

22nd Asia Pacific Seminar on Climate Change, Hanoi, Vietnam
“Measurement, Reporting and Verification (MRV) for Mitigation and, Monitoring and Evaluation (M&E) for Adaptation in the Asia Pacific Region”
<Sofitel Plaza Hanoi - June 27, 2013>

**MOEJ support for NAMA/MRV in Asian countries
and Introduction of the NAMA Guidebook**
-Bottom up approach taken in the MOEJ/OECC
Capacity-building Programme-

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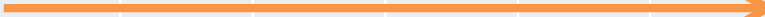




1. Support for NAMA / MRV in Asian Countries by the Ministry of the Environment, Japan

Background

- In 2007, COP13 decided to start consideration on nationally appropriate mitigation actions (NAMAs) by developing countries in a measurable, reportable, and verifiable (MRV) manner, supported by technologies, financing, and capacity-building, followed by the Copenhagen Accord, the Cancun Agreement, etc.
- Ministries handling environmental issues in partner countries and the Ministry of the Environment, Japan (MOEJ), decided to cooperate on capacity building and joint studies on NAMAs in a MRV manner in different sectors according to priorities of host country.
- OECC acted as a joint Secretariat with host ministries, signed an Agreement in mid - 2012.

Sample schedule of joint activities

Schedule on MOEC-MOEJ Cooperation on NAMAs

	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Overall (WG Meeting)	X	Y	X	Y	X	Y	X	Y
Study on Baseline & NAMA Scenarios							Wrap up	R
Draft Guidelines on NAMAs Selection							Wrap up	R
Draft Guidelines on MRV							Wrap up	R
Study on domestic institutional Arrangement							Wrap up	R
Technology Information Study							Wrap up	R
Study Tour to Japan			X					
Environmental Technology Mission from Japan						X		

* X: Cambodia-Japan Joint meeting, Y: Cambodia only

* R: Deliver a Report to OECC

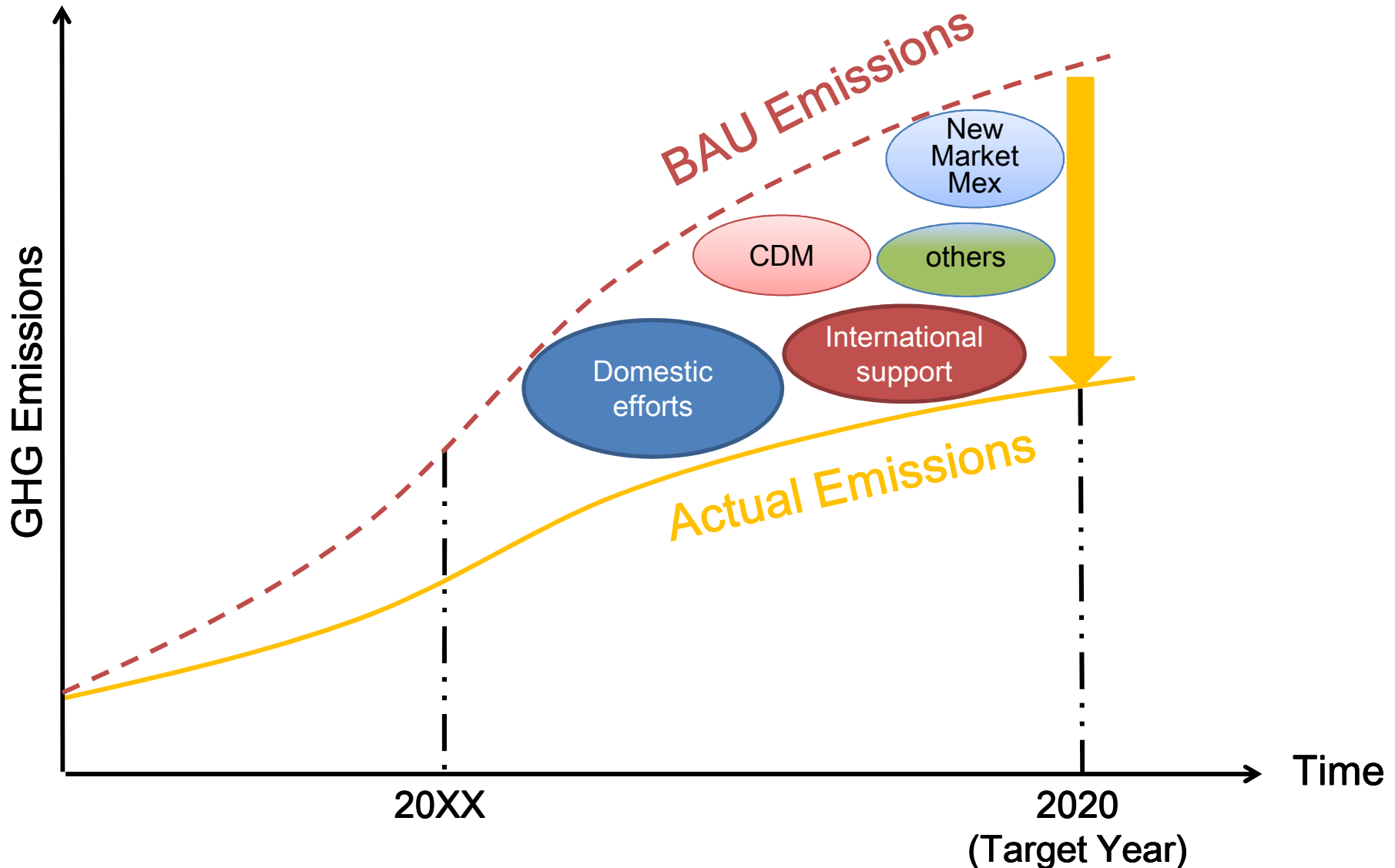
NAMA capacity building outputs according to MOU

- Output 1: Identify BAU and NAMA Scenario
- Output 2: Implementation Plan for NAMAs
- Output 3: Report for MRV of NAMAs
- Output 4: Proposal of a Modalities for Domestic Institutional Arrangement for NAMA implementation
- Output 5: Collect information on appropriate mitigation technologies

2. OECC's approach to developing NAMAs in a MRV manner under the MOEJ Programme

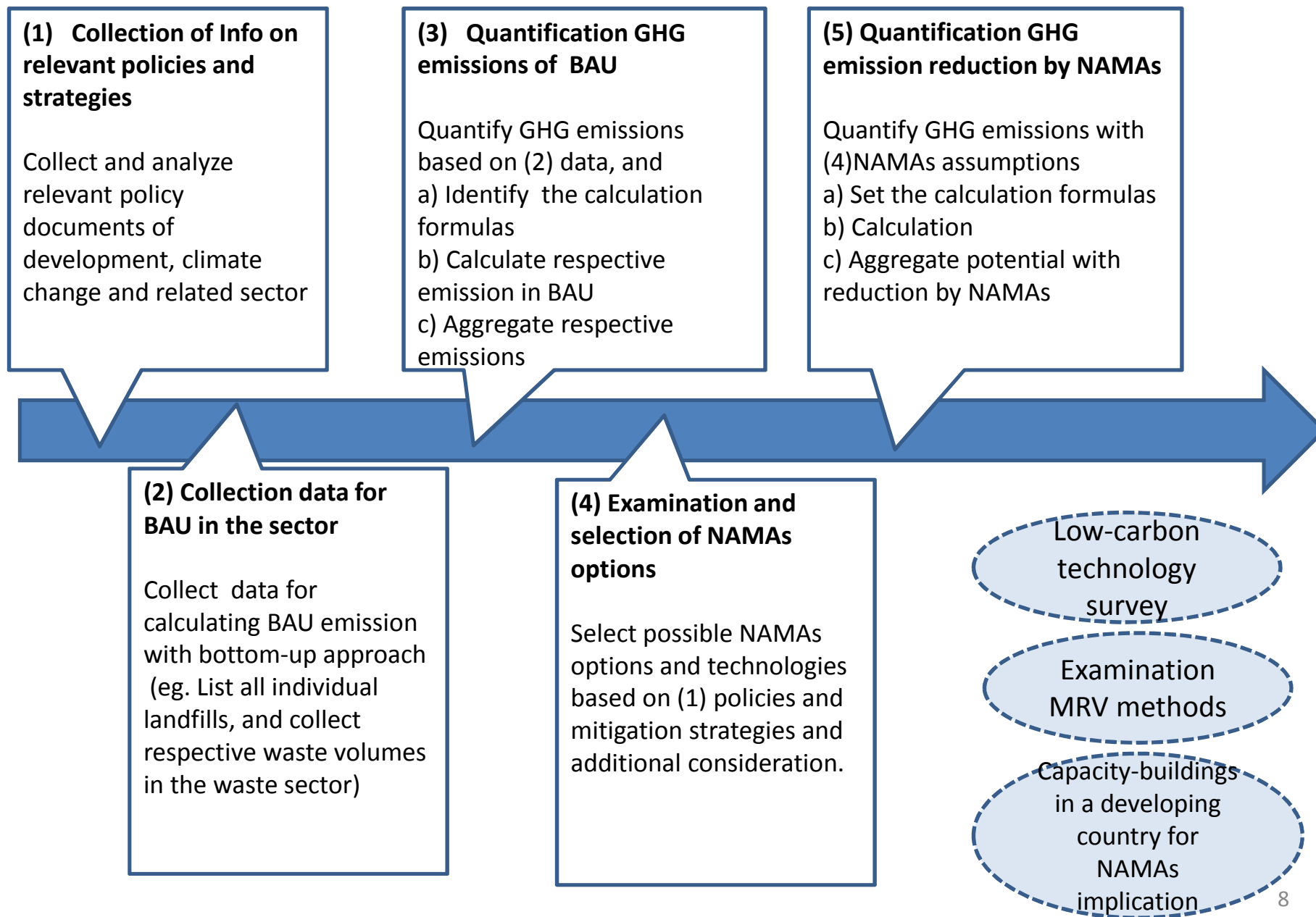
Background of NAMAs in a MRV manner

Illustration of mitigation actions in relation to BAU



NB. The above graphic does not include how accounting of GHG should be sorted out, in relation to offset mechanisms.

Proposed steps for NAMA development



How we quantified emission reductions

Climate Change Sectoral Strategy

Cambodia Energy Sector Strategy

Others

*Extract data and make fact sheets

Fig 1. Energy Development Plan in BAU and NAMAs

	2012	2020
BAU	XXX MWh	X,XXX MWh
NAMAs	-	X,XXX MWh

Fig 2. GHG Emissions in BAU and NAMAs

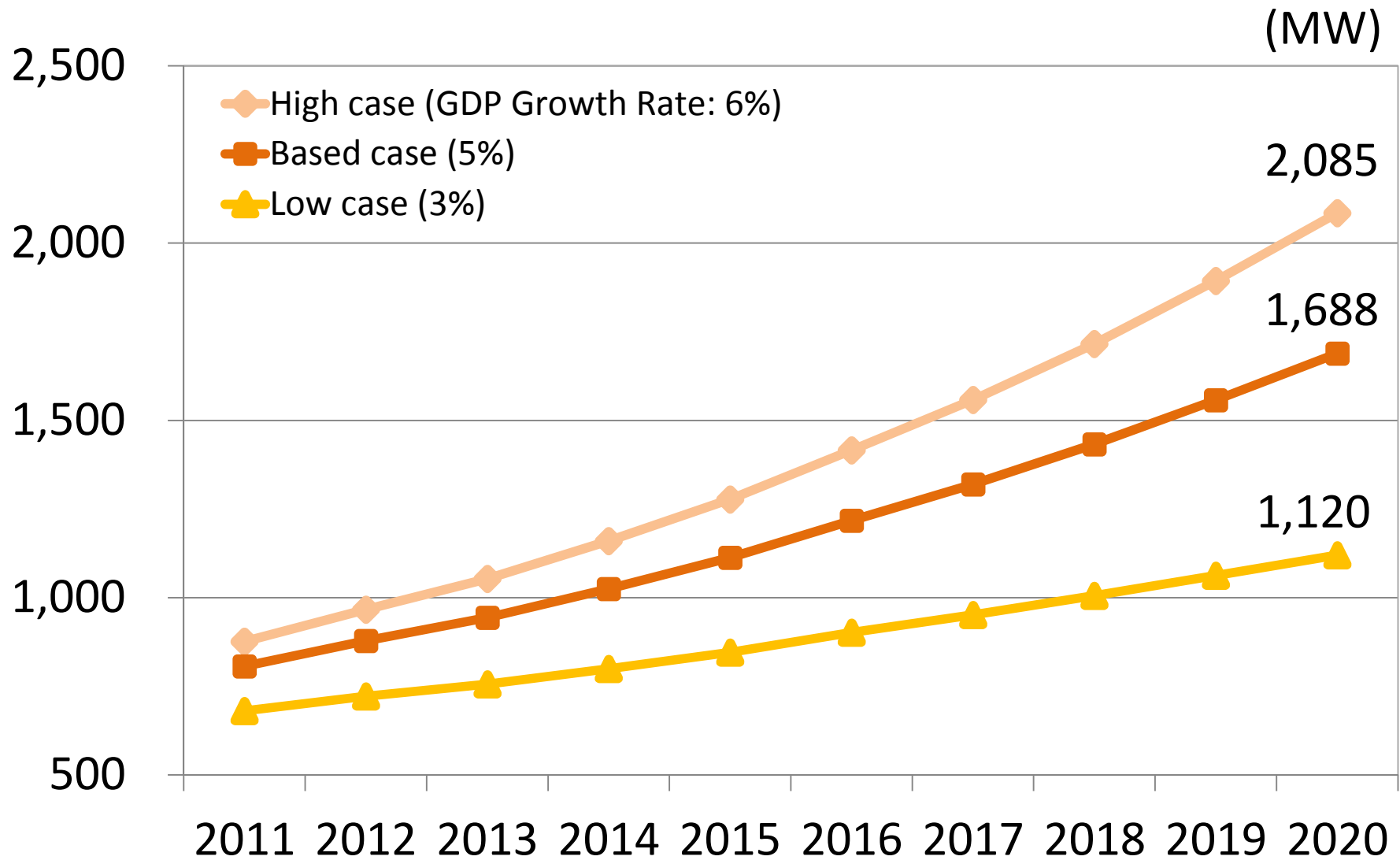
	2012	2020
BAU	XXX t-CO ₂	X,XXX t-CO ₂
NAMAs	-	X,XXX t-CO ₂

Activity1:
Data and Info.
collection

Activity2:
GHG Emissions
Calculation

Activity3:
Identify
Mitigation Action
- XX MW Solar
- XX units Boilers

BAU: Energy Demand Projection in County A



BAU: Power Development Plan in Country A

*Need to consider projects which may be developed in BAU out of the present plan.

No.	Project Name	Type	Capacity (MW)	Year	Condition as of Dec. 2011
1	XXXX	Heavy Fuel Oil	340	-	Operating
2	YYYY	Coal	13	-	
3	ZZZZ	Hydro	13	-	
4	AAAA	Wood, Biomass	6	-	
5	Kamchay	Hydro	194	2012	Under Construction
6	Kirirom III	Hydro	18	2012	
7	Stung Atay	Hydro	120	2012	
8	Stung Tatay	Hydro	246	2013	
9	Lower Stung Russei Churum	Hydro	338	2013	
10	100 MW Coal Fired Power Plant	Coal	100	2013	PPA signed
11	270 MW Phase 1 of the 700MW Coal Fired Power Plant	Coal	270	2014 ~2015	
12	100 MW Coal Fired Power Plant	Coal	100	2016	
13	430 MW Phase 2 of the 700MW Coal Fired Power Plant	Coal	430	2017	FS completed
...	...	Coal	α^*	20XX	May be developed*
	Total		2188+ α		

Power Development Plan with mitigation options

No.	Project Name	Type	Capacity (MW)	Year
1	XXXX	Heavy Fuel Oil	340	
2	YYYY	Coal	13	-
3	ZZZZ	Hydro	13	-
4	AAAA	Wood, Biomass	6	-
5	Kamchay	Hydro	194	2012
6	Kirirom III	Hydro	18	2012
7	Stung Atay	Hydro	120	2012
8	Stung Tatay	Hydro	246	2013
9	Lower Stung Russei Churum	Hydro	338	2013
10	100 MW Coal Fired Power Plant	Coal	100	2013
11	270 MW Phase 1 of the 700MW Coal Fired Power Plant	Coal	270	2014 ~2015
12	100 MW Coal Fired Power Plant	Coal	100	20
13	430 MW Phase 2 of the 700MW Coal Fired Power Plant	Coal	430	2017
...	...	Coal	α^*	20XX
	Total		2188+ α	

Introduction of high-performance boiler

Promotion of renewable energy (hydro, solar, biomass)

GHG Emissions Reduction with mitigation measures

***All values are calculated on the assumption.**

Mitigation measure	Calculation method	Emissions reduction
Introduction of high-performance boiler	Amount of energy conserved by high-performance boilers (50 kl oil-equivalent/unit) × Cumulative numbers of boilers introduced in target year 2020 (100 units) × Emission factor (2.62 tCO ₂ /kl)	13,100 t-CO₂
Promotion of renewable energy	The use of renewable energy in 2020 (1,000,000 MWh) × Grid emission factor (0.6257 t-CO ₂ /MWh)	625,700 t-CO₂

Elements of NAMA explained

- Subject to measurement, report, verification(MRV) (differentiated MRVs for domestic and international finance)
- Supported by technology, financing, and capacity-building
- Aims (at least) at deviation from business-as-usual emission (BAU) in 2020
- Reported together with GHG Inventory in BUR and described with quantitative goals and progress indicators
- Encouraged to link with low carbon development strategies and planning

1/CP.13, 2/CP.15 Annex, 1/CP.16, and 2/17 and its Annex III (for detail slides 25 and later)

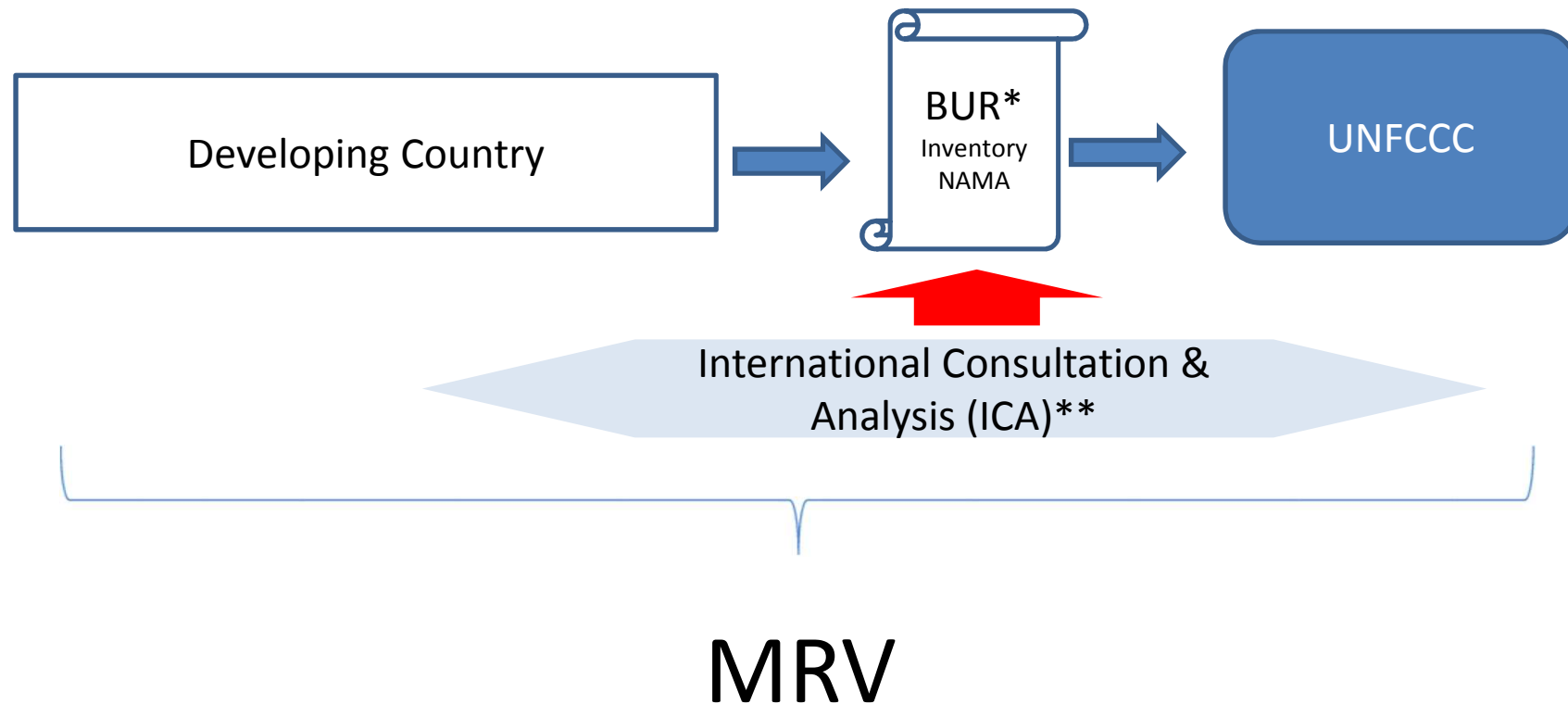


As long as with these elements, NAI Parties can decide NAMAs as they like, (while further elements may be agreed by the COP)

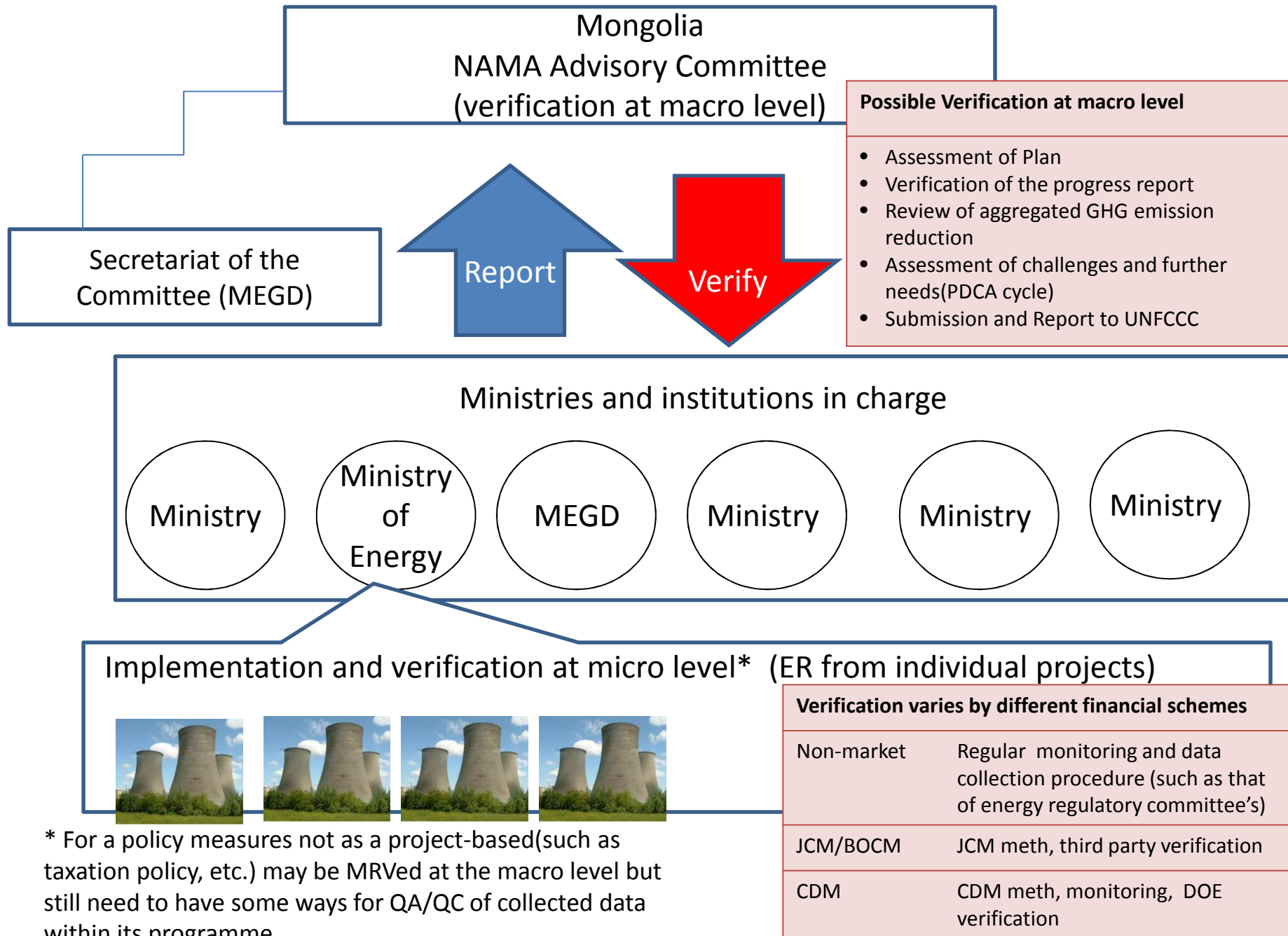
MRV for describing the international process

* Guidelines decided by 2/CP.17 Annex III

** Details are not yet decided (subject to further negotiations)



Possible Institutional Arrangement

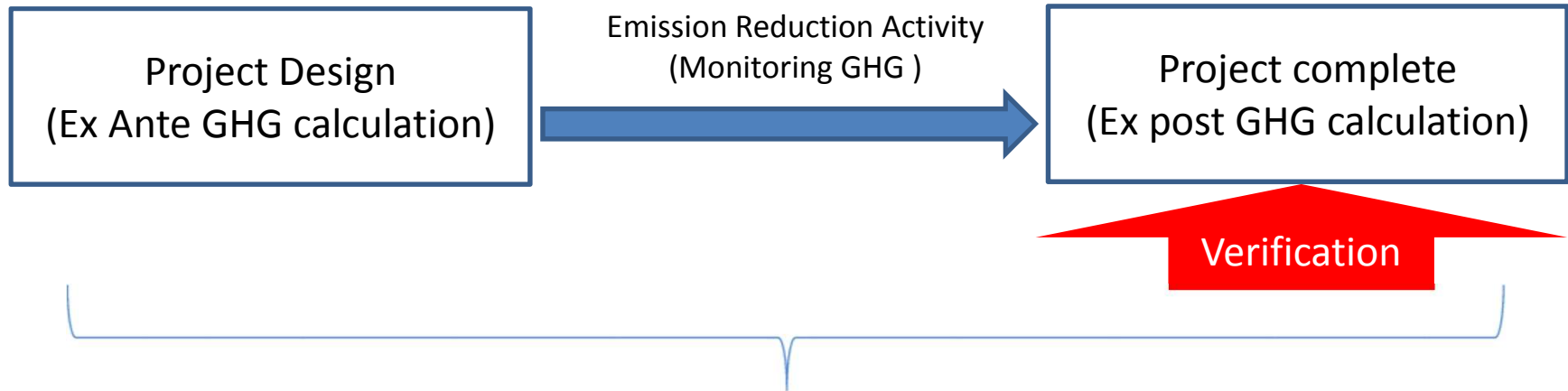


MRV at Activity level (Project or entity level)



$$\begin{aligned}
 ER_y &= BE_y - NE_y \\
 &= (BE(H)_y + BE(E)_y) - (NE(H)_y + NE(E)_y) \\
 &= (BE(H)_y - NE(H)_y) + (BE(E)_y - NE(E)_y)
 \end{aligned}$$

$ER(H)_y$ $ER(E)_y$



MRV

* Guidelines on methodologies are not decided by the UN

Preliminary results / outputs

1. Identified **BAU and emission reduction potentials** (now thru 2020) by a bottom-up approach for quantifying GHGs
2. Identified useful **low carbon technologies** to be introduced for NAMAs
3. Established an **inter-ministerial WG**, which may be a core group for national decision making process
(and policy-level MRV)
4. Elaborated **a possible mitigation action in a template**, which may be part of whole **implementation plan NAMAs**

3. Preliminary Results of Capacity-building Cooperation

Cambodia



Selected Sector: Agricultural Sector

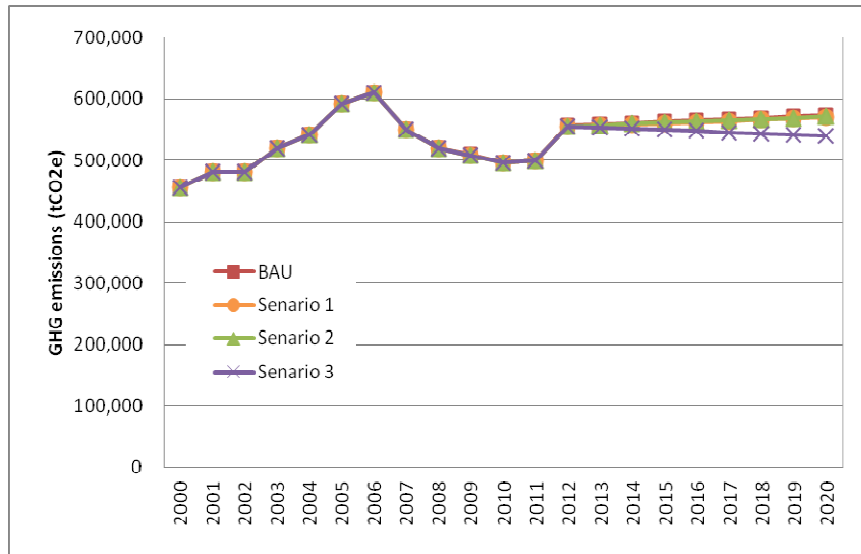
NAMAs: National Biodigester Programme

Working Group: MOE, MPWT, MIME chaired by MOE DG

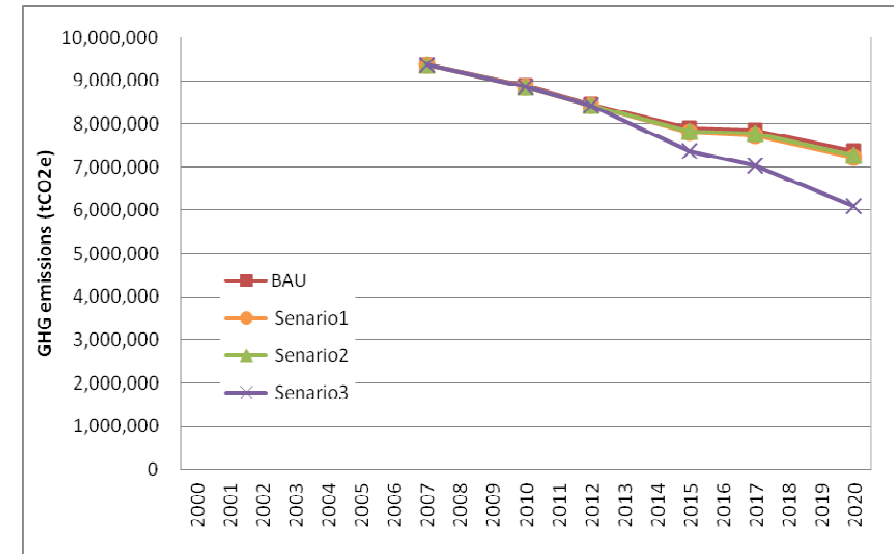
Results:

- Calculated BAU and ER by NAMAs ex ante (Emission Reductions from Methane Reduction and NRB)
- Sorted out reporting procedure

(* See Preliminary Results)

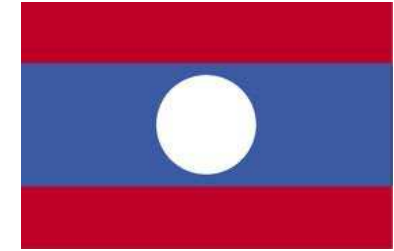


CH4 Emission from animal manure and its Reduction by biodigester Programme



CO2 reduction from non renewable biomass by different fuels

Lao PDR



Selected Sector: Transport Sector

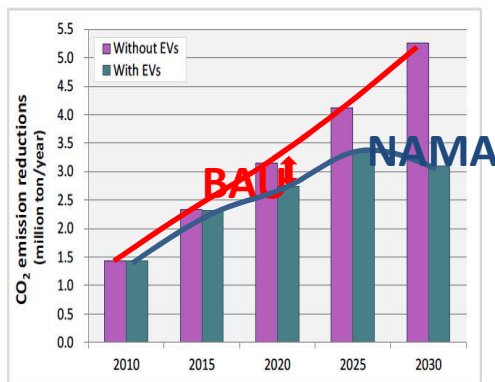
NAMAs: Replacement of conventional vehicle with EV

Working Group: 7 Ministries participates, including MONRE, MPWT, MIME, MOIC, MOST, chaired by Results:

- Calculated BAU and ER by NAMAs ex ante
- Activity data (fuel economy data) originally collected and based on JICA Study
- Proposed institutional arrangements are planned to be a part of technical WG under the National Climate Change Committee



(*) See Preliminary Results



Source: Basic Data Collection Study on Low-emission Public Transport System in Lao PDR, JICA, modified by OECC

	Motorcycle	Passenger car	Tuk Tuk / Mini bus	Song Thew / Middle size bus	Large bus	Total
Baseline Emissions						
Baseline fuel economy (km/liter)	40	13.0	20	6.5	2.5	
Baseline fuel economy (km/liter) (2020)	43.3	14.1	21.7	7.0	2.7	
Driving distance (km/day)	16	25	45	85	120	
CO ₂ emission factor (kgCO ₂ /liter)	2.18	2.18	2.70	2.70	2.70	
Days per year	365	365	365	365	365	
Baseline emission (tCO ₂ /year/vehicle)	0.3	1.4	2.0	11.9	43.8	
Project Emissions						
Driving distance (km/day)	16	25	45	85	120	
Project electricity economy (kWh/km)	0.080	0.130	0.130	0.310	1.000	
Grid electricity emission factor (tCO ₂ /MWh)	0.135	0.135	0.135	0.135	0.135	
Days per year	365	365	365	365	365	
Project emission (tCO ₂ /year/vehicle)	0.1	0.2	0.3	1.3	5.9	
Emission reduction (tCO₂/year/vehicle)	0.2	1.3	1.8	10.6	37.9	
Number of EV	698000	45000	12000	4000	1000	21
Total Emission Reduction (tCO₂/year)	161,204	56,280	21,065	42,537	37,887	318,973

Mongolia

Selected Sector: Energy Supply Sector

NAMAs: Improvement of CHP Plants

Working Group: MEDG, Ministry of Energy, other key institutes and experts, chaired by Climate Change Special Envoy

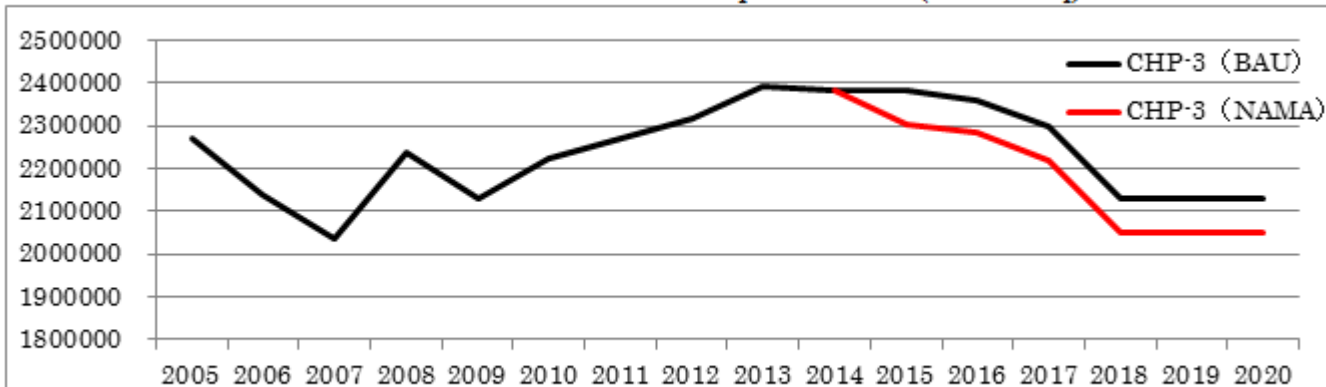
Results:

- Calculated BAU and ER by NAMAs ex ante both for power and heat supplies for CHP3 and CHP4
- Sorted out reporting process of activity data (ie Energy Regulatory Committee)
- Discussed technology options for application in NAMAs, including process diagnosis in CHP

(* See Preliminary Results)



GHG emissions in the BAU scenario and after NAMA implementation (ton-CO₂eq)¹



Diagnosis by energy technology experts from Japan at CHP

Viet Nam



Selected Sector: Waste Sector

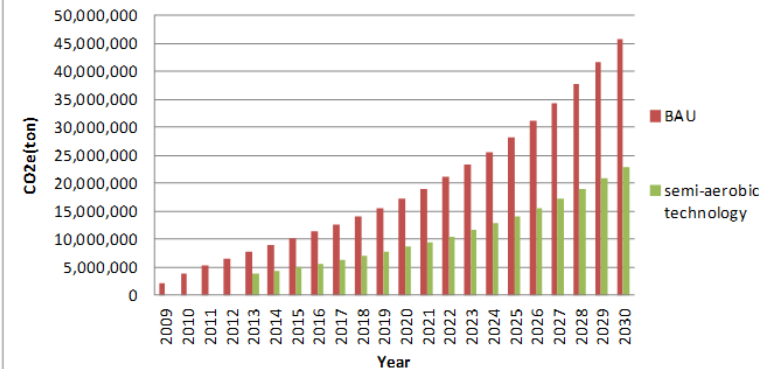
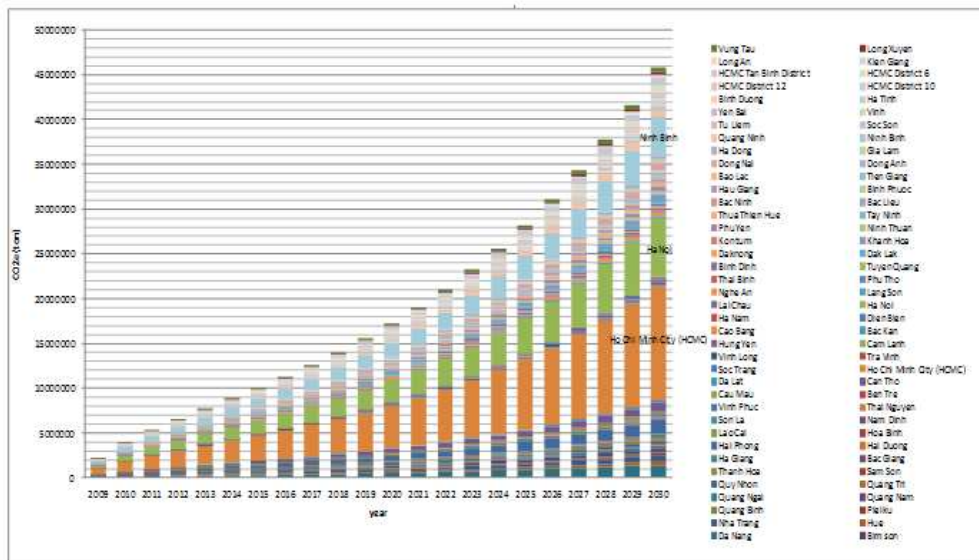
NAMAs: CH4 Reduction from Landfill (semi aerobic technology)

Working Group: MONREE, MOC, MPI, VEA, IMHEN, chaired by IMHEN

Results:

- Collected historical activity data from all landfills in Viet Nam
- Calculated BAU and reduction by NAMA candidates (Emission Reductions from Methane Emission from LFs)
- Discussed possible reporting procedures
- Jointly reported at COP18 Side Event

(* See Preliminary Results)



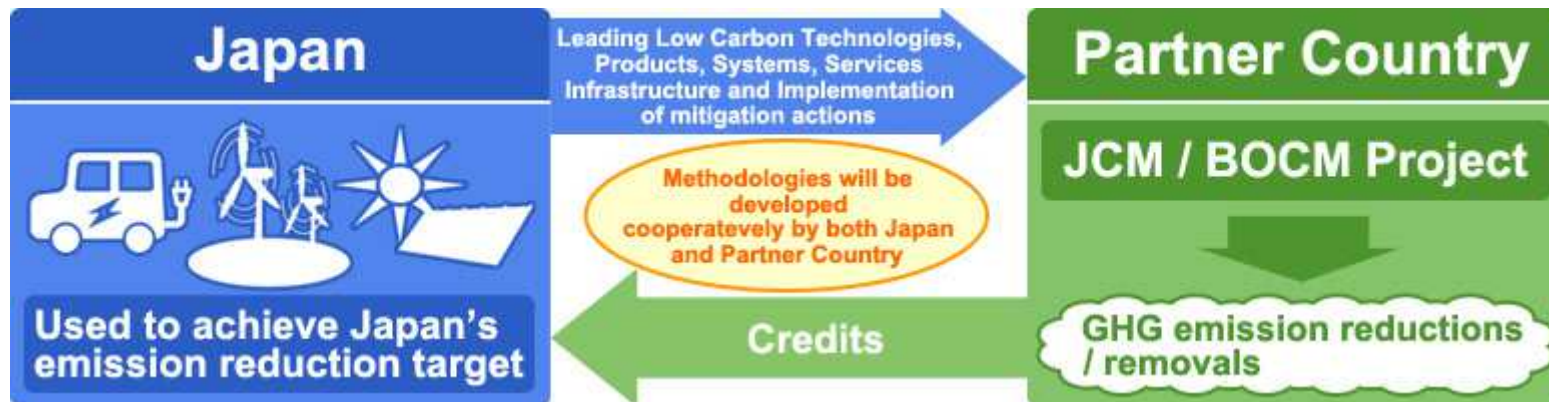
Next steps

1. Expanding sectors/subsectors for designing NAMAs
2. Drafting and Implementation Plan (national level), which contains institutional framework and process for domestic PDCA Cycle
3. Linking with existing domestic reporting procedures
4. Elaboration on different financial options, such as multilateral and bilateral finance, including the Joint Crediting Mechanism (JCM)

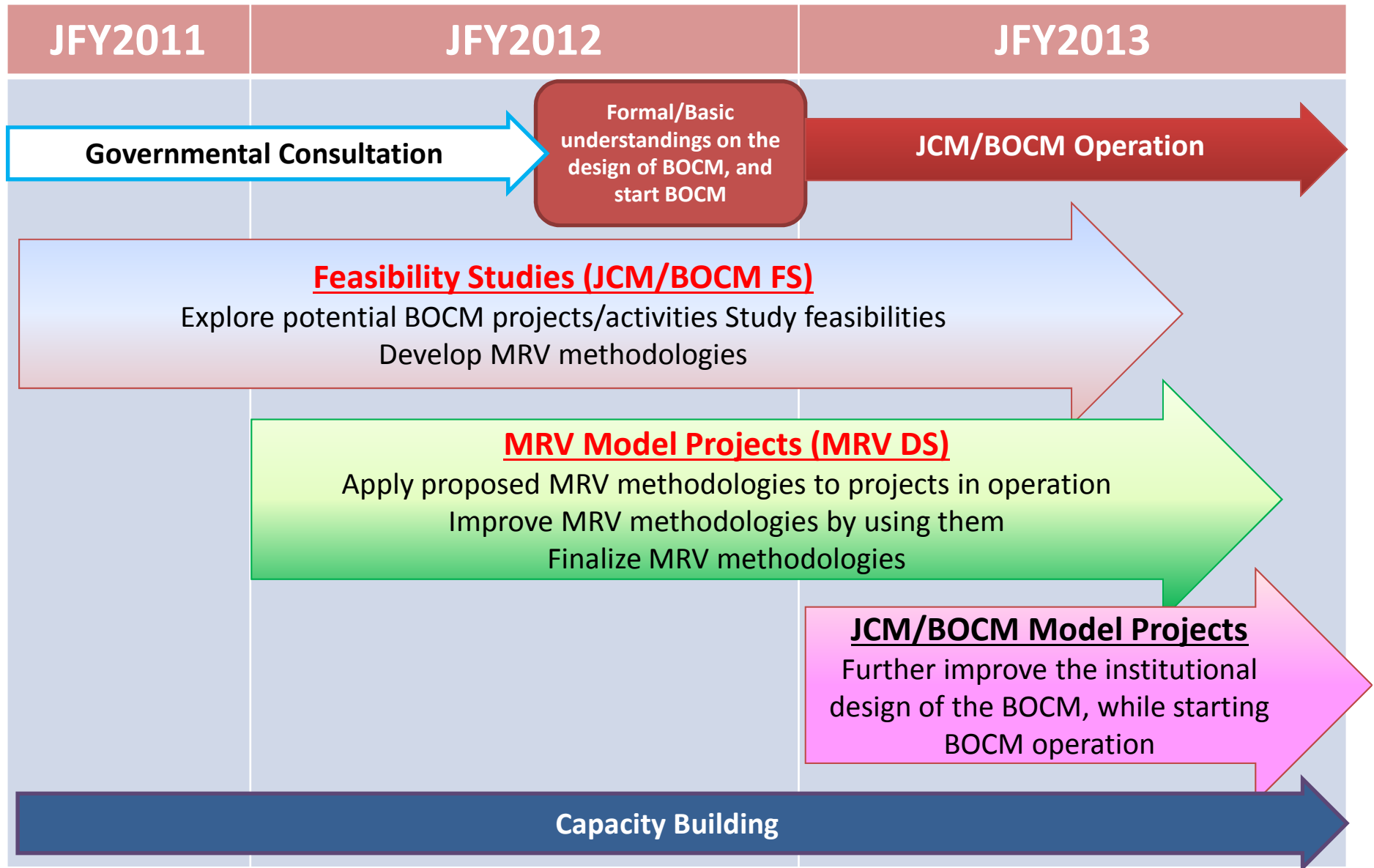
4. Recent development on Joint Crediting Mechanism (JCM) between Japan and Host Countries

Proposed Joint Crediting Mechanism (JCM)

- JCM: A financial and technology transfer option for NAMAs.
- Facilitates diffusion of leading low carbon technologies, products, systems, services, and infrastructure as well as implementation of mitigation actions, and contributing to sustainable development of developing countries.
- Appropriately evaluates contributions to GHG emission reductions or removals from developed countries in a quantitative manner, through mitigation actions implemented in developing countries and use those emission reductions or removals to achieve emission reduction targets of the developed countries.
- Contributes to the ultimate objective of the UNFCCC by facilitating global actions for emission reductions or removals.

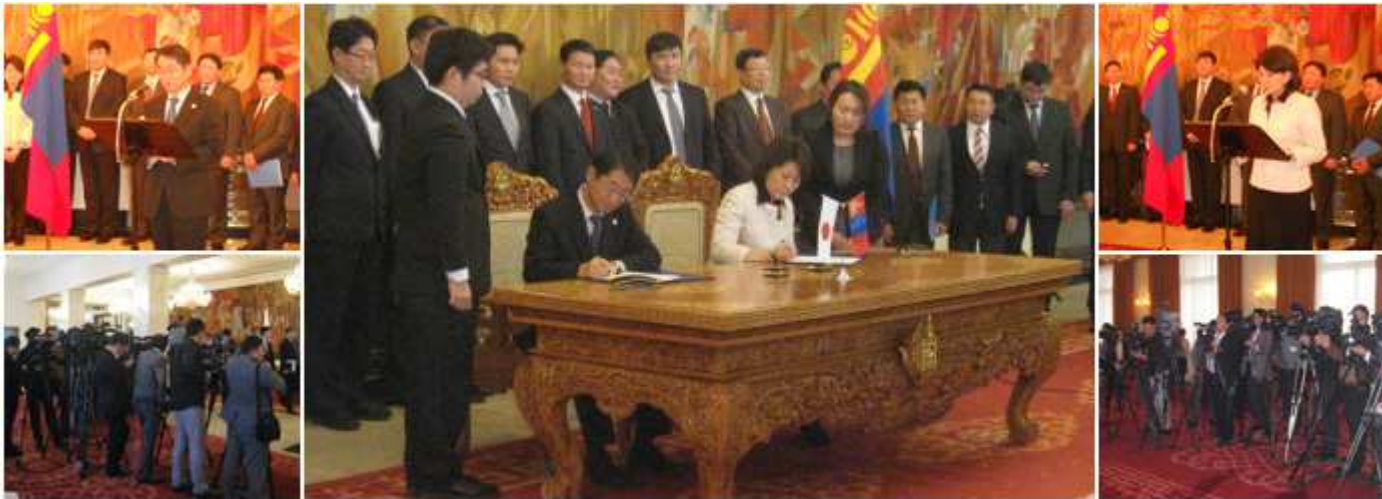


Schedule of JCM activities



JCM as a financial and technology driver for NAMAs

- In January 8, 2013, Mongolia and Japan signed a Memorandum of Understanding on JCM
- In March 19, Bangladesh and Japan signed a MOU on JCM/BOCM
- In May 29, Ethiopia and Japan signed a MOU on JCM
- In June 12, Kenya and Japan signed a Memorandum of Cooperation for JCM



Source: New Mechanisms Information Platform:
http://www.mmechanisms.org/e/initiatives/130108_mongolia.html

Japan and MOEJ Initiatives window

OECC also manages the “New Mechanism Information Platform” webpage and publishes a quarterly booklet, the “New Mechanism Express” with information containing all recent developments in relation to initiatives from Japan and the Ministry of the Environment, Japan (MOEC), including a network of Japanese organizations.

Please click below:

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

The screenshot displays the 'New Mechanisms Information Platform' website. At the top, there is a navigation bar with links for 'Inquiry', 'E-mail Newsletter', and 'Japanese'. Below this is a search bar and a secondary navigation menu with categories like 'Japan's Initiatives', 'Support Programmes', 'Useful Experiences', 'Useful Calculation Methodology', and 'REDD/REDD+'. The main content area features a large image of wind turbines. Below the image, there is a section titled 'The Joint Crediting Mechanism / Bilateral Offset Credit Mechanism (JCM/BOCM)' with sub-sections for 'Proposed Elements of the JCM/BOCM', 'Mongolia', and 'Relevant Documents' (Gov't of Japan, MOEJ, MOFA). Further down, there are sections for 'Topics of Japan', 'Publications' (including 'New Mechanisms Express No. 7'), 'Information', and 'Activities of Related Organizations', each containing a list of recent news items with dates and brief descriptions.

OECC's side event at the SB38

On June 7, 2013 OECC has organized a side event at the recent SB38 meetings in Bonn (UNFCCC), in order to present the “First results of capacity-building of NAMAs in a MRV manner in Asia and Launch of preparation for the NAMA Guidebook” as well as progress on the JCM initiative, attracting more than 50 people.

In the same venue, OECC opened a booth with the aim to distribute information on MOEJ initiatives, NAMAs, JCM, NAMA/MRV Guidebook, etc.

Detailed information can be found at:

http://www.mmechanisms.org/e/event/details_130607SB38sideevent.html

The screenshot displays the 'New Mechanisms Information Platform' website. The main content area features a news item titled 'UNFCCC SB38 Side Event in Bonn, Germany' with a sub-headline 'First Results of Capacity-building of NAMAs in a MRV Manner in Asia - Launch of preparation for the NAMA Guidebook -'. Below the headline is a collage of three photographs showing participants at the event. The text describes the event's purpose, organizers (MOEJ and OECC), and agenda. The agenda includes an opening speech, a presentation on Japan's contribution to low-carbon societies, a panel discussion on NAMA capacity-building, and a Q&A session.

Agenda

18:30-18:35	Opening speech by Mr. Akira Nitta, Ministry of the Environment, Japan
Part 1: Cooperation activities supported by Japan drive efforts in the introduction of mitigation actions in Asia	
18:35-19:05	Japan's contribution towards formation of Low-Carbon societies (LCSs) in Asia by Dr. Junichi Fujino (National Institute for Environmental Studies/NIES)
19:05-19:35	Presentation of the first results of the NAMA and MRV Capacity-building and the JCM in Asia by Mr. Makoto Kato (OECC)
Part 2: Panel Discussion: Sharing experiences in relation to introduction of NAMA Capacity-building activities Facilitated by Mr. Jiro Ogahara (OECC)	
Discussants: Mr. Uy Kamal (Ministry of Environment/MOE, Cambodia) Mr. Syamphone Sengchandala (Ministry of Natural Resources and Environment/MONRE, Lao PDR) Dr. Damdin Dagvadorj (Ministry of Environment and Green Development/MEGD Mongolia) Dr. Nguyen Khac Hieu (Ministry on Natural Resources and the Environment/MONRE, Vietnam) Dr. Kenzaro Tamura (Institute for Global Environmental Strategies/IGES)	
Part 3: Current efforts and next steps	
19:35-19:45	Launching of our proposal on NAMAs and MRV guidebooks: Lessons from Asia Concept paper and Call for contributions by Dr. Junichi Fujino (NIES)
19:45-19:55	Q&A
19:55-20:00	Closing Remarks

5. Introduction of a Plan for NAMA and MRV Guidebooks

Initiative of the NAMA and MRV Guidebooks

The Ministry of the Environment, Japan, through a network of Japanese organizations has launched the proposal to write NAMA and MRV Guidebooks.



Net Global Reduction for Sustainable Development

National

Sector

Regional

Program

Activity

etc.

NAMAs



MRV



Activity	Category	Sub-Category	Value	Unit
Energy Intensity	Energy Intensity	Electricity	100	kg CO2e/kWh
		Gas	100	kg CO2e/kWh
		Coal	100	kg CO2e/kWh
		Oil	100	kg CO2e/kWh
Flight Transport	Flight Transport	Domestic	100	kg CO2e/passenger-km
		International	100	kg CO2e/passenger-km
		Low Load Factor	100	kg CO2e/passenger-km
		High Load Factor	100	kg CO2e/passenger-km
Passenger Transport	Passenger Transport	Bus	100	kg CO2e/passenger-km
		Tram	100	kg CO2e/passenger-km
		Light Rail	100	kg CO2e/passenger-km
		Subway	100	kg CO2e/passenger-km
Manufacturing	Manufacturing	Iron and Steel	100	kg CO2e/tonne
		Aluminum	100	kg CO2e/tonne
		Cement	100	kg CO2e/tonne
		Other	100	kg CO2e/tonne
Commercial	Commercial	Office	100	kg CO2e/tonne
		Retail	100	kg CO2e/tonne
		Industrial	100	kg CO2e/tonne
		Other	100	kg CO2e/tonne
Household	Household	Residential	100	kg CO2e/tonne
		Commercial	100	kg CO2e/tonne
		Industrial	100	kg CO2e/tonne
		Other	100	kg CO2e/tonne

Lessons from field experiences

Developing and implementing NAMAs / MRV based on Handbooks

Lessons from field experiences

NAMAs and MRV Handbooks

Characteristics of our Guidebooks

1. Comprehensive understanding of NAMAs and MRV (e.g. project-based bottom-up approach and policy-based top-down approach)
2. Based on case studies in Asia and the world that we have conducted together with Asian and global experts
3. Inviting any kind of volunteer efforts to create “NAMAs and MRV Guidebooks” as a common goods to achieve net global GHG reduction and sustainable development

Call for Contributions!

We are looking for any technical contributions to the Guidebook series from those involved in NAMAs and MRV projects at the local or national levels. Your inputs on experiences, implementation results, and good practices will be highly appreciated. While authorship will be recognized, participation will be voluntary.

For NAMA Guidebook:

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Ministry of the Environment



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Thank You!

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