission	20 Mn Ha to be afforested/eco-restored	43	1.0
Total		~ 275	~ 19

Source: http://unfccc.int/files/meetings/ad_hoc_working_groups/lca/application/pdf/india_ws.pdf

2.4 Organisational Structure



3. Market Mechanisms

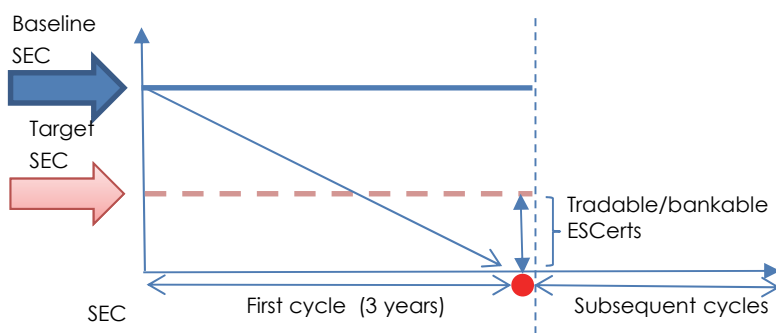
3.1 Domestic Market Mechanism

PAT (Perform Achieve & Trade) scheme

PAT is India's scheme for incentivising energy efficiency improvement, which is traded as Energy Saving Certificates (ESCs). The idea of PAT was introduced as early as 2001 as a part of Energy Conservation Act and its operation started in 2012. It obliges more than 500 entities in 8 sectors, covering 54% of India's energy consumption, to achieve Specific Energy Consumption (SEC).

- Each DC has specific target set by % reduction based on the current energy efficiency
- Energy source is converted into Metric Ton of Oil Equivalent (MTOE)
- DCs shall comply with targeted SEC
- DCs can buy Energy Saving certificates (ESCs) in case of not meeting the target
- DCs shall pay a penalty for non-compliance

Crediting mechanism



Source Bureau of Energy Efficiency, Energy Conservation Act 2001.

<http://unfccc.int/resource/docs/natc/indncl.pdf>

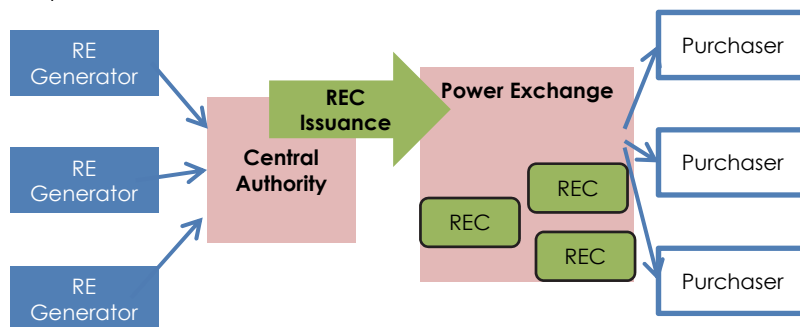
National Action Plan for Climate Change, http://pmindia.nic.in/climate_change.htm

Energy Saving Targets

Sector	Energy consumption in 2007 (mMTOE)	Energy saving targets by 2015	
		(mMTOE)	(%)
Aluminium	2.42	0.11	4.55%
Cement	14.47	0.6	4.15%
Chlor-alkali	0.43	0.02	4.65%
Fertiliser	11.95	0.51	4.27%
Iron and steel	36.08	1.56	4.32%
Pulp and paper	1.38	0.06	4.35%
Textiles	4.5	0.2	4.44%
Thermal power plants	160.3	6.92	4.32%
Total	231.53	10	4.32%

REC (Renewable Energy Certificate) scheme

REC scheme was launched in 2010 as a scheme to promote the use of renewable energy and fill the regional gap in renewable energy availability.



Source: Sournee, et al. Renewable Energy Certificate Mechanism in India.

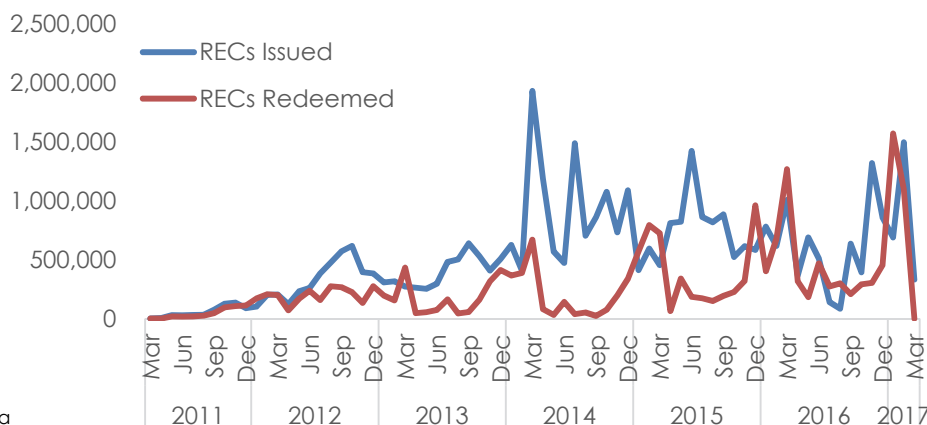
Type of unit	1 MW of electricity generation = 1 REC (Renewable Energy Certificate)
Target sector	Renewable energy generation
Applicability	<ul style="list-style-type: none"> • Small hydro, wind, solar including its integration with combined cycle, biomass, bio fuel cogeneration, urban or municipal waste • Accreditation by the state agency
Crediting period	5 years from the date of accreditation certificate.
Purchase unit obligation	REC can be purchased by obligated entities to meet their Renewable Purchase Obligation (RPO) which is required to purchase minimum level of renewable energy out of the total consumption in the area of a distribution licensee.
Flexibility measure	Electricity Act (2003), Regulations set by State Electricity Regulatory Commission (SERC) in each state.
	Exchanged within the band of a floor price and a ceiling price

Registered facilities

Source	Capacity (MW)	Unit
Wind	2,306.2	559
Solar PV	720.3	353
Biomass	582.6	65
Bio-fuel cogeneration	528.6	77
Small Hydro	251.7	32
Others	1.7	1
Total	4,391	1,097

Source: Renewable Energy Certificate Registry of India
<https://www.recregistryindia.nic.in>

Issued and redeemed REC



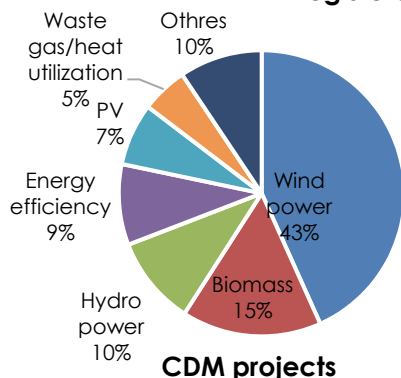
The value of REC will be equivalent to 1 MWh of electricity injected into the grid from renewable energy sources.

3.2 The Clean Development Mechanism (CDM)

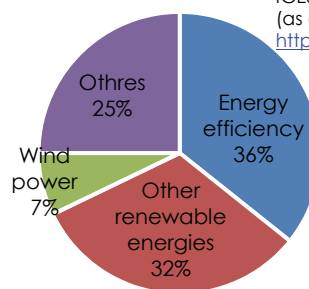
CDM Projects and PoAs status

Status	Number of Projects	Number of PoAs
Registered	1,638	30
At or after the validation stage	541	18

Registered projects and PoAs by type



CDM projects



PoAs

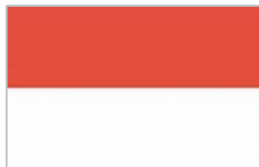
Source: IGES, IGES CDM Project Database (as of 31 January 2017)
 IGES CDM Programmes of Activities Database (as of 13 February 2017)
<http://www.iges.or.jp/en/climate/database.html>

Source: The Central Electricity Authority, Ministry of Power.

Grid emission factor

Regional grid	2013-2014	
	OM	BM
Integrated Northern, Eastern, Western and North-Eastern regional grids (NEWNE)	1.00	0.95
Southern grid	1.02	0.96

(t-CO₂/MWh)



Republic of Indonesia

1. Country Profile

1.1 General Information

Population	257.6 million(2015)
GDP	861.9 billion USD(2015)
Annual population growth rate	1.2% (2015)
Annual urban population growth rate	2.6% (2015)
Energy consumption per capita	850.2 (kilograms oil equivalent, 2015)

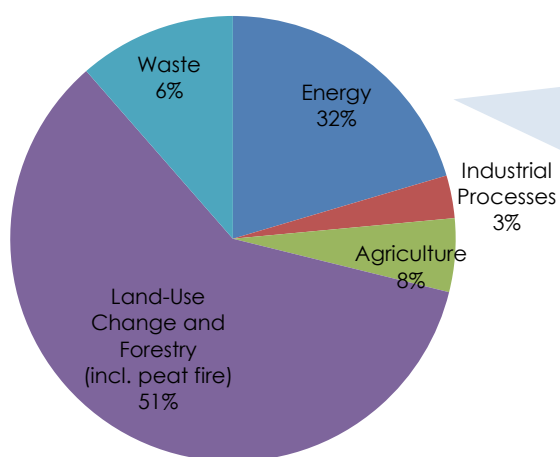
Source: World Bank Country data: <http://data.worldbank.org/country/Indonesia>

1.2 GHG Emissions

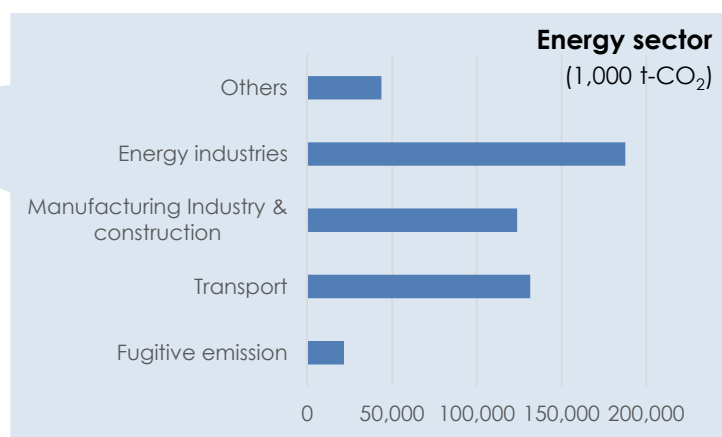
Year 2012

(1,000 t-CO₂)

Total emissions and removals	1,222,152,000
Emissions	1,275,556,000
Removals	-53,403,649.9



GHG Emissions by sector



Source: Indonesia First Biennial Update Report
<http://unfccc.int/resource/docs/natc/idnbur1.pdf>

Submission of National Communications and Biennial Update Report

First National Communication	27 October 1999
Second National Communication	14 January 2011 (Updated: 19 January 2012)
First Biennial Update Report	18 March 2016

Source: UNFCCC http://unfccc.int/national_reports/non-annex_i_natcom/items/2979.php,
 UNFCCC http://unfccc.int/national_reports/non-annex_i_natcom/reporting_on_climate_change/items/8722.php

2. National Climate Change Policy

- Law No. 16 Year 2016 on the Ratification of the Paris Agreement (2016)
- Government Regulation No. 79/2014 on National Energy Policy (2014)
- 2010-2014 National Medium-Term Development Plan (RPJMN: 2010-2014)
- Minister of Environment Regulation No. 15 year 2013 on MRV of Climate Change Mitigation Action (2013)
- National Action Plan for Climate Change Adaptation (RAN-API) (2013)
- Presidential Regulation of the Republic of Indonesia No.61 year 2011 on the National Action Plan for Greenhouse Gas Emission Reductions (RAN-GRK) (2011)
- Submission of Nationally Appropriate Mitigation Actions to UNFCCC (2010)

2.1 National Action Plan for Greenhouse Gas Emission Reduction (RAN-GRK)

Objective

(Published in 2011)

Implementation of various activities both directly and indirectly to reduce greenhouse gas emissions in accordance with the regional development targets

Core activities

Sector	Strategies
Agriculture	<ol style="list-style-type: none"> 1. Optimise land and water resources 2. Apply land management and farming technologies with lowest GHG emissions and absorb CO₂ optimally 3. Stabilise the water level and arrange for uninterrupted circulation of water in irrigation network
Forestry and peat land	<ol style="list-style-type: none"> 1. Suppress the rate of forest deforestation and degradation 2. Increase planting to increase GHGs absorption 3. Increase the efforts to secure forest areas from fire and illegal loggings and apply a sustainable forest management 4. Enhance productivity and efficient production of agriculture on peat lands with lowest emission and absorb optimally 5. Optimise land and water resources without deforestation 6. Apply land management and agriculture farming technologies that have lowest GHG emissions and can absorb CO₂ optimally
Energy and transportation	<ol style="list-style-type: none"> 1. Conserve the final energy both through the application of cleaner and more efficient technologies and through reduction in the consumption of non-renewable energy 2. Encourage the use of new and renewable energy in small and medium scales 3. Reduce the travel needs, particularly in city areas, through land use management, reduce travel activities and unnecessary distances 4. Shift from using private vehicles to low-carbon transportation pattern, such as non-motorized, public, or water transportation facilities 5. Improve energy efficiency and carbon release reduction in motorized vehicles in transportation facilities
Industrial sector	<ol style="list-style-type: none"> 1. Conduct an energy audit especially on energy-intensive industries 2. Provide incentives in energy efficient programs
Waste management	<ol style="list-style-type: none"> 1. Enhancement of institutional capacity, regional regulations, and waste water management in urban areas 2. Reduction of the heaps of waste through 3R 3. Improvement of the process at the Final Treatment Facility (FTF), construction/rehabilitation of the FTF 4. Utilisation of waste/ solid waste into environmentally friendly energy products

2.2 Intended Nationally Determined Contribution (INDC)

INDC submission date	24/09/2015
Mitigation type	Relative emission reduction
Mitigation Summary	Indonesia is committed to reducing emissions by 29% compared to the business as usual (BAU) scenario by 2030. Indonesia's target should encourage support from international cooperation, which is expected to help Indonesia to increase its contribution up to 41% reduction in emissions by 2030.
Adaptation Summary	<ul style="list-style-type: none"> • Study and map regional vulnerabilities as the basis of adaptation information system • Strengthen institutional capacity and promulgation of climate change sensitive policies and regulations by 2020. • Reduce risks on all development sectors (agriculture, water, energy security, forestry, maritime and fisheries, health, public service, infrastructure, and urban system) by 2030 through local capacity strengthening, improved knowledge management, convergent policy on climate change adaptation and disaster risks reduction, and application of adaptive technology.
Market Mechanisms	Indonesia will meet its unconditional commitments regardless of the existence of international market mechanisms. Indonesia welcomes bilateral, regional and international market mechanisms that facilitate and expedite technology development and transfer, payment for performance, technical cooperation, and access to financial resources to support Indonesia's climate mitigation and adaptation efforts towards a climate resilient future.

2.3 Minister of Environment Regulation No. 15 year 2013 on Measurement, Reporting, and Verification of Climate Change Mitigation Action (2013)

(Approved on 29 December 2013)

Objective

To provide guidelines for the implementation of measurement, reporting and verification of action on climate change mitigation for the Responsible Person for Mitigation Action in order to know the achievements of Climate Change Mitigation actions that accurate, transparent, and accountable.

Components

- Covers measurement that is carried out for mitigation action in planning and implementation of mitigation action.
- Achievement report on mitigation actions shall at least describe; 1) the calculation of GHG emissions in the absence of mitigation action, 2) a baseline set including the assumptions used, 3) methodology for calculating the performance of mitigation actions, 4) monitoring result of data on implemented activities, 5) description of performed action, 6) achievement statements of reduction and/or uptake of GHG emissions in every action performed as well as the aggregation, 7) applied managerial and monitoring system, and 8) obstacles and barriers.
- The verifier appointed by the Responsible Person for Mitigation Action shall not directly involved in the implementation of the mitigation actions and have a Certificate of Competence as a verifier of climate change mitigation action achievement.
- The Minister, assisted by National MRV Commission which is chaired by a Deputy Ministers, conducts an assessment of the result of the measurement, reporting and verification and issue a registration certificate on the achievements of Climate Change Mitigation action or a letter of rejection.
- National Registration System for actions that have been certified and information regarding the results of MRV. The **National Registry System on Climate Change**, a web-based management of data and information system for action and resources of climate change adaptation and mitigation has been launched: <http://ditjenppi.menlhk.go.id/srn/>

Source: Minister of Environment Regulation No. 15 year 2013 on Measurement, Reporting, and Verification of Climate Change Mitigation Action (2013)

2.4 Nationally Appropriate Mitigation Actions (NAMAs)

Publication Date	19 January 2010
GHG Emission Reduction Goal	26% reduction from Business As Usual scenario

Contents of NAMAs

- (a) Sustainable peat land management;
- (b) A reduction in the rate of deforestation and land degradation;
- (c) The development of carbon sequestration projects in forestry and agriculture;
- (d) The promotion of energy efficiency;
- (e) The development of alternative and renewable energy sources;
- (f) A reduction in solid and liquid waste;

Source: UNFCCC (2013) Compilation of information on nationally appropriate mitigation actions to be implemented by developing country Parties

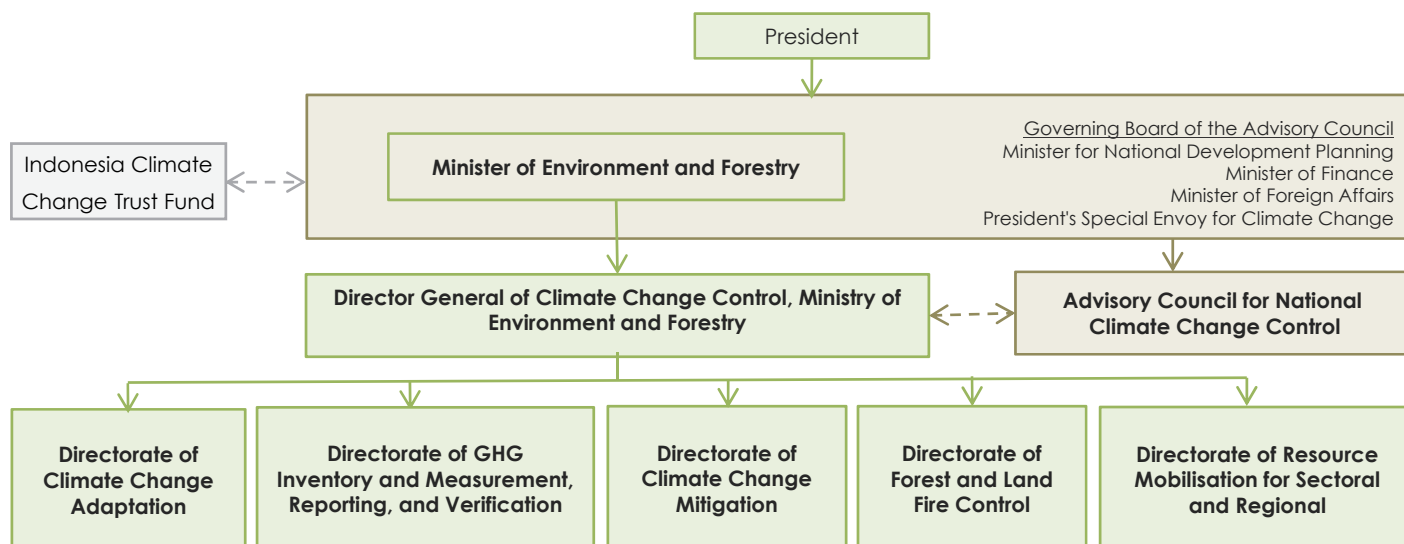
NAMA seeking support for implementation

UNFCCC ID	Title and Overview
NS-65	<u>Sustainable Urban Transport Initiative</u> Promotes sustainable urban transport in Indonesian Cities by implementing and monitoring measures in order to halt the increasing motorisation and reduce externalities of transportation. The policies for each city include high quality public transport, non - motorised transport, parking management, traffic management, spatial planning, alternative fuels and vehicle efficiency.
NS-89	<u>Smart Street Lighting Initiative</u> Aims to increase the energy efficiency of street lighting by substituting conventional street lighting with more efficient technologies in Indonesian cities and urban areas. Most of the cities are still partially charged for the street lights' electricity consumption on a lump-sum (unmetered) basis, the SSLI will therefore encourage further energy policy reform, the more rapid uptake of electricity metering and the modernisation of street lighting systems that meet road safety standards.

Source: NAMA Registry, Public NAMA – Country <http://www4.unfccc.int/sites/nama/SitePages/Country.aspx?CountryId=80>

2.5 Organisational Structure

The Directorate General of Climate Change Control, Ministry of Environment and Forestry is the UNFCCC focal point.

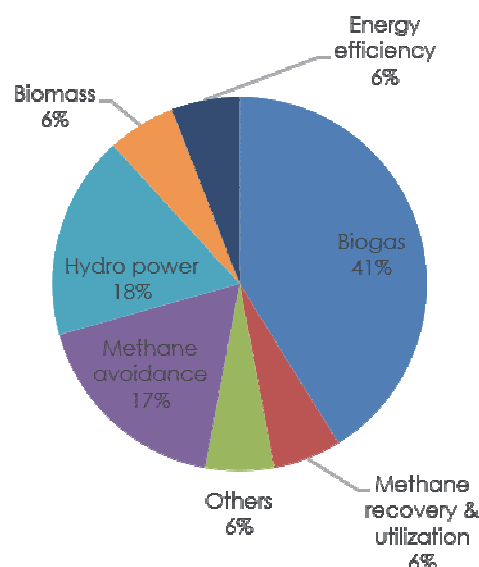
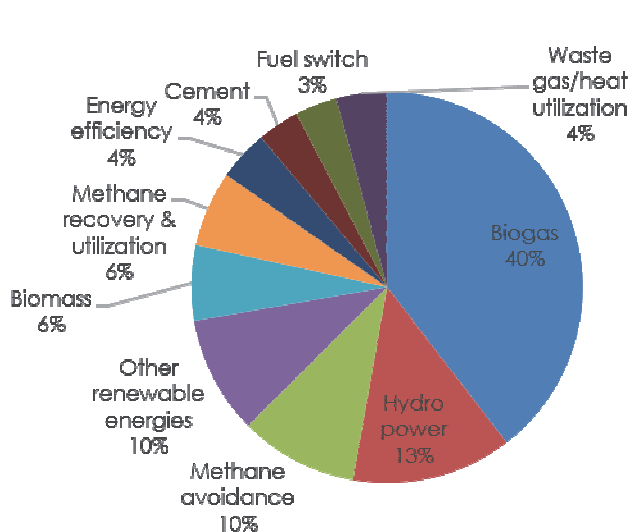


3. Market Mechanisms

3.1 The Clean Development Mechanism (CDM)

CDM projects and PoAs status

Project Status	Number of projects	Number of PoAs
Registered	147	10
At or after the validation stage	7	7



Source: IGES, IGES CDM Project Database (as of 31 January 2017)
 IGES CDM Programmes of Activities Database (as of 13 February 2017)
<http://www.iges.or.jp/en/climate/database.html>

3.2 Joint Crediting Mechanism (JCM)

Date of agreement on the JCM 26 August 2013

Approved methodologies (As of March 2017)

Meth No.	Title	Version	Date of approval/revision
ID_AM001	Power Generation by Waste Heat Recovery in Cement Industry	1.0	19/05/2014
ID_AM002	Energy Saving by Introduction of High Efficiency Centrifugal Chiller	2.0	10/11/2015
ID_AM003	Installation of Energy-efficient Refrigerators Using Natural Refrigerant at Food Industry Cold Storage and Frozen Food Processing Plant	2.0	10/11/2015
ID_AM004	Installation of Inverter-Type Air Conditioning System for Cooling for Grocery Store	2.0	10/11/2015
ID_AM005	Installation of LED Lighting for Grocery Store	2.0	10/11/2015
ID_AM006	GHG emission reductions through optimization of refinery plant operation in Indonesia	1.0	18/05/2015
ID_AM007	GHG emission reductions through optimization of boiler operation in Indonesia	1.0	18/05/2015
ID_AM008	Installation of a separate type fridge-freezer showcase by using natural refrigerant for grocery store to reduce air conditioning load inside the store	1.0	10/11/2015
ID_AM009	Replacement of conventional burners with regenerative burners for aluminum holding furnaces	2.0	10/02/2017
ID_AM010	Introducing double-bundle modular electric heat pumps to a new building	1.0	06/08/2015
ID_AM011	Installation of energy saving air jet loom at textile factory	1.0	10/02/2017
ID_AM012	Reduction of Energy Consumption by Introducing an Energy-Efficient Old Corrugated Carton Processing System into a Cardboard Factory	1.0	10/02/2017

Registered projects that have issued JCM credits

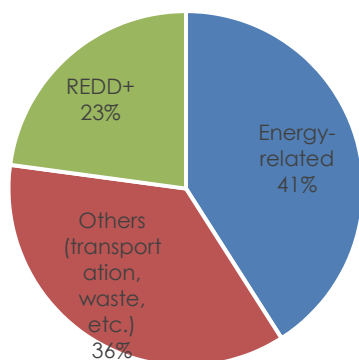
Indonesia has issued 9tCO₂ to its registry (as of March 2017).

Project Title	Regis-tration Date	Project Participant (Japan)	Project Participant (host country)	Third Party Entity for Validation	Location	Estimated Annual Emission Reduction (average tCO ₂ /year)	Amounts of credits issued
ID002 Project of Introducing High Efficiency Refrigerator to a Food Industry Cold Storage in Indonesia	29/03/2015	MAYEKAWA MFG. CO., LTD.	PT. Adib Global Food Supplies, PT. Mayekawa Indonesia	Japan Quality Assurance Organization (JQA)	Bantargebang, Bekasi, West Java	120	Date of issuance: 12 May 16
							Indonesia: 6
							Japan: 23
ID003 Project of Introducing High Efficiency Refrigerator to a Frozen Food Processing Plant in Indonesia	29/03/2015	MAYEKAWA MFG. CO., LTD.	PT. Adib Global Food Supplies, PT. Mayekawa Indonesia	Japan Quality Assurance Organization (JQA)	Cilebar, Karawang, West Java	21	Date of issuance: 12 May 16
							Indonesia: 3
							Japan: 8

Source: Official JCM Indonesia-Japan website <https://www.jcm.go.jp/id-jp/projects/issues>

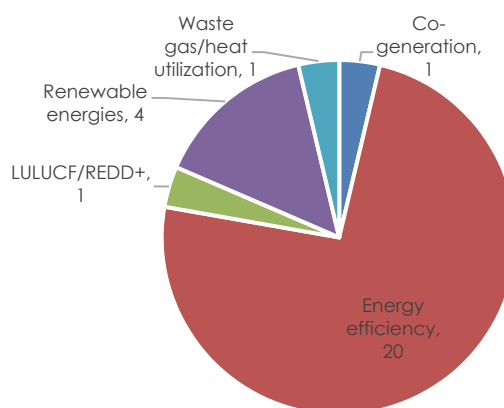
JCM feasibility studies and projects (2010-2015)

Total 105 studies



Selected projects under JCM financing programme

Total 27 projects



Source: IGES JCM Database, November 2016.

<https://pub.iges.or.jp/pub/iges-joint-crediting-mechanism-jcm-database>

Grid emission factor

Grid Name	Year	Emission Factors (t-CO ₂ eq. / MWh)	
		Ex-ante	Ex-post
Java-Madura-Bali (Jamali)	2013	0.843	0.855
	2012	0.814	0.823
Sumatra	2013	0.698	0.668
	2012	0.686	0.687
West Kalimantan (Khatulistiwa)	2013	0.728	0.725
	2012	0.730	0.732
South and Central Kalimantan (Barito)	2013	1.177	1.220
	2012	0.900	0.900
East Kalimantan (Mahakam)	2013	1.208	1.198
	2012	1.030	1.069
North Sulawesi, Central Sulawesi, and Gorontalo (Sulutenggo)	2013	0.718	0.737
	2012 (North Sulawesi/Minahasa-Kotamobagu)	0.532	0.600
South Sulawesi, Southeast Sulawesi, West Sulawesi (Sulselrabar)	2013	0.840	0.868
	2012 (South & West Sulawesi)	0.710	0.746
Batam	2013	0.965	1.029
	2012	0.485	0.473
Tanjung Pinang	2013	1.209	1.328
Lombok	2013	0.750	0.844
Bima	2013	0.777	0.788
Sumbawa	2013	0.694	0.620
Kupang	2013	0.754	0.753
Ende	2013	0.733	0.730
Maumere	2013	0.728	0.734
Waingapu	2013	0.779	0.742
Ambon	2013	0.742	0.735
Ternate	2013	0.740	0.738
Tual	2013	0.744	0.741
Masohi	2013	0.750	0.759

Source: Directorate General of Electricity, Ministry of Energy and Mineral Resources, Indonesia, 2015 and National Committee on Clean Development Mechanism Indonesian DNA for CDM Based on data obtained by Directorate General of Electricity, Ministry of Energy and Mineral Resources, Indonesia, <http://www.jcmindonesia.com/en/projects/projref/emifact>



Republic of Korea

1. Country Profile

1.1 General Information

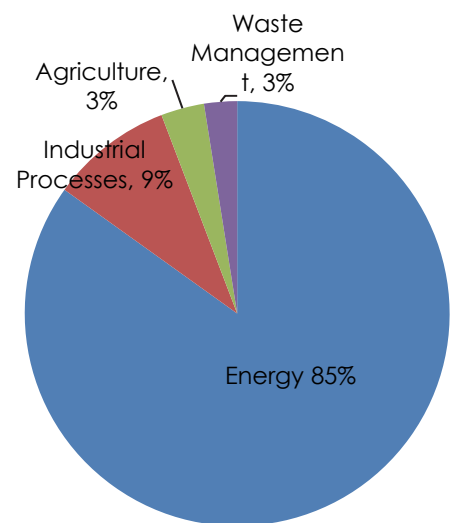
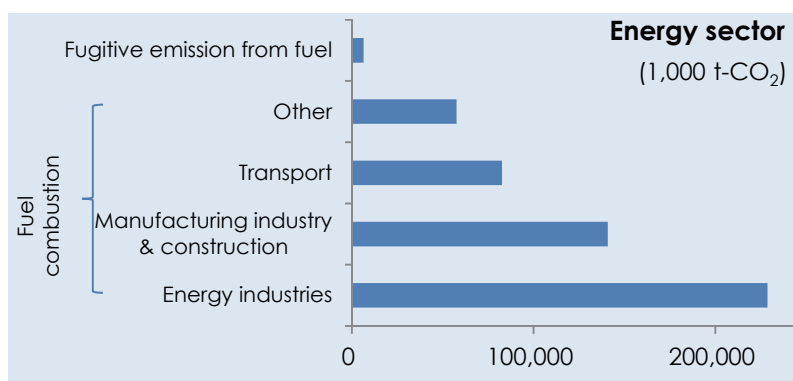
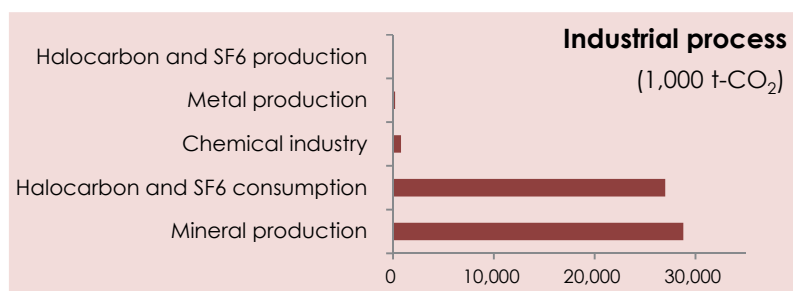
Population	50.62 million (2015)
GDP	1.38 trillion (2015)
Annual population growth rate	0.5 (2010-2015)
Annual urban population growth rate	0.7 (2010-2015)

Source: World Bank Country data: <http://data.worldbank.org/country/korea-republic>
UNdata: <http://data.un.org/CountryProfile.aspx?crName=Republic%20of%20Korea>

1.2 GHG Emissions

Year 2009 (1,000 t-CO₂)

Total emissions and removals	564,700
Emissions	607,600
Removals	-42,900



GHG emissions by sector

Source: Republic of Korea's 3rd National Communication to UNFCCC
<http://unfccc.int/resource/docs/natc/komc3.pdf>

Submission of National Communication

First	12 February 1998
Second	1 December 2003
Third	20 March 2012

Source: UNFCCC http://unfccc.int/national_reports/non-annex_i_natcom/items/2979.php

2. National Climate Change Policy

2.1 Framework Act on Low-Carbon Green Growth (LCGG)

Background

Act No. 9931, 13 January 2010
Amendment Act No. 10599, 14 April 2011

- Lay institutional foundation for the “Low-carbon Green Growth” national vision
- Integrate 3 existing of draft laws; Energy act, Framework act on sustainable development, Bill on countermeasures against Climate Change

Objective

- To focus on promoting green technology/industry as new growth engines
- To organically connect and harmonize climate change and energy measures
- To suggest the direction of environmentally friendly taxation
- To secure statistical data such as GHG emissions and energy production and establish the foundation for promoting green management by corporations
- To introduce the Target Management System (TMS) for GHG mitigation and energy saving

Measures to control GHG emissions

- Mid-term GHG emission reduction target: 30% of BAU by 2020
- GHG and Energy Target Management System (TMS)
 - * Emission Trade System (ETS) through a new separate law
- Comprehensive National GHG Information System
- Control of automobiles' GHG emission and fuel efficiency
- Vitalization of green life style

Source: Ministry of Environment, Republic of Korea (MOE) http://www.iges.or.jp/jp/cdm/pdf/regional/101104/m_lee.pdf
Korea Environment Corporation (KECO)

2.2 Intended Nationally Determined Contribution (INDC)

INDC submission date	30/06/2015
Mitigation type	Relative emission reduction
Mitigation Summary	Korea plans to reduce its greenhouse gas emissions by 37% from the business-as-usual (BAU, 850.6 Mt-CO ₂ eq) level by 2030 across all economic sectors.
Adaptation Summary	<ul style="list-style-type: none">• Strengthening infrastructure for climate change monitoring, forecasting and analysis;• Developing a management system for disaster prevention and stable water supply;• Developing a climate-resilient ecosystem;• Making a systemic transition to a climate-resilient social and economic structure;• Enhancing the system for the management of negative impacts of climate change on health.
Market Mechanisms	Korea will partly use carbon credits from international market mechanisms to achieve its 2030 mitigation target, in accordance with relevant rules and standards.

Source: IGES INDC and NDC Database: <http://enviroscope.iges.or.jp/modules/envirolib/view.php?docid=6147>

2.3 Nationally Appropriate Mitigation Actions (NAMAs)

Status of NAMAs Submission

Publication Date	25 January 2010
Emission Reduction Goal	30% reduction from the business as usual emissions by 2020

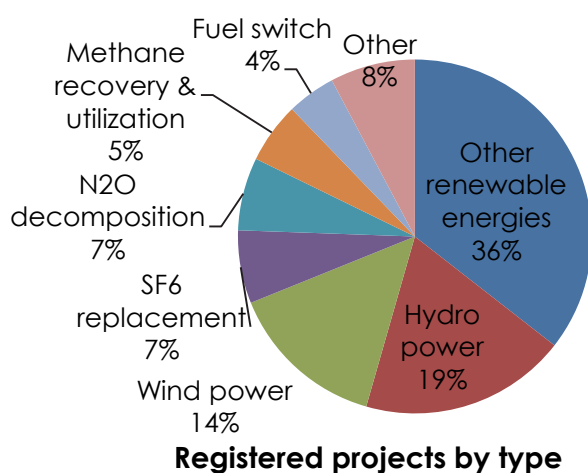
Source:-UNFCCC http://unfccc.int/files/meetings/cop_15/copenhagen_accord/application/pdf/koreacphaccord_app2.pdf

3. Market Mechanisms

3.1 The Clean Development Mechanism (CDM)

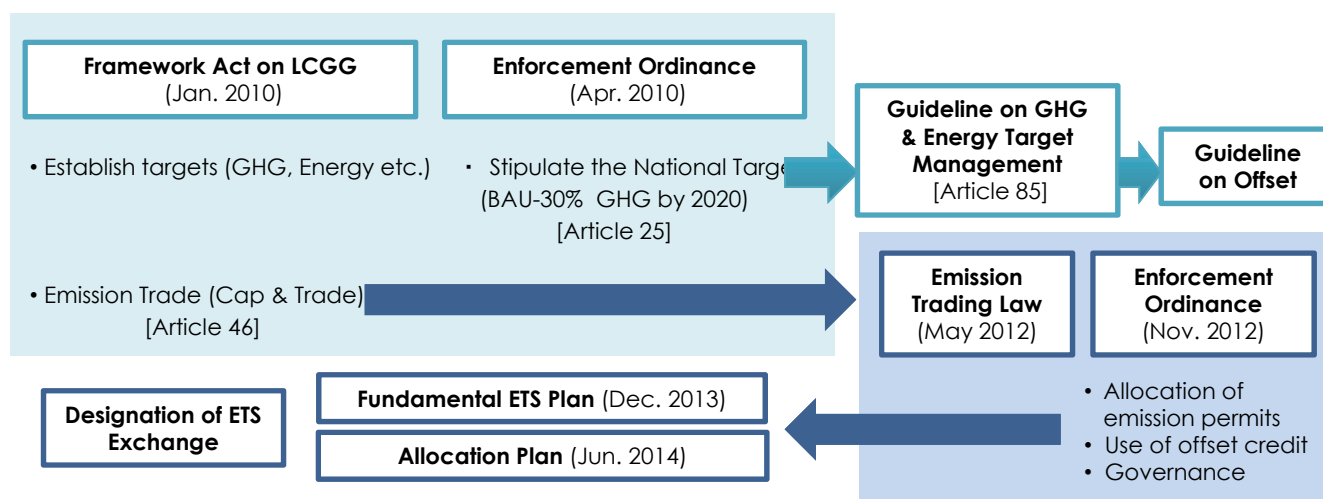
CDM projects and PoAs status

Project Status	Number of projects	PoA
Registered	91	7
At or after the validation stage	2	4



Source: IGES, IGES CDM Project Database (as of 31 January 2017)
 IGES CDM Programmes of Activities Database (as of 13 February 2017)
<http://www.iges.or.jp/en/climate/database.html>

3.2 Domestic market mechanism



Source: Korea Environment Corporation (KECO), Press Release on Enforcement Ordinance of ETS Law, Presidential Committee on Green Growth (PCGG), 13 Nov. 2012 <http://www.greengrowth.go.kr/?p=57847&cat=6>

Target Management System (TMS) (started from 2012)

Emission Trading Scheme (ETS) (started from 2015)

Coverage

- Installation emitting over 25,000 t-CO₂/y in 2012
- Extending TMS coverage

- Installation emitting over 25,000 t-CO₂/y or entities emitting over 125,000t-CO₂/y
- Voluntary participants via opt-in procedure

Setting Targets

- Keep consistency with the national mid-term target
- Based on average of 3 years emission records, with adjustments through negotiations between the government and covered entities

Allocation of emission permits

- Decrease the percentage of free allocation gradually

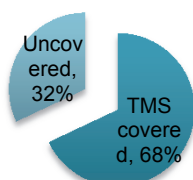
1 st phase (2015-2017)	2 nd phase (2018-2020)	3 rd phase (2021-2025)
100% free allocation	97% free allocation	Free allocation of 90% or below *

- 100% free allocation to trade-exposed carbon-intensive sectors which meet the requirements below

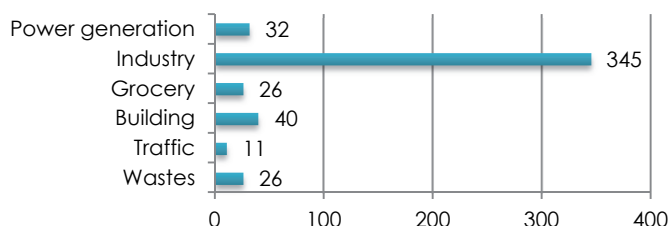
Type	Exposure to trade	Exposure to carbon intensity
1	More than 10%	More than 5%
2	More than 30%	-
3	-	More than 30%

- 1,686 million KAUs (Korean Allowance Unit) from 2015 to 2017 were secured.
- 1,597 million KAUs were allocated to entities before starting and 89 million KAUs were reserved for market stabilization and additional allocation for expansion.

Coverage of GHG emissions



Covered 480 companies (2013)



Performance Evaluation

- Implementation plans submitted for government's review each year
- MRV – GHG Inventory & Research Center, Third Party verification

Offset (Domestic/International)

Use of international offset credits

1 st & 2 nd phase	3 rd phase
international offset credits cannot be used	Limited use of international offset credits <ul style="list-style-type: none"> ✓ To meet up to 10% of a liable entities surrender obligations ✓ Volume must not exceed the number of domestic offset credits used.

- The standards of offset credits to be used will be noticed later

Transaction Infrastructure

- Designate Trading Platform
- Registry for unit accounting, trading and emission inventory
- Strict MRV system adapted from TMS infrastructure

Penalty

- Administrative and financial penalty on non-compliance
- No more than 10 million KRW (9,394 USD)

- Up to 3 times average market price in the previous year
- No more than 100 thousand KRW (94 USD)/t-CO₂



Lao People's Democratic Republic

1. Country Profile

1.1 General Information

Population	6.689 million (2014)
GDP	11.77 billion USD (2014)
Annual population growth rate	1.9% (2010-2015)
Annual urban population growth rate	4.9% (2010-2015)

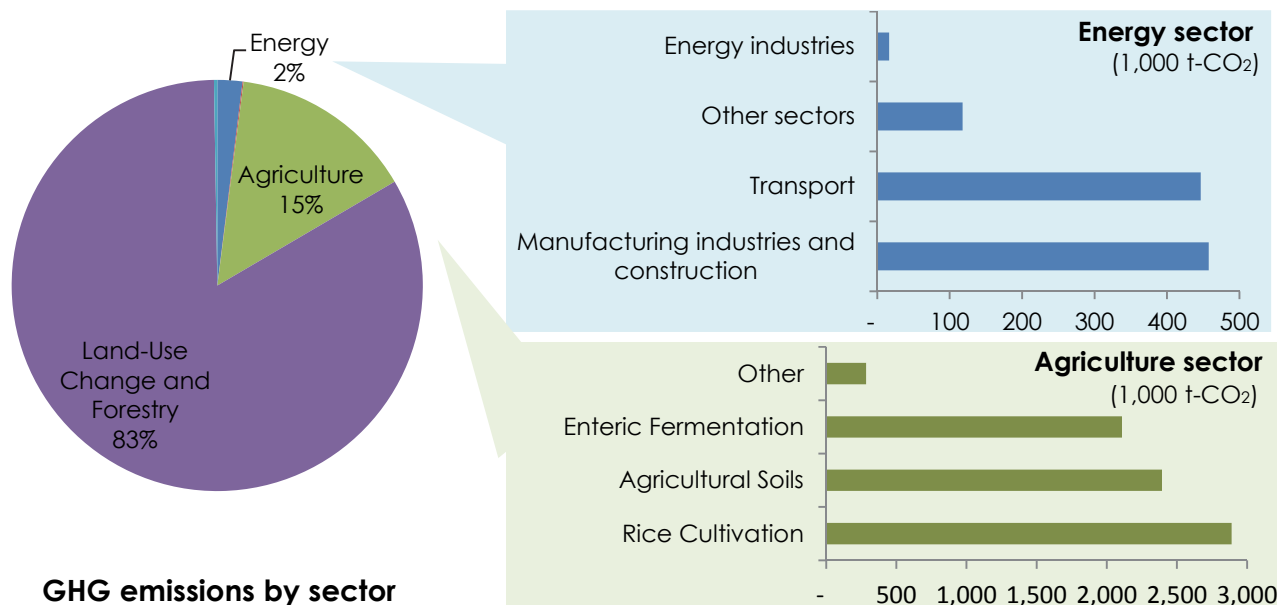
Source: World Bank Country data: <http://data.worldbank.org/country/lao-pdr>
UNdata: <http://data.un.org/CountryProfile.aspx?crName=Lao%20People%27s%20Democratic%20Republic>

1.2 GHG Emissions

Year 2000

(1,000 t-CO₂)

Total emissions and removals	50,817
Emissions	52,864
Removals	-2,047



Source: UNFCCC. Greenhouse Gas Inventory Data - Detailed data by Party. Indonesia.

<http://unfccc.int/di/DetailedByParty/Event.do?event=go#>

Lao People's Democratic Republic. Second National Communication. <http://unfccc.int/resource/docs/natc/laonc2.pdf>

Submission of National Communications

First	2 November 2000
Second	24 June 2013

Source: UNFCCC. Non-Annex I national communications. http://unfccc.int/national_reports/non-annex_i_natcom/items/2979.php

2. National Climate Change Policy

2.1 Strategy on Climate Change of the Lao PDR

(Adopted in 2010)

Objective

To secure a future where the Lao PDR is capable of mitigating and adapting to changing climatic conditions in a way that promotes sustainable economic development, reduces poverty, protects public health and safety, enhances the quality of Lao PDR's natural environment, and advances the quality of life for all Lao people.

Strategic priorities for mitigation

Sector / Actions	Scope of actions
Agriculture & Food security	<ul style="list-style-type: none"> Reducing methane emissions from rice paddies, enteric fermentation and livestock manure Reducing methane emissions from enteric fermentation Reducing emissions from livestock manure Promoting new technology transfers
Forestry & Land use change	<ul style="list-style-type: none"> Reducing "slash and burn" agriculture, off-site burning and forest fires Reducing off-site burning Integrating forest management Integrating forest management including effective mapping and planning Pursuing carbon market opportunities
Energy & Transport	<ul style="list-style-type: none"> Promoting 90% of electrification rate by 2020. Accelerating the development of renewable energy (solar, wind and hydro including mini-hydro) and cleaner energy (coal-bed methane and coalmine methane) Introducing energy-efficient lighting, appliances and energy-efficient buildings Promoting the use of alternate energy operated motor vehicles and pursuing environmental sustainable transport strategy Generating public awareness on energy saving by implementing initiatives such as car free day, marking Earth Day and World Environment Day Seeking the opportunities under CDM or other flexible, pragmatic financing mechanisms
Industry	<ul style="list-style-type: none"> Improving energy efficiency during the production process Reducing wood waste through improvement of furniture manufacturing techniques and methods Promoting the use of biomass including agricultural residues
Urban Development	<ul style="list-style-type: none"> Applying the 3Rs (reduces, reuse and recycle), composting and landfill gas captured Upgrading solid waste collection services and management of sewage sludge Building recycling facilities Composting organic contents to manufacture organic fertilizers Promoting environmental sustainable urban development Encourage the participation of the private sector and international partners in GHG emission reduction from wastes under the CDM and other financing mechanisms

Source: National Environmental Committee (2010) Strategy on Climate Change of the Lao PDR.

2.2 Intended Nationally Determined Contribution (INDC)

INDC submission date	01/10/2015
Mitigation type	Policies and actions
Mitigation Summary	<ul style="list-style-type: none"> • To increase forest cover to 70% of land area (i.e. to 16.58 million hectares) by 2020. Once the target is achieved, emission reductions will carry on beyond 2020. • To increase the share of renewable energy to 30% of energy consumption by 2025. • To make electricity available to 90% of households in rural area by the year 2020. This will offset the combustion of fossil fuels to produce power where there is no access to the electricity grid • Approximately total installed capacity of the hydropower plants will be 5,500 MW by 2020. In addition, 20,000 MW of additional hydroelectric capacity is planned for construction after 2020
Adaptation Summary	<ul style="list-style-type: none"> • Climate Resilience in Farming Systems and Agriculture Infrastructure; • Climate Resilience in Forestry Production and Forest Ecosystems; • Water Resource Information Systems; Managing Watersheds and Wetlands; Increasing Water Resource Infrastructure Resilience; • Increasing the Resilience of Urban Development and Infrastructure to Climate Change; • Increasing the Resilience of Public Health Infrastructure and Water Supply System
Quantified Financial Needs	An initial estimate of the financial needs for implementing identified mitigation and adaptation policies and actions is US\$ 1.4 billion.
Specific Technology Transfer Needs	Forest monitoring and inspection system, Sustainable community forest management and agro-forestry for mitigation and poverty reduction.
Market Mechanisms	Implementation of the electricity export agreement along with development of a NAMA, and preparedness for future carbon market mechanism.

Source: IGES INDC & NDC Database: <https://pub.iges.or.jp/pub/iges-indc-ndc-database>

2.3 Climate Change Action Plan 2013-2020

Objective

To identify the goals, key initiatives, proposed projects and activities as well as leading or responsible agencies. The plan should therefore help to guide implementation and promote monitoring and reporting of results through coordinated climate change program. The Action Plan is also important part of the Lao contribution to international climate change efforts under the UNFCCC.

Projects and activities by Ministries

Key initiative 1: Strengthening institutional and human resource capacities on climate change

- Ministry of Natural Resource and Environment (MONRE)
- Ministry of Foreign affairs (MOF)

Key initiative 2: Enhancement of adaptive capability for coping with climate change

- Ministry of Natural Resource and Environment (MONRE)
- Ministry of Agriculture and Forestry (MAF)
- Ministry of Public Health (MPH)
- Ministry of Energy and Mine(MEM)
- Ministry of Industry and Commerce (MIC)
- Ministry of Public Works and Transport (MPWT)

Key initiative 3: Climate change mitigation through the reduction of green house gas emission

- Ministry of Natural Resource and Environment (MONRE)
- Ministry of Agriculture and Forestry (MAF)
- Ministry of Energy and Mine(MEM)
- Ministry of Industry and Commerce (MIC)
- Ministry of Public Works and Transport (MPWT)

Key initiative 4: Strengthening education and rising public awareness on climate change

- Ministry of Natural Resource and Environment (MONRE)
- Ministry of Education (MOE)

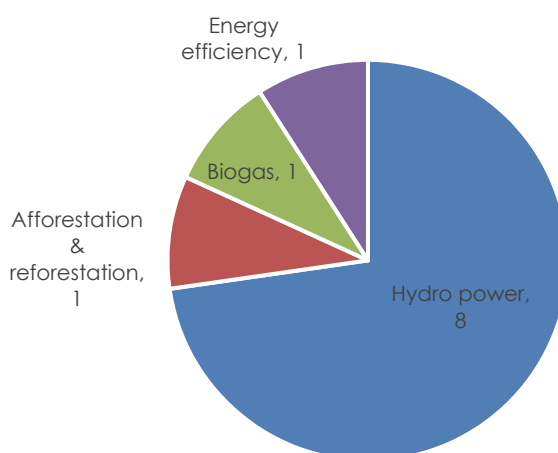
3. Market Mechanisms

3.1 The Clean Development Mechanism (CDM)

CDM projects and PoAs status

Project status	Number of Projects	Number of PoAs
Registered	11	0
At or after the validation stage	6	0

Registered CDM projects



Source: IGES, IGES CDM Project Database (as of 31 January 2017)
 IGES CDM Programmes of Activities Database (as of 13 February 2017)
<http://www.iges.or.jp/en/climate/database.html>

Sustainable Development Criteria and Assessment Matrix for CDM project in Lao PDR

Environment	Social	Economic
Contribution to mitigation of global climate change	Concrete contribution of poverty alleviation	Share of project budget spent in-country
Reduction in air pollution (e.g. PM10, NOx, SO ₂)	Contribution to gender equity	Reduced dependence on fossil fuels
Reduction in water pollution	Stakeholder consultation	Reduced dependence on energy
Reduction in soil pollution	All groups, both men and women, have equal access to and control over the target community benefits of the project	
Sustainable use of land resources		Transfer of Technology and Knowledge
Biodiversity conservation and protection of endangered species	Creation of employment in the country	Transfer of appropriate and best available technology
Rational use of mineral resources	Improvement of community infrastructure & services	Capacity building of local stakeholders and industries/businesses
Sustainable use of forest resources	Nuisance and risks for the people in the vicinity the project area	
Sustainable use of water resources		
Protection of archaeological, cultural, historical and spiritual heritage and sites		

Source: Sustainable Development Criteria and Assessment Matrix for CDM project in Lao PDR

Contact Information: DNA in Lao People's Democratic Republic

Ministry of Natural Resources and Environment (MONRE) P.O. Box 7864 Ban Sisavath,
 Vientiane, Lao PDR

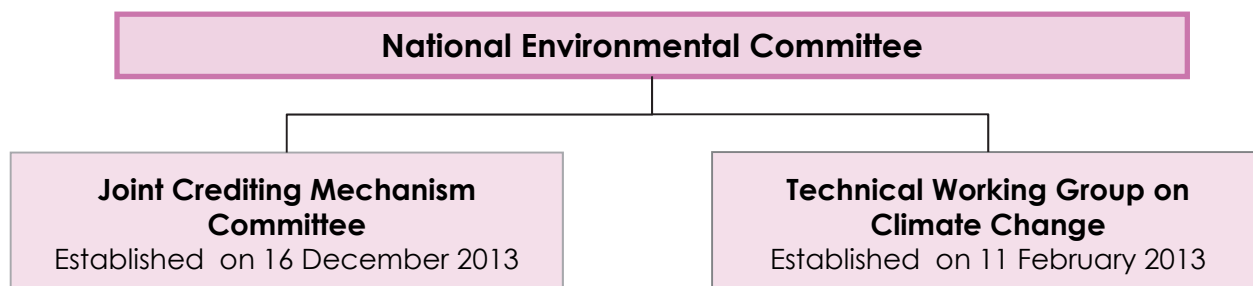
Tel: (856-21) 255125 Fax: (856-21) 265017 Email: laocdm.dna@gmail.com

3.2 The Joint Crediting Mechanism (JCM)

Date of agreement on the JCM

7 August 2013

Institutional Arrangement for the JCM



Chair and Members for both of committees*

Chair: Ministry of Natural Resource and Environment

Members:

Ministry of Agriculture and Forestry

Ministry of Public Works and Transport

Ministry of Industrial and Commerce

Ministry of Education and Sport

Ministry of Energy and Mines

Ministry of Science and Technology

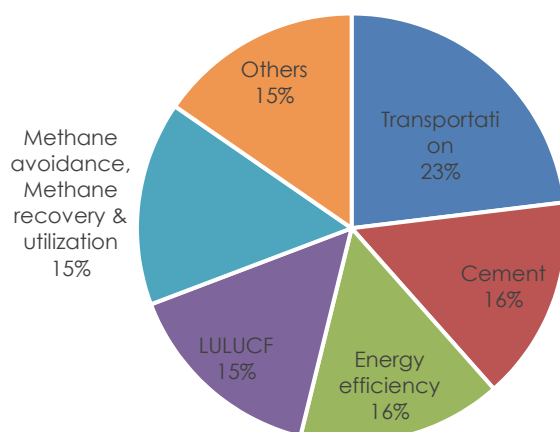
Ministry of Health

*Members of Technical Working Group on Climate Change also represent the Joint Crediting Mechanism Committee

The Duties and Authorities of the Technical Working Group

- Be as Secretariat to the National Environment Committee on Climate Change issues
- Study and provide suggestions to the NEC and MONRE related to climate Change and conflicts issues
- Be the focal point for coordination between the Authorities of Climate Change agencies at national and local level
- Study and propose recommendations to the policy, strategy and legal document on Climate change
- Be responsible for dissemination and awareness creation of policy, strategy and decree on Climate Change to be as a plan, programme and project by effectively implementing at the ministry concerned
- Support and monitor the Climate Change activities in central and provincial levels of the country
- Exchange experiences and data information on the climate change activities at national and international levels
- Disseminate and implement a community awareness-raising campaign in relation to climate change
- Support and public awareness-raising campaign to the people in country and oversea to take part in the activities related to climate change, in general, and in the green house gas reduction as well as climate change adaptation in particular

JCM feasible studies (2011 - 2015)



13 projects in total

Source:

Global Environment Center Foundation

http://gec.jp/main.nsf/en/Activities-Climate_Change_Mitigation-Top

Ministry of Economy, Trade and Industry

http://www.meti.go.jp/policy/energy_environment/global_warming/global.html

New Energy and Industrial Technology Development Organization

<http://www.nedo.go.jp/english/index.html>

Source: New market mechanism platform

<http://www.mmechanisms.org/e/index.html>



Mongolia

1. Country Profile

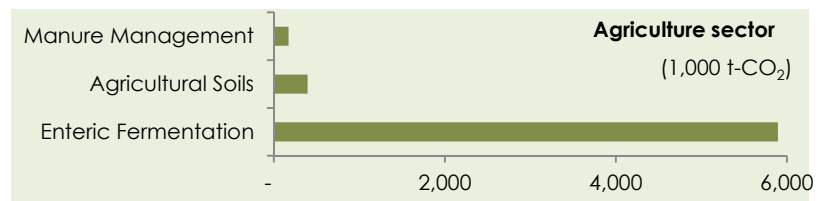
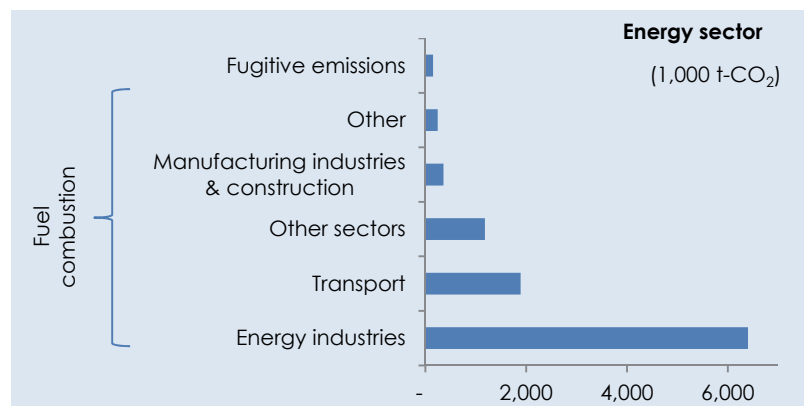
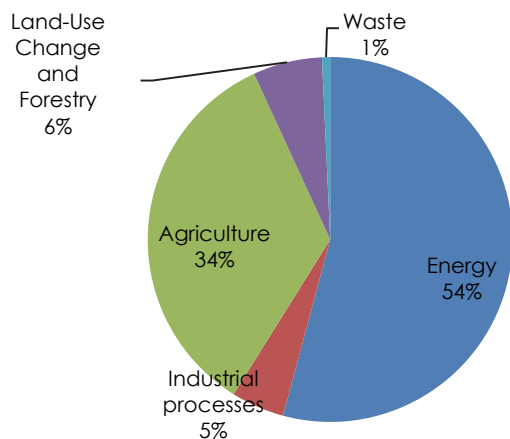
1.1 General Information

Population	2.959 million (2015)
GDP	11.758 billion USD (2015)
Annual population growth rate	1.679% (2015)
Annual urban population growth rate	2.8% (2015)
Energy consumption per capita	1,826 (kilograms oil equivalent, 2015)

Source: World Bank Country data: <http://data.worldbank.org/country/Mongolia>

1.2 GHG Emissions

Year 2006	(1,000 t-CO ₂)
Total emissions and removals	15,628
Emissions	18,868
Removals	-2,083



GHG Emissions by Sector

Source: Ministry of Nature, Environment and Tourism, Mongolia second national communication under the United Nations Framework Convention on Climate Change. <http://unfccc.int/resource/docs/natc/mongnc2.pdf>

Submission of National Communication and Biennial Update Report (BUR)

First National Communication	1 November 2001
Second National Communication	10 December 2010
First BUR	Not submitted yet

Source: UNFCCC http://unfccc.int/national_reports/non-annex_i_natcom/items/2979.php,
UNFCCC http://unfccc.int/national_reports/non-annex_i_natcom/reporting_on_climate_change/items/8722.php



2. National Climate Change Policy

Main domestic legally-binding legislation related to climate change and energy that are already in place include:

- National Action Programme on Climate Change (NAPCC), 2011 (2011-2021)
- Green development policy, 2014 (2014-2030)
- MDGs based comprehensive national development programme, 2008 (2008-2021)
- Law on renewable energy, 2015
- Law on energy, 2015

2.1 National Action Program on Climate Change (NAPCC)

(Approved by the Parliament in January 2011)

Goal

- Maintain ecological balances
- Develop social and economic resilient to climate change
- Reduce vulnerabilities and risks
- Mitigate GHG emissions through improvement of economic productivity and efficiency
- Support implementation of 'green growth' policies

1st Phase (2011-2016)

- Strengthen national mitigation and adaptation capacities.
- Set up legal, institutional and administrative structure.
- Improve community and public participation.

2nd Phase (2017-2021)

- Best available measures and activities for climate change adaptation will be implemented.
- Sustainable implementation of actions to decelerate growth of GHG emissions will begin.

Strategic Objectives

1. Set the legal environment, structure, institutional and management frameworks for addressing on climate change.
2. Ensure environmental sustainability is maintained and reduce socio-economic vulnerabilities and risks through strengthening the national climate change adaptation capacity.
3. Mitigate GHG emissions and establish a low carbon economy through the introduction of environmentally friendly technologies and improvement in energy effectiveness and efficiency
4. Enhance the national climate observation, research and monitoring network and strengthen employee's capacity
5. Conduct public awareness campaigns and support citizen and community participation in actions against climate change

Strategic Objective 3	Indicators of the first phase (2011-2016)	Indicators for the second phase (2017-2021)
Mitigate GHG emissions and establish a low carbon economy through the introduction of environmentally friendly technologies and improvement in energy effectiveness and efficiency	Specific fuel consumption of power plants for electricity generation will not exceed 340 gJ/kWh.	Specific fuel consumption of power plants for electricity generation will not exceed 340 gJ/ kWh.
	Specific fuel consumption of thermal energy production will be reduced by 20 kgJ/gCal compared to 2010.	Specific fuel consumption of thermal energy production will be reduced by 30 kgJ/gCal compared to 2010.
	Renewable energy will account for 10% of the total national energy production. Heat use will be reduced by 25%.	Renewable energy will account for 20% of the total national energy production. Heat use will be reduced by 30%.

Source: Ministry of Environment and Tourism (MET)

2.2 Intended Nationally Determined Contribution (INDC)

Mongolia ratified the Paris Agreement in September 2016.

INDC submission date	24/09/2015
Mitigation type	Relative emission reduction
Mitigation Summary	A series of policies and measures to implement up to 2030, in the energy, industry, agriculture and waste sectors is expected to achieve 14% reduction in total national GHG emissions excluding LULUCF by 2030, compared to the projected emissions under BAU scenario.
Adaptation Summary	Implement sustainable pasture management, increase irrigated cropland, reduce soil water loss and decrease soil carbon emissions, maintain availability of water resources through protection of runoff formation zones and in river basins, reduce forest degradation rate, improve effectiveness of forest management, enhance and improve early warning and prevention systems for natural disasters, etc.
Quantified Financial Needs	Rough estimations of adaptation measures: around 3.4 billion USD for technology and capacity building. Up to 80% of total need expected to be financed from international sources and donor institutions.
Specific Technology Transfer Needs	Early warning system for drought and dzuds, improvement of livestock quality, health, and breeds, diffusion of zero-tillage technology, increase variety of crops and rotation, effective drip irrigation technology, ecosystem-based technologies, hydrological monitoring, water diversion canals, etc.
Market Mechanisms	Mongolia is interested to access the Green Climate Fund and to participate in crediting mechanisms.

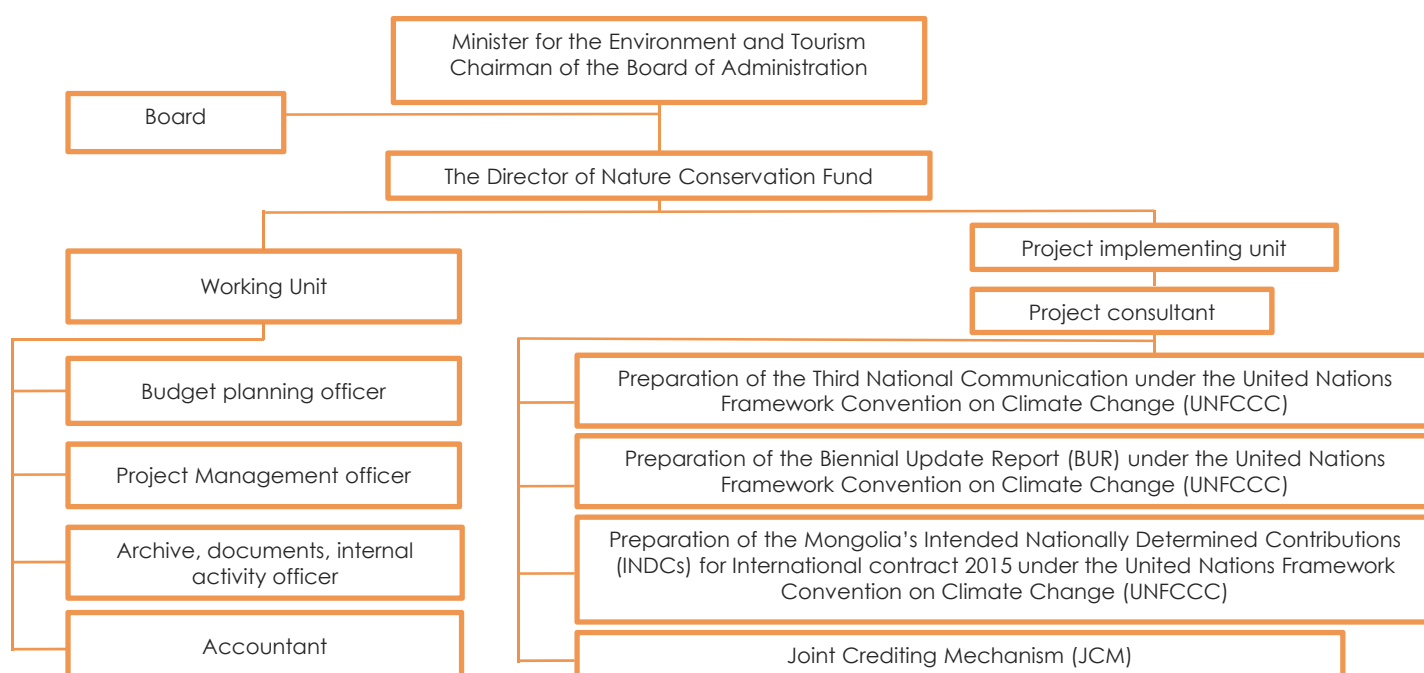
Source: IGES INDC & NDC Database: <https://pub.iges.or.jp/pub/iges-indc-ndc-database>

2.3 GHG mitigation Policies and measures for implementation up to 2030

Mongolia intends to contribute to global efforts to mitigate GHG emissions by implementing the policies and measures listed in table below, contingent upon the continuation of international support to complement domestic efforts.

Sector	Measure	Policy/strategy document
Energy (power and heat)	Increase renewable electricity capacity from 7.62% in 2014 to 20% by 2020 and to 30% by 2030 as a share of total electricity generation capacity.	<ul style="list-style-type: none"> State policy on energy (Parliament resolution No. 63, 2015) Green development policy, 2014
	Reduce electricity transmission losses from 13.7% in 2014 to 10.8% by 2020 and to 7.8% by 2030.	
	Reduce building heat loss by 20% by 2020 and by 40% by 2030, compared to 2014 levels.	
	Reduce internal energy use of Combined Heat and Power plants (improved plant efficiency) from 14.4% in 2014 to 11.2% by 2020 and 9.14% by 2030.	
	Implement advanced technology in energy production such as super critical pressure coal combustion technology by 2030.	
Energy (Transport)	Improve national paved road network. Upgrading/Paving 8000 km by 2016, 11000 km by 2021.	<ul style="list-style-type: none"> National Action Programme on Climate Change (NAPCC), 2011 Urban public transport investment programme, 2015 Nationally Appropriate Mitigation Actions (NAMAs), 2010 Mid-term new development programme, 2010
	Improve Ulaanbaatar city road network to decrease all traffic by 30-40% by 2023.	
	Increase the share of private hybrid road vehicles from approximately 6.5% in 2014 to approximately 13% by 2030.	
	Shift from liquid fuel to LPG for vehicles in Ulaanbaatar and <i>aimag</i> (province) centres by improving taxation and environmental fee system.	
	Improve enforcement mechanism of standards for road vehicles and non-road based transport.	
Industrial sector	Reduce emissions in the cement industry through upgrading the processing technology from wet- to dry- processing and through the construction of a new cement plant with dry processing up to 2030.	<ul style="list-style-type: none"> NAMAs, 2010 NAPCC, 2011 Government resolution No. 171, 2012 Building materials programme
Agriculture	Maintain livestock population at appropriate levels according to the pasture carrying capacity.	Mongolian national livestock programme, 2010

2.4 Organisational Structure

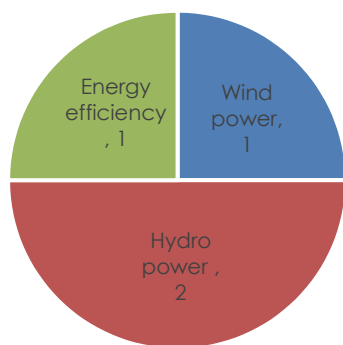


3. Market Mechanisms

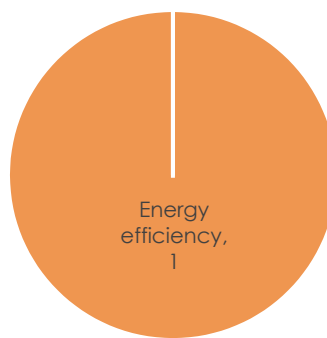
3.1 Clean Development Mechanism (CDM)

CDM projects and PoAs status

Project Status	Number of projects	Number of PoAs
Registered	4	1
At or after the validation stage	0	0



CDM projects



PoAs

Registered projects and PoAs by type

Source: IGES, IGES CDM Project Database (as of 31 January 2017)
 IGES CDM Programmes of Activities Database (as of 13 February 2017)
<http://www.iges.or.jp/en/climate/database.html>

Grid Emission Factor

Grid name	2010-2012 Emission Factors (t-CO ₂ / MWh)	
	OM	BM
Central grid system	1.1542	1.0566

Source: MET

3.2 Joint Crediting Mechanism (JCM)

Date of agreement on the JCM	8 January 2013
------------------------------	----------------

Documents (As of March 2017)

Document type	Title
General	<ul style="list-style-type: none"> Bilateral cooperation on the Joint Crediting Mechanism for the low carbon growth partnership between Japan and the Lao people's democratic republic Rules of Implementation for the JCM ver03.0 Glossary of Terms ver01.0 Common Specifications of the JCM Registry ver01.0
Project cycle	<ul style="list-style-type: none"> JCM Project Cycle Procedure ver04.0 JCM Guidelines for Developing Proposed Methodology ver02.0 JCM Guidelines for Developing Project Design Document and Monitoring Report ver03.0
Third-Party Entity (TPE)	<ul style="list-style-type: none"> JCM Guidelines for Designation as a Third-Party Entity ver04.0 JCM Guidelines for Validation and Verification ver01.0
Joint Committee	<ul style="list-style-type: none"> JCM Rules of Procedures for the Joint Committee ver02.0

Source: Official JCM Mongolia-Japan website https://www.jcm.go.jp/mn-jp/rules_and_guidelines

Approved methodologies (As of March 2017)

Meth No.	Title	Version	Date of approval
MN AM001	Installation of energy-saving transmission lines in the Mongolian Grid	1.0	20 Feb 2014
MN AM002	Replacement and Installation of High Efficiency Heat Only Boiler (HOB) for Hot Water Supply Systems	1.0	28 Jan 2015
MN AM003	Installation of Solar PV System	2.0	30 Jan 17

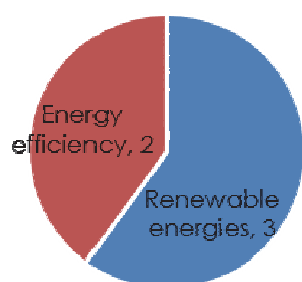
Registered projects that have issued JCM credits

Mongolia has issued 32 tCO₂ to its registry (as of March 2017).

Project Title	Registration Date	Project Participant (Japan)	Project Participant (host country)	Third Party Entity for Validation	Location	Estimated emissions reductions (average tCO ₂ e/year)	Amounts of credits issued
MN001 Installation of high-efficiency Heat Only Boilers in 118th School of Ulaanbaatar City Project	30/06/2015	SUURI-KEIKAKU CO.,LTD.	ANU-SERVICE CO.,LTD.	National Renewable Energy Centre (NREC)	8th Khoroo, Khan-Uul District, Ulaanbaatar City	92	Date of issuance: 30 Sep 16
							Mongolia: 10
							Japan: 40
MN002 Centralization of heat supply system by installation of high-efficiency Heat Only Boilers in Bornuur soum Project	30/06/2015	SUURI-KEIKAKU CO.,LTD.	ANU-SERVICE CO.,LTD.	National Renewable Energy Centre (NREC)	Bornuur soum, Tuv aimag	206	Date of issuance: 30 Sep 16
							Mongolia: 22
							Japan: 85

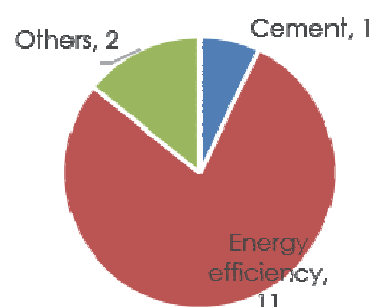
Selected projects under JCM financing programme

Total 5 projects



JCM feasibility studies (2010-2015)

Total 19 studies



Source: IGES JCM Database, November 2016.

<https://pub.iges.or.jp/pub/iges-joint-crediting-mechanism-jcm-database>



Republic of the Union of Myanmar

1. Country Profile

1.1 General Information

Population	53.90 million (2015)
GDP	64.86 billion USD (2015)
Annual population growth rate	0.8% (2010-2015)
Annual urban population growth rate	2.5% (2010-2015)
Energy consumption per capita	84.0 (kilograms oil equivalent, 2010)

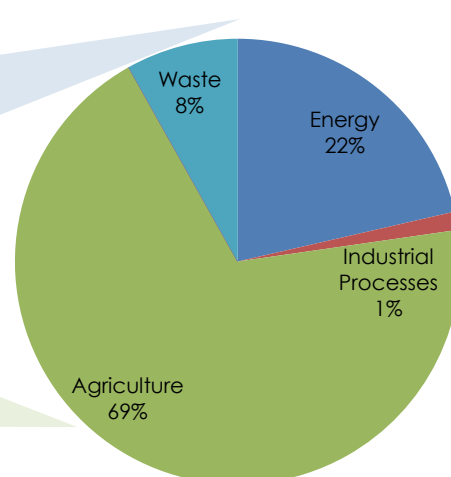
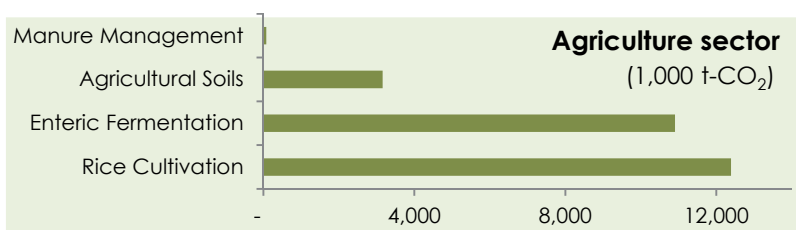
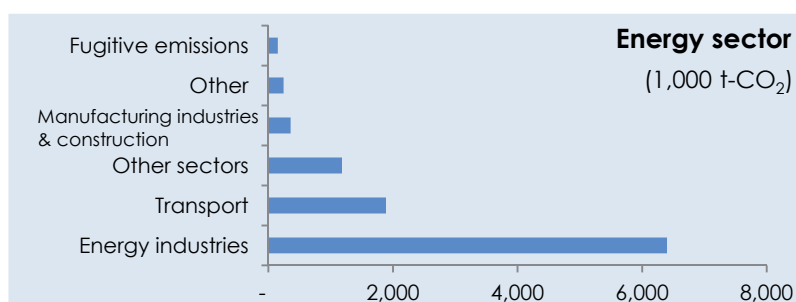
Source; World Bank Country data: <http://data.worldbank.org/country/myanmar>
UNdata: <http://data.un.org/CountryProfile.aspx?crName=MYANMAR>

1.2 GHG Emissions

Year 2005

(1,000 t-CO₂)

Total emissions and removals	15,628
Emissions	18,868
Removals	--3,240



Source; UNFCCC GHG demission profiles http://unfccc.int/ghg_data/ghg_data_unfccc/ghg_profiles/items/4626.php7

Submission of National Communications

First

26 December 2012

Source: UNFCCC http://unfccc.int/national_reports/non-annex_i_natcom/items/2979.php

2. National Climate Change Policy

2.1 Environmental policies

Myanmar does not have a specific policy on climate change. Environmental Conservation Law went into effect in July 2012 as the foundation of environment-related policies, which are currently being formulated. Below is the list of environmental policies in Myanmar .

Title	The National Environment Policy of Myanmar
Objective	<ul style="list-style-type: none">• To establish sound environment policies in the utilization of water, land, forests, mineral, marine resources and other natural resource in order to conserve the environment and prevent its degradation• To integrate environment and development to achieve sustainable development to give environmental protection a priority in promoting economic development
Year adopted	1994

Title	Myanmar Agenda 21
Objective	To strengthen and promote systematic and environmental management
Target sections	1) Sustainable use of natural resources ; 2) sustainable social development ; 3)sustainable economic development ; 4) sustainable institutional development
Year adopted	1997

Title	National Sustainable Development Strategies (NSDS)
Objective	<ul style="list-style-type: none">• Covers 3 main areas of Social, Economic and Environmental issues• Focus national effort to achieve sustainable development
Year adopted	2009

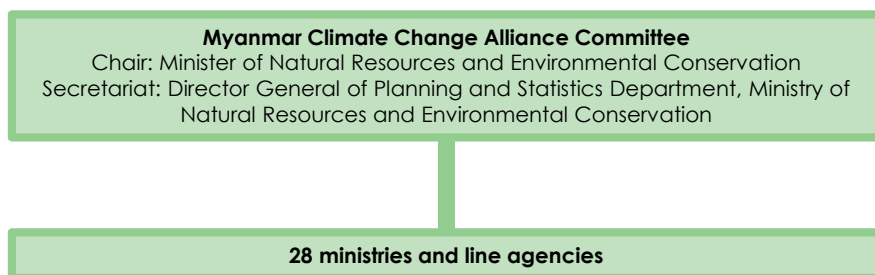
Title	Environmental Conservation Law
Ministry in charge	Ministry of Environmental Conservation and Forestry
Year adopted	2012

2.2 Intended Nationally Determined Contribution (INDC)

INDC submission date	29/09/2015
Mitigation type	Policies and actions
Mitigation Summary	Indicative goal - hydroelectric generation of 9.4 GW by 2030 Indicative goal: Rural electrification through the use of at least 30% renewable sources as to generate electricity supplies. Indicative goal: To realise a 20% electricity saving potential by 2030 of the total forecast electricity consumption. Indicative goal: To distribute approximately 260,000 cook stoves between 2016 and 2031.
Adaptation Summary	<ul style="list-style-type: none">• Resilience in the agriculture sector, developing early warning systems and forest preservation measures• Public health protection and water resource management• Coastal zone protection• Energy and industry sectors, and biodiversity preservation
Specific Technology Transfer Needs	A major obstacle continues to be access and availability of technologies. This is particularly true, for instance in the area of climate data analysis and short to longterm forecast, i.e. lack of advanced computing facilities to enable accurate warning and information and scenarios.

Source: IGES INDC & NDC Database: <https://pub.iges.or.jp/pub/iges-indc-ndc-database>

2.3 Organisational Chart



Myanmar Climate Change Alliance Committee was formed in December 2013 with support from UN-HABITAT, European Union and UNEP. Further information is currently being sought.

Source: UN-HABITAT and UNEP

3. Market Mechanisms

3.1 The Clean Development Mechanism (CDM)

List of registered CDM projects and PoAs

Name of CDM Project Activity	Type of Project	Annual ER (t-CO ₂ /yr)	Project proponent (Host Country) / CME	Status
Dapein(1) Hydropower Project in Union of Myanmar	Hydro power	709,360	Dapein(1) Hydropower Co., Ltd.	Registered
Upper Baluchaung No.2 Hydropower Project in Myanmar	Hydropower	17,559	NEO Energy Oasis Development Co., Ltd.	Under Validation
Household energy appliance programme (PoA)	Energy Efficiency	137,926	Differ Cookstoves AS	Registered
Installation of Energy Efficient Cookstoves in Myanmar (PoA)	Energy Efficiency	433,720	Core CarbonX Sols Pvt Ltd Myanmar Ceramic Society	Under Validation

Source: IGES, IGES CDM Project Database (as of 31 January 2017)
IGES CDM Programmes of Activities Database (as of 13 February 2017)
<http://www.iges.or.jp/en/climate/database.html>

3.2 The Joint Crediting Mechanism (JCM)

Date of agreement on the JCM	16 September 2015
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List of JCM projects

Support Scheme	Project Title	Type of Project	Expected GHG Emission Reductions (t-CO ₂ /year)
JCM Model Project	Introduction of Energy Saving Brewing Systems to Beer Factory	Energy efficiency	2,841
JCM Model Project	Introduction of High-efficiency Once-through Boiler in Instant Noodle Factory	Energy efficiency	674
JCM Model Project	Introduction of Waste to Energy Plant in Yangon City	Methane avoidance	4,732

Source: New mechanism information platform <http://www.mmechanisms.org/support/adoption.html>



Republic of The Philippines

1. Country Profile

1.1 General Information

Population	100.70 million (2015)
GDP	291.96 billion USD (2015)
Annual population growth rate	1.7% (2010-2015)
Annual urban population growth rate	1.3% (2010-2015)

Source: World Bank Country data: <http://data.worldbank.org/country/philippines>
UNdata: <http://data.un.org/CountryProfile.aspx?crName=Philippines>

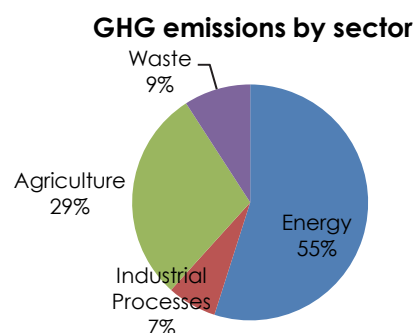
1.2 GHG Emissions

Year 2000	(1,000 t-CO ₂)
Total emissions and removals	21,767
Emissions	126,878
Removals	-105,111

Submission of National Communications

First	19 May 2000
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Source: UNFCCC http://unfccc.int/national_reports/non-annex_i_natcom/items/2979.php



Source: National Climate Change Action Plan

2. National Climate Change Policy

2.1 National Framework Strategy on Climate Change (NFSCC) 2010-2022

Vision

(Adopted in 2010)

A climate risk-resilient Philippines with healthy, sage, prosperous & self-reliant communities, and thriving & productive ecosystems.

Goal

To build the adaptive capacity of communities and increase the resilience of natural ecosystems to climate change, and optimize mitigation opportunities towards sustainable development.

The Mitigation Pillar

1. Energy Efficiency & Conservation
2. Renewable Energy
3. Environmentally Sustainable Transport
4. Sustainable Infrastructure
5. National REDD+ Strategy
6. Waste Management

The Adaptation Pillar

1. Enhanced Vulnerability and Adaptation Assessments
2. Integrated Ecosystem-Based Management
 - i. River Basin Management
 - ii. Coastal and Marine Systems
 - iii. Biodiversity
3. Climate-Responsive Agriculture
4. Water Governance & Management
5. Climate-Responsive Health Sector
6. Climate Proofing Infrastructure
7. Disaster Risk Reduction

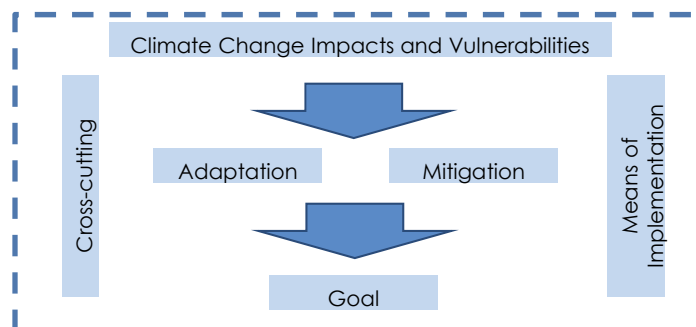
Cross-Cutting Strategies

1. Capacity Development
2. Knowledge Management and Information, Education and Communication
3. Research and Development (R&D) and Technology Transfer

Means of Implementation

1. Establish appropriate management and institutional arrangements and coordination mechanisms for climate change at the national, sub-national and local levels
2. Maximize government financing instruments at the national and local levels as source of funds for the National Framework Strategy
3. Install policy and incentive mechanisms to facilitate and leverage private sector investments in climate change.

Operational Diagram for the NFSCC



Source: National Framework Strategy on Climate Change. Climate Change Commission. <http://www.climate.gov.ph/>

2.2 National Climate Change Action Plan

(Adopted in 2011)

Objective

To address a realistically achievable country-driven programme of action for integrated climate change adaptation and mitigation

Goal

To build the adaptive capacity of women and men in their communities, increase the resilience of vulnerable sectors and natural ecosystems to climate change, and optimize mitigation opportunities towards gender-responsive and rights-based sustainable development

Seven strategic priorities for 2011 to 2028

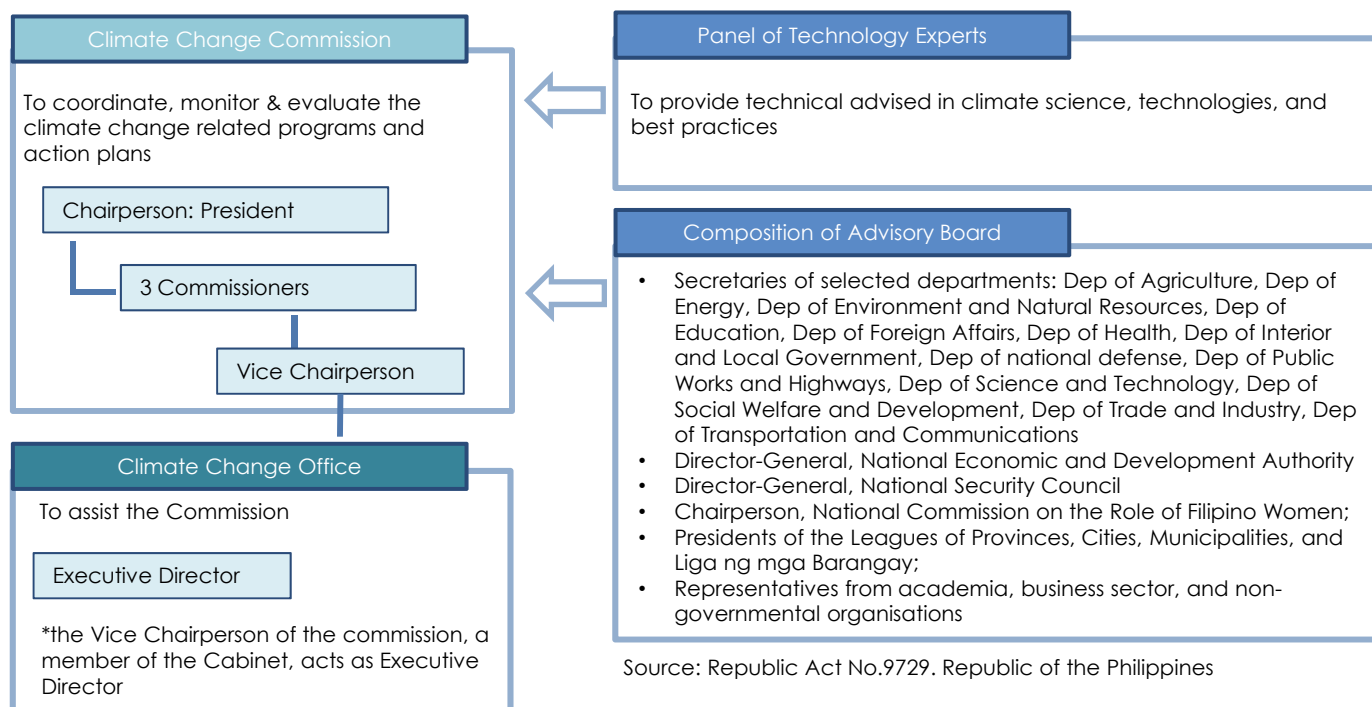
1. Food Security
 - Enhanced CC resilience of agriculture and fisheries production and distribution systems
 - Enhanced resilience of agricultural and fishing communities from climate change
2. Water Sufficiency
 - Water governance restructured towards integrated water resources management in watersheds and river basins
 - Sustainability of supplies and access to safe water ensured
 - Knowledge and capacity for CC adaptation in the water sector enhanced
3. Ecosystems and Environmental Stability
 - Ecosystems protected, rehabilitated and ecological services restored
4. Human Security
 - CCA and DRR practiced by all sectors at the national and local levels
 - Health and social sector delivery systems are responsive to climate change
 - CC-adaptive human settlements and services developed, promoted and adopted
5. Climate-smart Industries and Services
 - Climate-smart industries and services promoted, developed and sustained
 - Sustainable livelihood and jobs created from climate-smart industries and services
 - Green cities and municipalities developed, promoted and sustained
6. Sustainable Energy
 - Nationwide energy efficiency and conservation promoted and implemented
 - Sustainable energy development enhanced
 - Environmentally sustainable transport promoted and adopted
 - Energy systems and infrastructures climate-proofed, rehabilitated and improved
7. Knowledge and Capacity Development
 - Knowledge on the science of climate change enhanced
 - Capacity for CC adaptation and mitigation at the national and local level enhanced
 - CC knowledge management

2.3 Intended Nationally Determined Contribution (INDC)

INDC submission date	01/10/2015
Mitigation type	Relative emission reduction
Mitigation Summary	The Philippines intends to undertake GHG (CO ₂ e) emissions reduction of about 70% by 2030 relative to its BAU scenario of 2000-2030. Reduction of CO ₂ e emissions will come from energy, transport, waste, forestry and industry sectors. The mitigation contribution is conditioned on the extent of financial resources, including technology development & transfer, and capacity building, that will be made available to the Philippines.
Adaptation Summary	<ul style="list-style-type: none"> • System strengthening for downscaling climate change models, climate scenario-building, climate monitoring and observation; • Science-based climate/disaster risk and vulnerability assessment process • Enhancement of climate and disaster-resilience of key sectors – agriculture, water and health; • Systematic transition to a climate and disaster-resilient social and economic growth
Specific Technology Transfer Needs	Technology transfers and innovations are needed to support adaptation and minimization of loss-and-damages as well as enhanced capacity for mitigation. Technical inputs and assistance are critical for certain sectors such as grid efficiency improvement, standard development for energy and water efficiency, cost-effective renewable energy, alternative or high-efficiency technology for conventional power generation, among others.

Source: IGES INDC & NDC Database: <https://pub.iges.or.jp/pub/iges-indc-ndc-database>

2.4 Organisational Charts



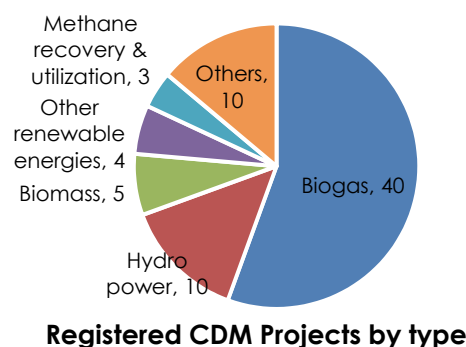
3. Market Mechanisms

3.1 The Clean Development Mechanism (CDM)

CDM projects and PoAs status

Project Status	Number of projects	Number of PoAs
Registered	72	4
At or after the validation stage	3	7

Source: IGES, IGES CDM Project Database (as of 31 January 2017)
 IGES CDM Programmes of Activities Database (as of 13 February 2017)
<http://www.iges.or.jp/en/climate/database.html>



3.2 The Joint Crediting Mechanism (JCM)

Date of agreement on the JCM	12 January 2017
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Kingdom of Thailand

1. Country Profile

1.1 General Information

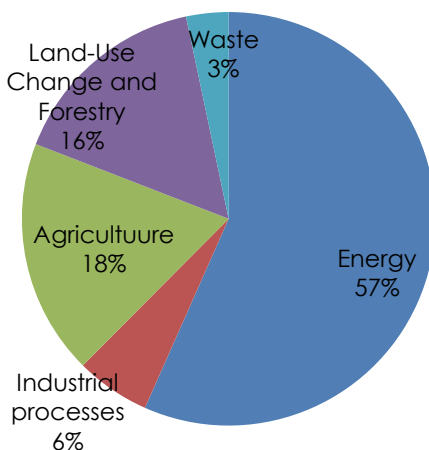
Population	67.96 million (2015)
GDP	395.1 billion USD (2015)
Annual population growth rate	0.3% (2010-2015)
Annual urban population growth rate	1.6% (2010-2015)
Energy consumption per capita	1287.0 (kilograms oil equivalent, 2010)

Source: World Bank Country data: <http://data.worldbank.org/country/thailand>
UNdata: <http://data.un.org/CountryProfile.aspx?crName=Thailand>

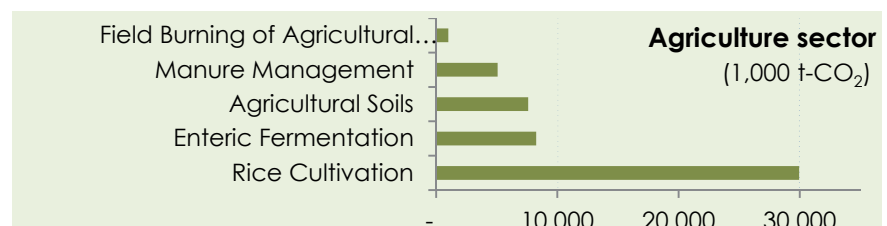
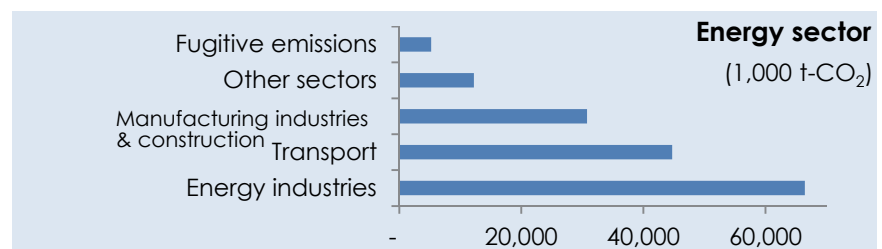
1.2 GHG Emissions

Year 2000 (1,000 t-CO₂)

Total emissions and removals	229,056
Emissions	281,430
Removals	-52,374



GHG Emissions by sector



Source: Thailand's second National Communication to UNFCCC
http://unfccc.int/files/national_reports/non-annex_i_natcom/submitted_natcom/application/pdf/snc_thailand.pdf

Submission of National Communication

First	13 November 2000
Second	24 March 2011

Source: UNFCCC http://unfccc.int/national_reports/non-annex_i_natcom/items/2979.php

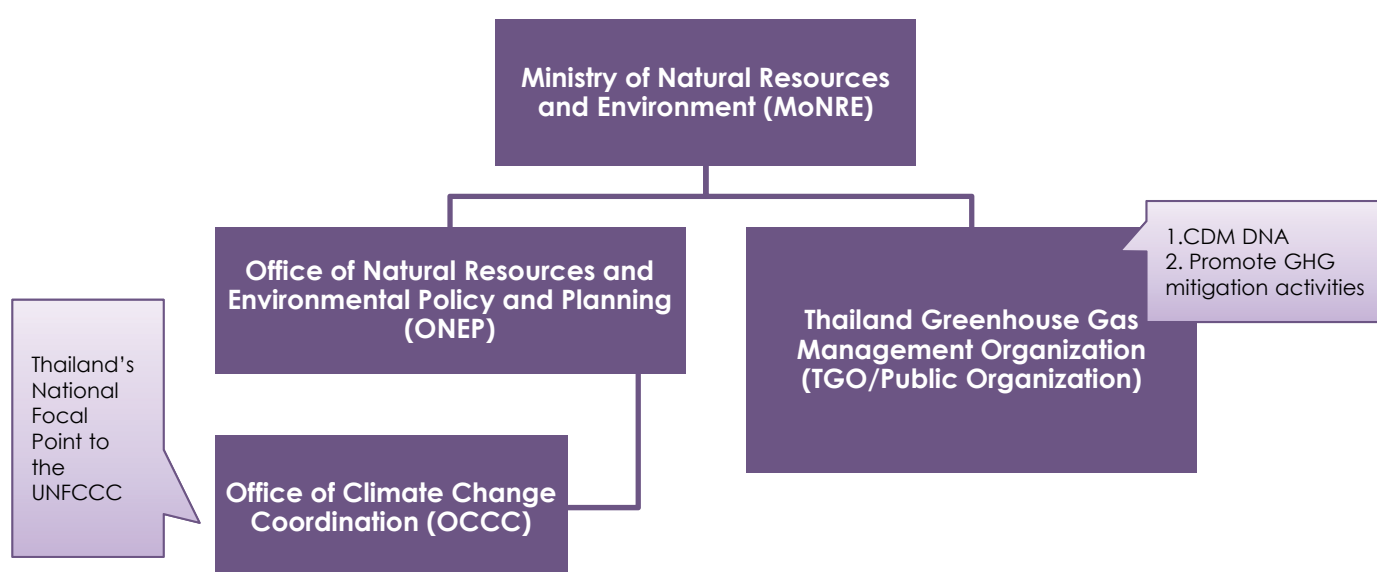
2. National Climate Change Policy

2.1 Intended Nationally Determined Contribution (INDC)

INDC submission date	21/09/2016
Mitigation type	Relative emission reduction
Mitigation Summary	Thailand intends to reduce its greenhouse gas emissions by 20 percent from the projected business-as-usual (BAU) level by 2030. The level of contribution could increase up to 25 percent, subject to adequate and enhanced access to technology development and transfer, financial resources and capacity building support through a balanced and ambitious global agreement under the United Nations Framework Convention on Climate Change (UNFCCC).
Adaptation Summary	<ul style="list-style-type: none"> • Promote and strengthen Integrated Water Resources Management (IWRM) practices • Safeguard food security through the guidance of Sufficiency Economy Philosophy; • Promote sustainable agriculture and Good Agricultural Practice (GAP); • Increase capacity to manage climate-related health impacts • Increase national forest cover to 40% through local community participation • Safeguard biodiversity and restore ecological integrity in protected areas and important landscapes from the adverse impacts of climate change.
Specific technology transfer needs	<ul style="list-style-type: none"> • Agriculture, in need of forecasting and early warning system technologies, crop improvement technologies, and precision farming technologies; • Water Resource Management, in need of networking (via pipes and canals) and management of infrastructures (including zoning), seasonal climate prediction, and sensor web using observation and/or modeling data; • Modeling, in need of an integrated national data center, national data transfer/management process and the advanced research, weather research and forecasting model, and an integrated model to address the need of agricultural sector and water resource management sector.
Market Mechanisms	Thailand recognizes the important role of market-based mechanisms to enhance the cost effectiveness of mitigation actions, and therefore will continue to explore the potentials of bilateral, regional and international market mechanisms as well as various approaches that can facilitate, expedite and enhance technology development and transfer, capacity building and access to financial resources that support Thailand's efforts towards achieving sustainable, low-carbon and climate-resilient growth, as appropriate.

Source: IGES INDC & NDC Database: <https://pub.iges.or.jp/pub/iges-indc-ndc-database>

2.2 Organisational Structure



Source: "National Strategy on Climate Change Management: Modeling and Data Application", "Data Democracy Workshop on Climate Change" Geo-Informatics and Space Technology Development Agency 7-10 June, 2010 Bangkok, Thailand.

3. Market Mechanisms

3.1 Domestic market mechanism

Objectives

- Support voluntary GHG reduction activities
- Encourage private companies who attempt to reduce their GHG emissions, implement cost-effective GHG reduction activities
- Learn how to manage domestic emission trading scheme / carbon offsetting program

Voluntary Carbon Markets in Thailand

Voluntary Emission
Reduction Projects
(VER)

Thailand Voluntary
Emission Reduction
Program (T-VER)

Thailand Voluntary
Emission Trading
Scheme
(TVETS)

Characteristics of T-VER

Type	Baseline and credit
Eligible projects	Energy efficiency, alternative energy, renewable energy, solid waste management, transportation management, forestry and green area, agriculture and other
Size of projects	No limitation. Projects can be bundled.
MRV method	Domestic guideline
Carbon credit	TVERs
Gas coverage	CO ₂ , CH ₄ , N ₂ O
Crediting period	7 years for non-forestry projects / 20 years for forestry projects.
Buyers	Government / CSR companies / Brokers
Status	Launch in Oct 2013

Characteristics of TVETS

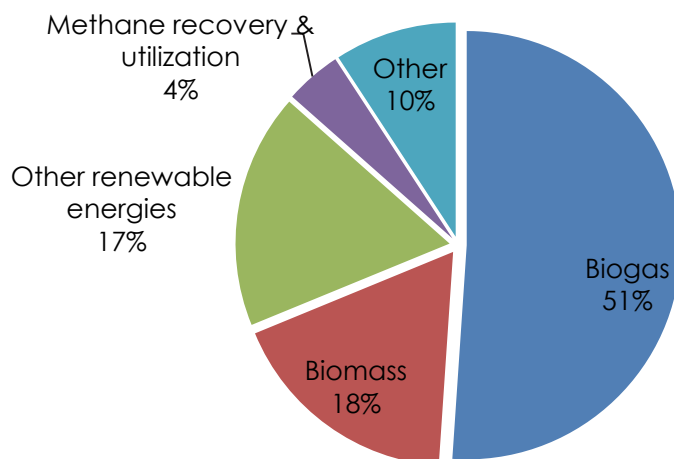
Type	Cap-and-trade
Target sector	It allows firms to enter the carbon market voluntarily without identifying target industries
MRV method	ISO 14064-1 / 14064-3 / 14065
Gas Coverage	Energy-related CO ₂
Allocation method	Grandfathering in trial phase
Buyers	Entities / Traders
Status	Launch in Nov 2014 1 st Trading period: (Pilot Phase: 2015-2017) 2 nd Trading period: (2018-2020)
Flexibility measures	TVERs is eligible for offset

3.2 The Clean Development Mechanism (CDM)

CDM projects and PoA status

Project Status	Number of projects	Number of PoAs
Registered	146	7
At or after the validation stage	11	0

Registered projects



Registered projects by type

Source: IGES, IGES CDM Project Database (as of 31 January 2017)
 IGES CDM Programmes of Activities Database (as of 13 February 2017)
<http://www.iges.or.jp/en/climate/database.html>

Contact Information: DNA in Thailand

Thailand Greenhouse Gas Management Organization (TGO)
 120 Mu 3, Building B, 9th Floor, The Government Complex, Chaeng Wattana Road, Laksi, Bangkok 10210 Thailand
 Phone: (+66) 2 141 9790 / 9801 (Executive Office) Fax: (+66) 2 143 8400 / 1

3.3 Joint Crediting Mechanism (JCM)

Date of agreement on the JCM

19 November 2015

Approved methodologies (As of March 2017)

Meth No.	Title	Version	Date of approval/revision
TH_AM001	Installation of Solar PV System	1.0	23 Aug 2016
TH_AM002	Energy Saving by Introduction of Multi-stage Oil-Free Air Compressor	1.0	23 Aug 2016



Socialist Republic of Vietnam

1. Country Profile

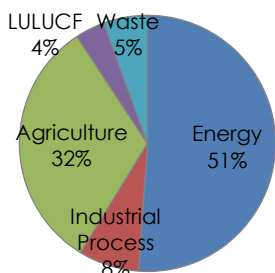
1.1 General Information

Population	91.70 million (2015)
GDP	193.60 billion USD (2015)
Annual population growth rate	1.0% (2010-2015)
Annual urban population growth rate	3.0% (2010-2015)
Energy consumption per capita	481.0 (kilograms oil equivalent, 2010)

Source: World Bank Country data: <http://data.worldbank.org/country/vietnam>
UNdata: <http://data.un.org/CountryProfile.aspx?crName=Viet%20Nam>

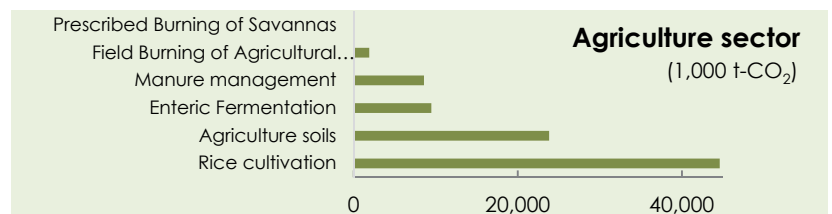
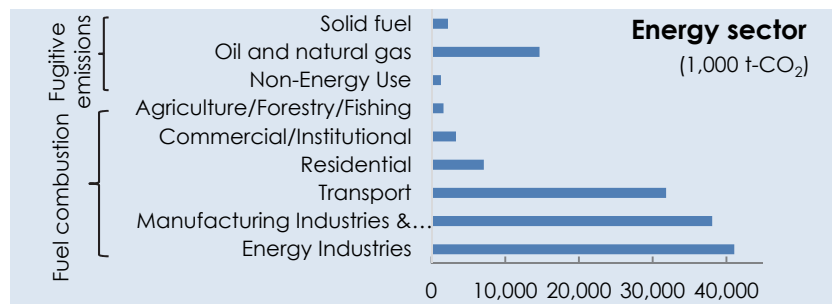
1.2 GHG Emissions

Year 2010	(1,000 t-CO ₂)
Total emissions and removals	246,831
Emissions	276,232
Removals	-29,491



GHG Emissions by Sector

Source: MONRE, The initial biennial updated report of Vietnam to the UNFCCC
<http://unfccc.int/resource/docs/natc/vnmbur1.pdf>



Submission of National Communication

First	2 December 2003
Second	7 December 2010

Source: UNFCCC http://unfccc.int/national_reports/non-annex_i_natcom/items/2979.php

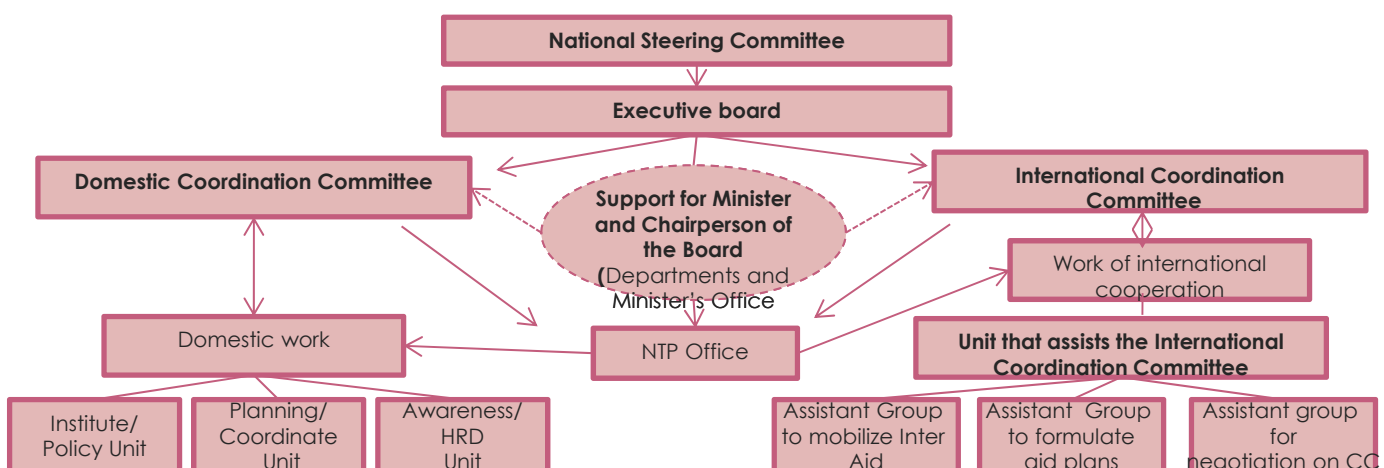
Submission of Biennial Updated Report

First	8 December 2014
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Source: UNFCCC http://unfccc.int/national_reports/non-annex_i_natcom/reporting_on_climate_change/items/8722.php

2. National Climate Change Policy

2.1 Organisational Structure



Other relevant policies

- National target program to respond to climate change (NTP-RCC) (The Prime Minister 158/2008/QĐ-TTg 2/12/2008)
- Action plan to respond to climate change (Ministry of Trade and Industry 4103/QĐ-BCT 3/8/2010)
- National climate change strategy (The Prime Minister 2139/QĐ-TTg 5/12/2011)
- National target programme to respond to climate change (NTP-RCC) 2012-2015 (The Prime Minister 1183/QĐ-TTg 30/8/2012)
- National green growth strategy (The Prime Minister 1393/QĐ-TTg 25/9/2012)
- Plan of greenhouse gas emission management; management of carbon trading activities to the world market (The Prime Minister 1775/QĐ-TTg 21/11/2012)
- The national action plan for green growth period 2014 - 2020 (The Prime Minister 403/QĐ-TTg 20/03/2014)
- Official Guide to the updated action plan to respond to climate change (990/BTNMT-KTTVBĐKH 24/03/2014)

Source: Ministry of Natural Resources and Environment (MONRE), Overview of NTP-RCC & SP-RCC

http://www.ntprcc.gov.vn/index.php?option=com_content&view=category&layout=blog&id=80&Itemid=145&lang=en

2.2 Intended Nationally Determined Contribution (INDC)

INDC submission date	29/09/2015
Mitigation type	Relative emission reduction
Mitigation Summary	<p>With domestic resources, by 2030 Viet Nam will reduce GHG emissions by 8% compared to BAU, in which:</p> <ul style="list-style-type: none">- Emission intensity per unit of GDP will be reduced by 20% compared to the 2010 levels;- Forest cover will increase to the level of 45%. <p>The above-mentioned contribution could be increased up to 25% with international support.</p>
Adaptation Summary	<ul style="list-style-type: none">• Respond pro-actively to disasters and improve climate monitoring: Modernise the hydro-meteorological observatory and forecasting system; Produce Socio-Economic Development Plans; Implement disaster prevention plans and measures...• Ensure social security: Review, adjust and develop livelihoods and production processes; Develop mechanisms, policies, and strengthen the insurance system; Improve regulations and technical standards for infrastructure; Implement community-based adaptation...• Responding to sea level rise and urban inundation: Implement integrated coastal zone management; Use sea level rise scenarios in urban and land use planning for infrastructure, industrial parks, coastal and island resettlement areas; Implement anti-inundation measures for large coastal cities...
Quantified Financial Needs	<p>While there are policies, plans and programmes climate change adaptation efforts were designed to collect funding for implementation, State resources can only meet 30% of the adaptation needs.</p> <p>The cost of adaptation is estimated to exceed 3-5% of GDP by 2030.</p>
Specific Technology Transfer Needs	<p>(i) technology for real-time forecasting, early warning, and sharing information system on real-time hydro-meteorological monitoring; (ii) tools to assess climate change impacts, vulnerability, exposure and climate change adaptation measures; (iii) technology for the sustainable use of water resources, prevention of water pollution, and urban water supply; (iv) technology to prevent erosion and protect the coastline and riverbanks; and (v) technology for sustainable agriculture, forestry and aquaculture production; biotechnology to develop new varieties that are more resilient to climate change.</p>
Market Mechanisms	<p>The above-mentioned 8% contribution could be increased to 25% if international support is received through bilateral and multilateral cooperation, as well as through the implementation of new mechanisms under the Global Climate Agreement, in which emission intensity per unit of GDP will be reduced by 30% compared to 2010 levels.</p>

Source: IGES INDC & NDC Database: <https://pub.iges.or.jp/pub/iges-indc-ndc-database>

3. Market Mechanisms

3.1 Domestic market mechanism

Plan of greenhouse gas emission management; management of carbon trading activities to the world market

(Approved on 21 November 2012)

Objective

- Management of GHG emission in order to implement the UNFCCC and other international agreements in which Vietnam is a party, at the same time take advantage of the opportunity to develop low carbon economy, green growth with the international community in the efforts to reduce GHG emission, contributing to the implementation of the goal of country's sustainable development
- Managing and monitoring the efficiency of the purchase, sale and transfer of carbon credits generated from the mechanism inside and outside the framework of the Kyoto Protocol to the international market.

Targets and measures

GHG emissions reduction target by sector	Measures
Energy and transportation 8%	<ul style="list-style-type: none"> • Increase efficiency and save energy conservation • Development of renewable energy • Conversion of fossil fuel use in electricity production • Use associated gas in oil • Development of public transport • Using LPG to replace gasoline, diesel oil for transport of passengers • Production of building materials, urban infrastructure
Agriculture 20%	<ul style="list-style-type: none"> • Application of advanced rice farming practices in the direction of saving water and reducing input costs • Application of technical measures to improve fertilizer use efficiency, reduce emissions of N₂O in rice cultivation • Applying solutions to save energy and fuel in soil preparation, watering industrial plants, developing and applying minimum cultivation measures to reduce GHG emission; • Collecting, recycling, re-using of agricultural by-products, Development and application of organic waste treatment technology in the cultivation of vegetables, sugar cane, short and long-term industrial crops • Change the diet of livestock and poultry. Provide MUB(multi-nutrient blocks) for dairy cows • Application process good agricultural practices in Vietnam (VIETGAP) in animal husbandry • Use of antibiotics to intestinal bacteria to reduce the level of GHG emissions from livestock • Development of biogas technology, collection systems, storage, handling of manure of livestock and poultry.
LULUCF 20%	<ul style="list-style-type: none"> • Forest Protection • Afforestation and reforestation • Promote reforestation and natural regeneration • Reduce GHG emissions through efforts to limit deforestation and forest degradation, sustainable management of forest resources, conserve and enhance forest carbon stocks (REDD)
Waste 5%	<ul style="list-style-type: none"> • Recovery and use of methane (CH₄) from landfills • Industrial wastewater treatment.

*The base year of the target is year 2005

Source: The Prime Minister, Decision on approval of project of greenhouse gas emission management; management of carbon credit business activities to the international market (No. 1775/QĐ-TTg)

Outline and schedule

2016 – 2020 Period

□Institutional framework

- Developing and applying system of standard and target of energy consumption and emissions

□Research and database development

- Preparing periodic reports on emission and reduction of GHG emission
- Summarizing and assessing the efficiency of project implementation
- Report to the Prime Minister on the results of implementation of the project and proposing a appropriate work for the next stage.

□Awareness raising and capacity building

- Raising awareness, responsibility, strengthening the capability for the implementation of the reduction of GHG emissions
- Strengthening the capacity of organization, institution, policy of managing and monitoring of GHG emissions
- Strengthening the management of carbon credit trading activities to the international market in accordance with the domestic and international context

□Implementation

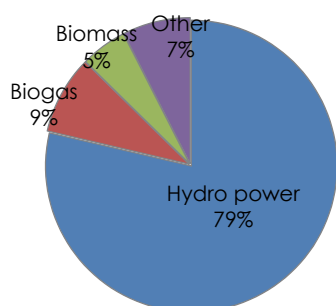
- Implementing a number of targets to reduce emissions and increase capacity of sinks, specifically in the areas of energy, transportation, agriculture, LULUCF and waste
- Periodically inventorying GHG
- Registering and widely deploying NAMA on the basis of the successful results of the pilot NAMA

Source: The Prime Minister, Decision on approval of project of greenhouse gas emission management; management of carbon credit business activities to the international market (No. 1775/QĐ-TTg)

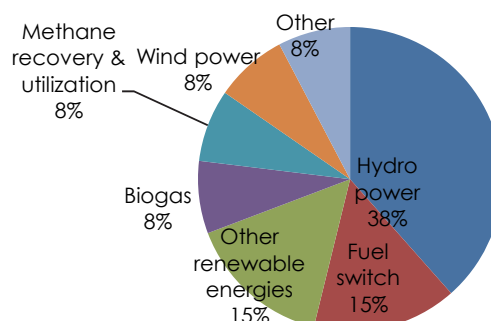
3.2 Clean Development Mechanism (CDM)

CDM projects and PoAs status

Project Status	Number of projects	Number of PoAs
Registered	255	9
At or after the validation stage	2	1



CDM projects



Registered projects and PoAs by type

Source: IGES, IGES CDM Project Database (as of 31 January 2017)
 IGES CDM Programmes of Activities Database (as of 13 February 2017)
<http://www.iges.or.jp/en/climate/database.html>

Grid Emission Factor

(t-CO₂/MWh, 2015)

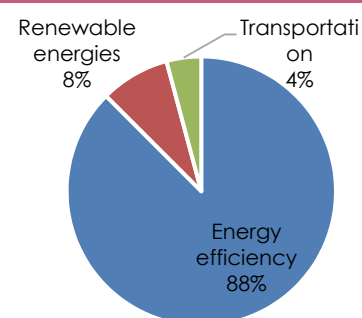
OM	BM	CM (CM; OM:BM 50:50)
0.6808	0.4505	0.5657

Source: Department of meteorology, Hydrology and Climate Change, MONRE and Ozone Layer Protection Centre "Study, definition of Vietnam grid emission factor", 21/4/2014
http://www.noccop.org.vn/Data/vbpg/Airvariable_Idoc_70vnBao%20cao%20EF%202012.pdf

3.3 Joint Crediting Mechanism (JCM)

Date of agreement on the JCM	2 July 2013
------------------------------	-------------

JCM Model projects and demonstration projects (2014-2016) Total 24 cases



Source: IGES Joint Crediting Mechanism (JCM) Database
<https://pub.iges.or.jp/pub/iges-joint-crediting-mechanism-jcm-database>

Approved methodologies (As of March 2017)

Meth No.	Title	Version	Date of approval/revision
VN_AM001	Transportation energy efficiency activities by installing digital tachograph systems	2.0	20 Oct 2016
VN_AM002	Introduction of room air conditioners equipped with inverters to public sector buildings	1.0	14 Jan 2015
VN_AM003	Improving the energy efficiency of commercial buildings by utilization of high efficiency equipment	1.0	14 Jan 2015
VN_AM004	Anaerobic digestion of organic waste for biogas utilization within wholesale markets	1.0	4 Aug 2015
VN_AM005	Installation of energy efficient transformers in a power distribution grid	1.0	3 Sept 2015
VN_AM006	Introduction of air conditioning system equipped with inverters	1.0	16 Oct 2016

Editors: Mr. Kentaro Takahashi
Dr. Chisa Umemiya
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Mr. Alexis R. Rocamora
Ms. Aryanie Amellina

**Climate and Energy Area,
Institute for Global Environmental Strategies (IGES)**

IGES Climate Policy and Market Mechanisms Status Report provides an overview of climate policies in selected countries and specific information on market mechanisms in the region. The contents of this booklet are based on the viewpoints of the editors, not of IGES. Careful attention was paid for the accuracy of the data at the time of publication and neither the editors nor publisher can accept any legal responsibility or liability for any errors or omissions that may be made. Please contact the following address if you find errors or have some comments: <mm-info@iges.or.jp>. This booklet is downloadable at <<http://www.iges.or.jp/en/climate-energy/mm/publication.html>>. Reproduction and quotation are prohibited without specifying the source.



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