

The 9th Workshop on GHG Inventories in Asia (WGIA9)
- Capacity building for measurability, reportability and verifiability –
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Climate Change Activities in Cambodia

SUM Thy

Ministry of Environment, Cambodia

Outline:

1. Background
2. Climate Change Institutional Arrangement
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1. Background

- Cambodia is a least developed agrarian country with over 80% of people living in rural areas.
- It is vulnerable to climate change due to its low adaptive capacity to changing climate conditions.
- The Royal Government of Cambodia (RGC) is committed at national and international levels to address the challenges of climate change and, therefore, ratified the United Nations Framework Convention on Climate Change (UNFCCC) in 1995 and acceded to its Kyoto Protocol in 2002.

1. Background

- In 1999, Cambodia started launching of the first climate change project to help prepare the Cambodia's Initial National Communication (UNDP/GEF). The Initial National Communication was submitted to the CoP-8 in New Delhi, India
- In 2003, Establishment of the Climate Change Office within the MoE. The office was promoted to Department level (Climate Change Department) in late 2009;
- In 2003, Government appointed MoE as the Designated National Authority (DNA) for the Clean Development Mechanism (CDM);
- In 2003, Cambodia started launching of the UNDP/GEF-supported project "Formulation of the National Adaptation Programme of Action to Climate Change (NAPA);

1. Background

- In 2004, Cambodia with support from the Global Environmental Strategies (IGES) launched the Integrated Capacity Strengthening for the Clean Development Mechanism project;
- In 2006, Cambodia established the National Climate Change Committee hosted by the Ministry of Environment;
- In 2007, Cambodia started launching of the project Enabling Activities for the Preparation of the Kingdom of Cambodia's Second National Communication to the UNFCCC (UNDP/GEF);
- In 2010, Cambodia started launching of Cambodia Climate Change Alliance (CCCA) with support from EU, UNDP, Sida and Danida.
- In 2010, Cambodia started launching of Pilot Programme for Climate Resilience (PPCR).

Climate Change Institutional Arrangement

Mandates of National Climate Change Committee

(NCCC) is to prepare, coordinate and monitor the implementation of policies, strategies, legal instruments, plans and programmes of the Royal Government to address climate change issues.

Climate Change Institutional Arrangement

Key role and functions of Climate Change Department (CCD):

- Develop, in collaboration with relevant agencies, national strategy, action plan and policy and legal instruments related to climate change;
- Develop national communications and green house gases (GHG) inventory of the Kingdom of Cambodia under the UNFCCC;
- Conduct an assessment of potential GHG mitigation and promote the implementation of GHG mitigation projects in the Kingdom of Cambodia with appropriate technology;

Climate Change Institutional Arrangement

Key role and functions of Climate Change Department (CCD):

- Conduct assessment of vulnerability and adaptation (V&A) to climate change and promote implementation of climate change adaptation project in the Kingdom of Cambodia;
- Promote mainstreaming of climate change in the national development and sectoral plans and coordinate the implementation of clean development mechanism and carbon credit projects in the Kingdom of Cambodia;

Climate Change Institutional Arrangement

Key role and functions of Climate Change Department (CCD)

- Promote mainstreaming of climate change in the national development and sectoral plans and coordinate the implementation of clean development mechanism and carbon credit projects in the Kingdom of Cambodia;
- Promote research, education, dissemination, training, workshop and meeting to promote awareness on climate change and motivate participation of local communities in implementation of climate change response project;
- Play role as a focal point for the UNFCCC, Kyoto protocol, CDM, resolutions and IPCC and propose government position for negotiation;

National Greenhouse Gas Inventory

- As party to the UNFCCC, Cambodia has a commitment to communicate to the Conference of the Parties (COP) on (Article 12 of the UNFCCC):
 - A national inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, to the extent its capacities permit, using comparable methodologies to be promoted and agreed upon by the Conference of the Parties.

National Greenhouse Gas Inventory

- As developing country, Cambodia is entitled to full-cost financing for preparing its National Communications;
- As least developed country, Cambodia can prepare its National Communications at its own discretion (Decision 17/CP.8 re inventory base year) and may submit at their discretion (Decision 8/CP.11)

National Greenhouse Gas Inventory

- The preparation of the Cambodia's GHG inventory started in 1999 under Cambodia's Initial National Communication;
- The year 1994 was selected as base year for GHG inventory under the INC and 2000 for the Second National Communication;
- Three main GHGs were taken into account for Cambodia's GHG Inventory: CO₂, CH₄ and N₂O;
- The 1994 GHG inventory covers five main sectors: Energy, Industrial Process, Agriculture, Waste, Land Use Change and Forestry;
- The 2000 GHG inventory covers four main sectors: Energy, Agriculture, Waste, Land Use Change and Forestry.
- The inventory was mainly based on Revised 1996 IPCC Guidelines and GPG 2000.

National Greenhouse Gas Inventory

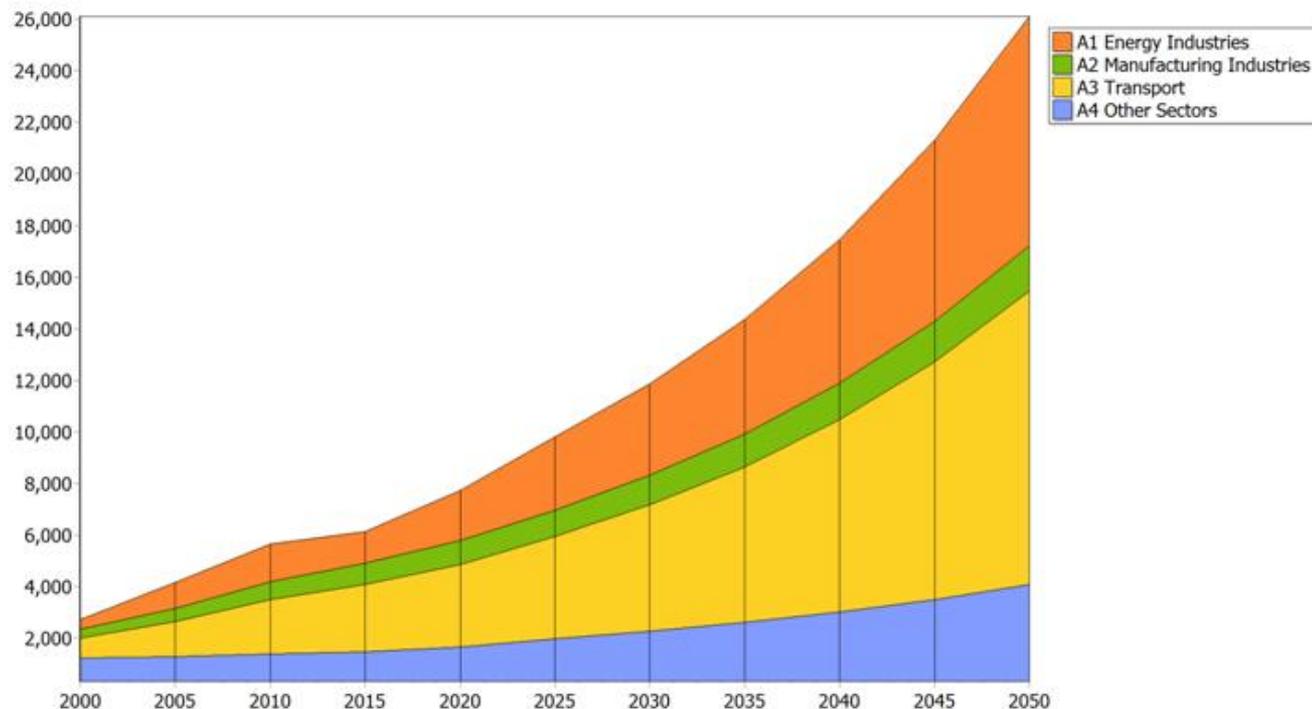
Comparison of GHG Inventory for the year 1994 and 2000

Greenhouse Gas Source and Sink Categories	Emission (Gg CO ₂ eq)	
	1994	2000
Energy	1,881.35	2643
Industrial Processes	49.85	n/a
Agriculture	10,560.15	21112.16
Waste	273.39	229.24
LUCF	46,943.70	23600.36
Total	59,708.44	47584.76

GHG mitigation potentials for Energy Sector and CDM project development

Baseline GHG Emissions Scenario

Emissions in Gg
CO₂ eq. by sector
2000-2050



Year	2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
A1 Energy Industries (GgCO ₂ eq.)	385	1,008	1,453	1,212	1,931	2,849	3,539	4,430	5,567	7,023	8,888
A2 Manufacturing Industries (GgCO ₂ eq.)	320	508	689	828	923	1,024	1,144	1,270	1,414	1,578	1,766
A3 Transport (GgCO ₂ eq.)	709	1,249	2,000	2,465	3,040	3,751	4,631	5,720	7,069	8,742	10,816
A4 Other Sectors (GgCO ₂ eq.)	1,229	1,304	1,392	1,482	1,658	1,977	2,285	2,623	3,025	3,505	4,079
Total (GgCO₂ eq.)	2,643	4,070	5,533	5,987	7,551	9,601	11,599	14,043	17,075	20,848	25,549

GHG mitigation potentials for Energy Sector and CDM project development

Overview Mitigation Options I

	Year	2010	2015	2020	2025	2030	2035	2040	2045	2050
Total Baseline Emissions		5,533	5,987	7,551	9,601	11,599	14,043	17,075	20,848	25,549
Energy Industries										
Grid Connection REEs		3	12	30	51	80	106	140	172	211
Grid Connection Auto Producers		18	152	269	268	309	354	430	492	563
Grid Connection Battery Charging Stations			5	12	16	16	14	12	10	10
Solar Power Plant		0	0	1	2	5	9	18	36	72
Solar Home Systems		0	6	16	22	22	19	16	12	12
Pico Hydro		-								
Mini and Micro Hydro			2	3	4	4	4	4	4	4
Rice Husks for Electricity Generation		27	67	167	417	445	463	481	498	516
Energy efficiency end users		22	55	138	344	592	797	1,002	1,264	1,600
Energy efficient buildings		50	85	193	285	354	443	557	702	889
Methane emissions reduction from hydro dams		-								
Sub Total Savings		120	384	829	1,409	1,826	2,210	2,659	3,191	3,877
% savings compared to Baseline		2%	6%	11%	15%	16%	16%	16%	15%	15%
Manufacturing Industries										
	Year	2010	2015	2020	2025	2030	2035	2040	2045	2050
Rice milling, Garment, Rice Mills, Brick Works		326	373	429	497	580	681	803	953	1,135
Organic Waste Methane recovery		-	-	-	-	-	-	-	-	-
Rice Husk Briquettes		-	-	-	-	-	-	-	-	-
Efficient Charcoal Production		-	-	-	-	-	-	-	-	-
Landfill gas recovery		-	-	-	-	-	-	-	-	-
Cement Production heat recovery		-	-	-	-	-	-	-	-	-
Biofuel		13	32	79	147	147	147	147	147	147
Sub Total Savings		339	405	508	644	727	828	950	1,100	1,282
% savings compared to Baseline		6.1%	6.8%	7%	7%	6%	6%	6%	5%	5%

GHG mitigation potentials for Energy Sector and CDM project development

Overview mitigation options II

	Year	2010	2015	2020	2025	2030	2035	2040	2045	2050
Total Baseline Emissions		5,533	5,987	7,551	9,601	11,599	14,043	17,075	20,848	25,549
	Year									
Transport Sector	2010	2015	2020	2025	2030	2035	2040	2045	2050	
Hybrid Cars			2	6	15	37	92	229	814	
Motor Vehicle Inspection	62	154	192	238	297	369	461	574	717	
Electric scooters and Bicycles	4	9	22	54	78	95	116	141	171	
Short lunch to reduce ½ the house to work travel	-									
City Transport Master Plan	-									
Public city transport	-									
Sub Total Savings	66	163	216	298	390	501	668	944	1,702	
% savings compared to Baseline	1.2%	2.7%	3%	3%	3%	4%	4%	5%	7%	
	Year									
Other Sectors	2010	2015	2020	2025	2030	2035	2040	2045	2050	
Efficient Cookstoves, Biodigesters, Water Filters	3	7	17	39	96	136	160	170	172	
Solar Lanterns	0.6	6.2	31	56	50	44	44	44	44	
Tree Planting for Cooking fuel	-									
Wind Water Pumping	0.0	0.4	3	5	9	11	14	16	18	
Sub Total Savings	4	14	51	100	155	191	218	230	234	
% savings compared to Baseline	0.1%	0.2%	0.7%	1.0%	1.3%	1.4%	1.3%	1.1%	0.9%	
Total Savings	528	966	1,603	2,452	3,098	3,730	4,495	5,465	7,094	
% savings compared to Baseline	9.5%	16.1%	21%	26%	27%	27%	26%	26%	28%	

GHG mitigation potentials for Energy Sector and CDM project development

Status of CDM project development

Name of CDM Project Activity	Type of Project	Approval Date (D/M/Y)	Annual emission reduction (tCO ₂ /yr)	Project Participants (Host Country)	Status
Bio Cogen Rice Husk Power Project	Biomass (Methane avoidance)	19/1/2006	51,620	Angkor Bio Cogen Co., Ltd.	Registered
T.T.Y. Cambodia Biogas Project	Biogas (Methane recovery)	4/7/2007	50,036	T.T.Y Corporation Ltd. Carbon Bridge Pte Ltd.	Registered
Methane fired power generation plant in Samrong Thom Animal Husbandry,	Biogas (Methane recovery)	15/10/2007	5,593	Samrong Thom Animal Husbandry	Registered
Kampot Cement Waste Heat Power Generation Project (KCC-WHG)	Waste heat/gas utilisation	20/11/2008	17,107	Kampot Cement Company Co., Ltd.	CER Issuance
Kamchay Hydroelectric BOT Project	Hydro	20/11/2008	370,496	Sinohydro Kamchay Hydroelectric Project Co., Ltd.	Under validation
Biogas Project at MH Bio-ethanol Distillery,	Biogas (Methane recovery)	29/6/2009	52,831	MH Bio-Energy Co., Ltd	Under validation
W2E Siang Phong Biogas Project	Biogas (Methane recovery)	03/11/2010	27,121	W2E Siang Phong Ltd.	Registered