New Market Mechanism Capacity Building
-Osaka General Meeting in FY2012-
<March 7-8, 2013>

Capacity-building to support the readiness for NAMAs in a MRV manner

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Outline

1. Background of NAMAs in a MRV manner
2. OECC's approach to developing NAMAs in a MRV manner under the MOEJ Programme
3. Activities in 4 partner countries

Reference materials

1. Background of NAMAs in a MRV manner

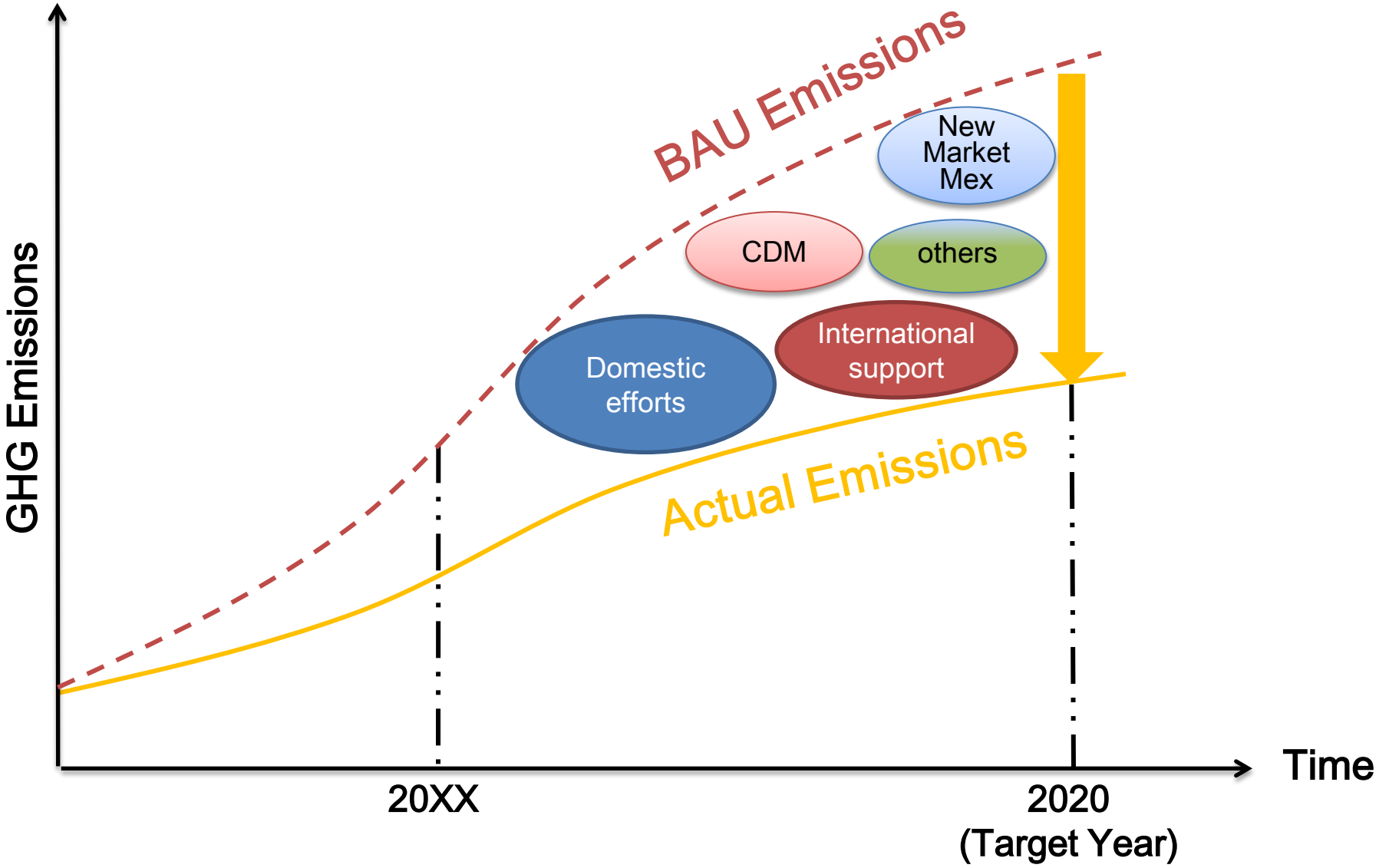
Elements of NAMAs

- 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)

Illustration of mitigation actions in relation to BAU



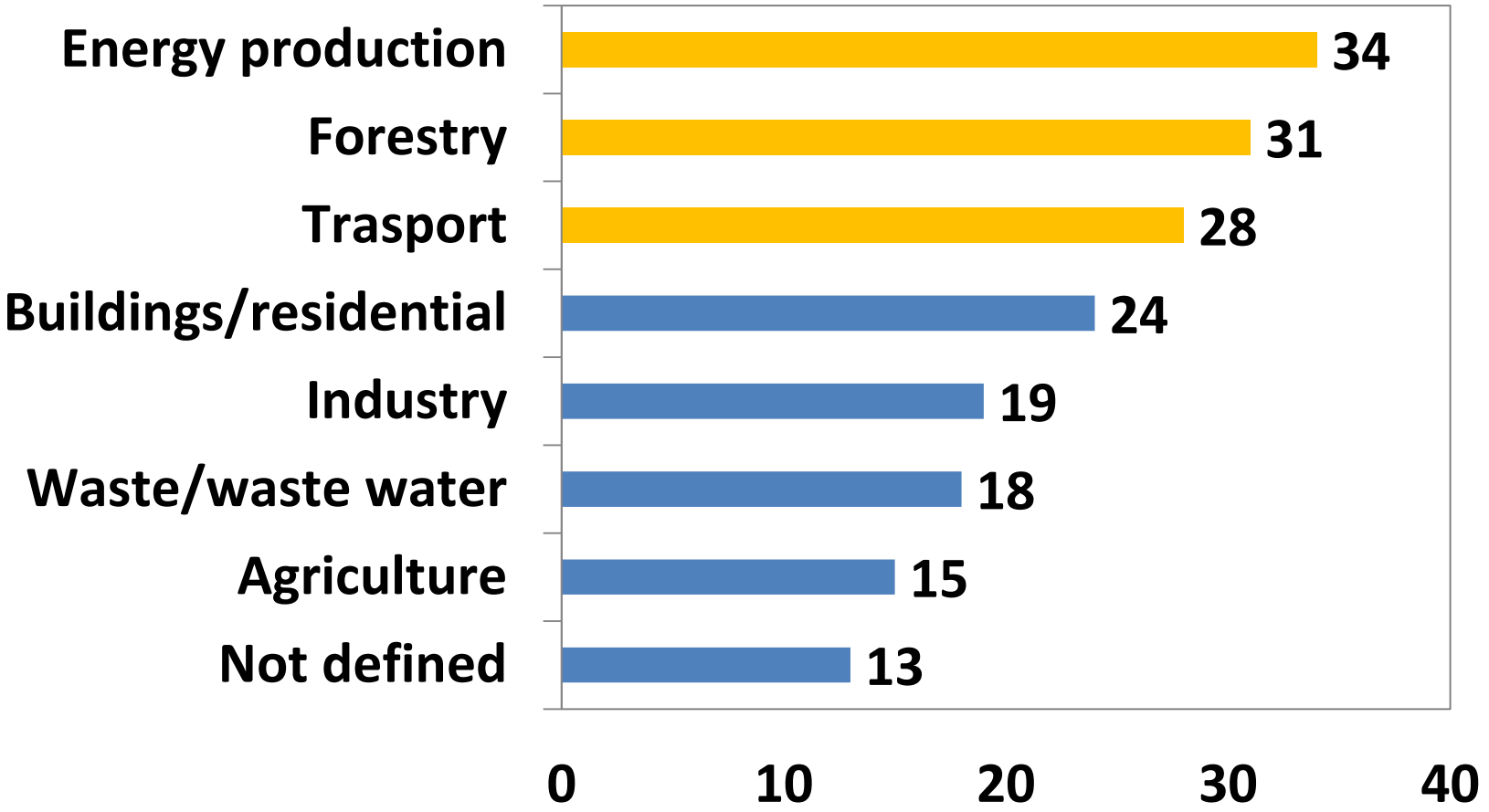
NAMA Response by NAI Parties to UNFCCC (example)

Country	Target	Sectors for NAMAs	Reference Level	Relevant Plan/ Strategy
Bhutan	Carbon Neutral (with Sink)	N/A	N/A	-
China	40-50% /GDP	• 15% for the share of non-fossil fuel • Forest Coverage 40,000,000 ha	2005	China Climate Change Program
Indonesia	26-41% (26% reduction thru unsupported NAMAs)	• Sustainable Peat land • Deforestation • Forestry, Agriculture • Renewable Energy • Waste • Transport	BAU	National Climate Change Action Plan and other development/ sectoral plans
Mongolia	N/A	• Renewable Energy • Construction, Industry • Transport • Agriculture, forestry	N/A	-

Source: : Compilation of information on NAMAs (FCCC/AWGLCA/2011/INF.1)

NAMA Response by NAI Parties to UNFCCC (example)

Wide sector coverage (No. of countries) :

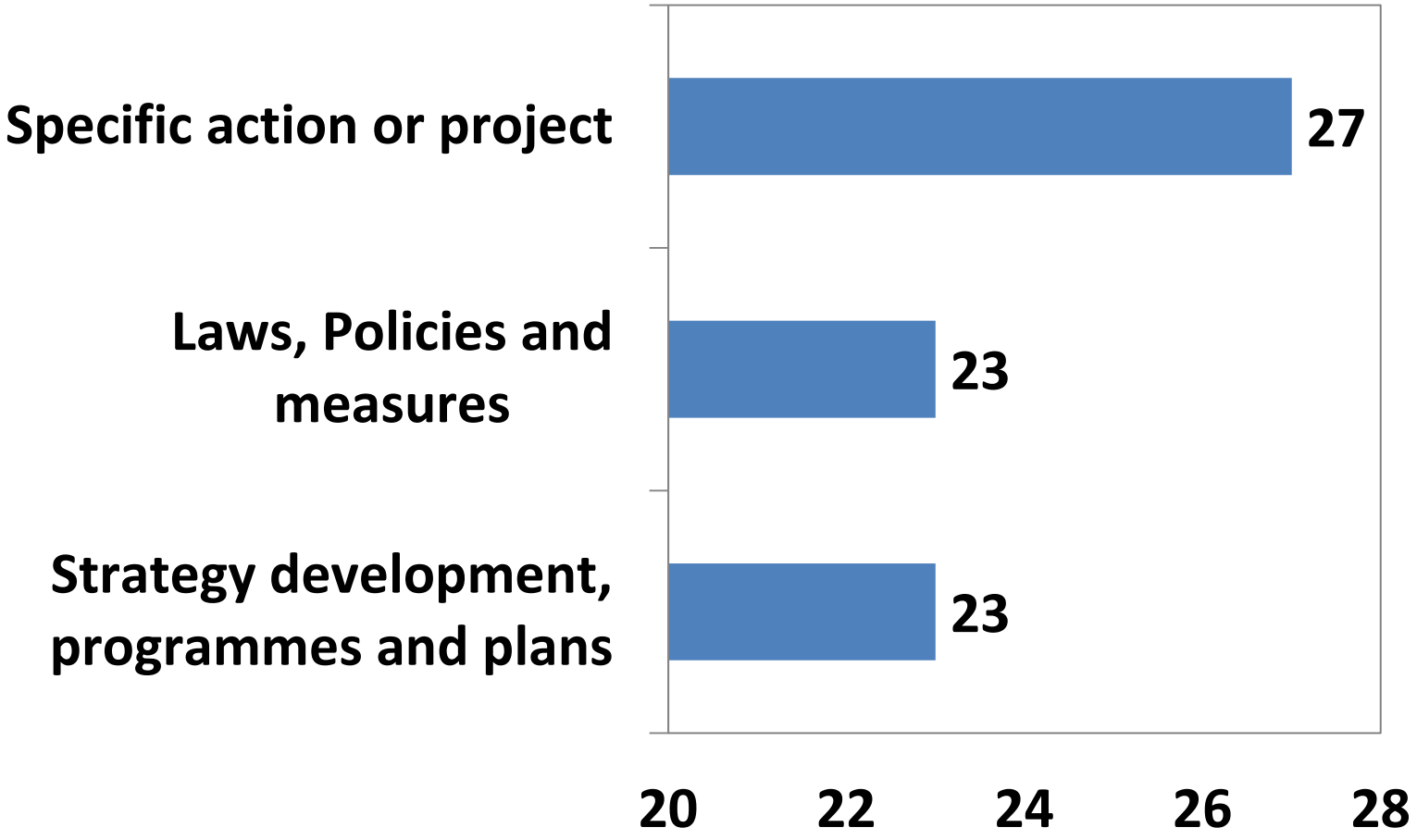


*Data might be slightly different to other studies due to vague expressions in Submissions.
**For the same reason graphs might not reflect exactly the current position of the Parties.

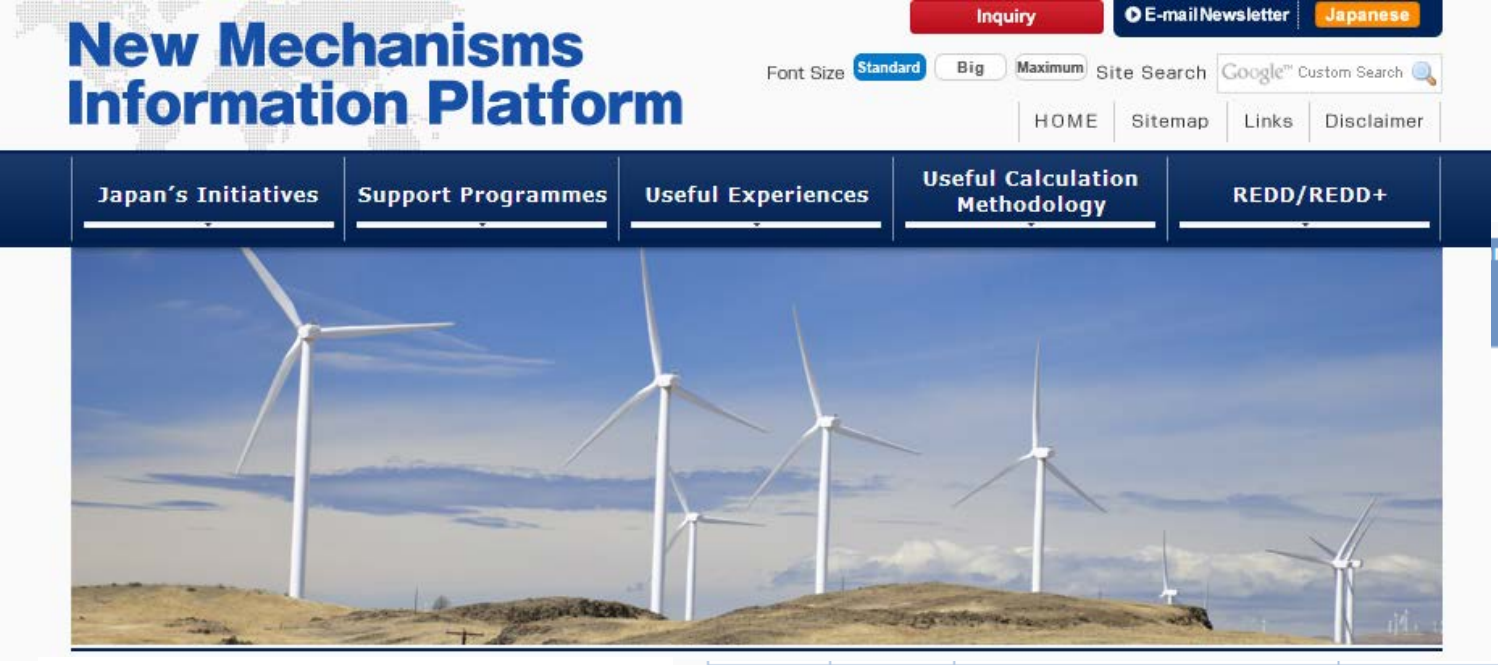
Source: : Compilation of information on NAMAs (FCCC/AWGLCA/2011/INF.1)

NAMA Response by NAI Parties to UNFCCC (example)

Broad range of type of action (No. of countries) :



Source: : Compilation of information on NAMAs (FCCC/AWGLCA/2011/INF.1)



				National Plan on Climate Change (if any)	Other relevant information
				N/A	original text
Togo	N/A	Togo proposes the following NAMAs: ● Increase in forest cover from 7% in 2005 to 30% in 2050 ● Energy efficiency in urban and rural areas ● Conservation of traditional energy sources ● Increased use of renewable energy sources	N/A	N/A	original text (fr)
Tunisia	N/A	Tunisia envisages the following NAMAs: ● Development of renewable energy sources ● Development of alternative energy sources ● Promotion of energy efficiency and sound use of energy ● Development and implementation of environmental standards for industries ● Reforestation/afforestation and prevention of deforestation and land degradation	N/A	N/A	original r/ar)

The Website Platform that contains information on NAMAs submitted to UNFCCC

http://www.mmechanisms.org/e/namainfo/index.html

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

Distinctive Feature of OECC's approach for FY2012 Activities

- Bottom up approach, aggregating mitigation activities with quantified GHG emission reduction (BAU and NAMAs)
- Based on existing and future policies on sectors for identifying activities of emission sources and reduction
- GHG quantification are basically based on equations of the IPCC GHG Inventory Guidelines
- Considers MRV both at activity level and aggregated level
- Utilizes existing domestic reporting systems as much as possible
- Highlights technology aspects in a selected sector for NAMAs

Japan's domestic experience of the Target Achievement Plan, utilizing P-D-C-A Cycle

Quantifying GHG Emissions Reduction

Climate Change Sectoral Strategy

Cambodia Energy Sector Strategy

Others

*Extract data and make fact sheets

Activity1:
Data and Info. collection

Fig 1. Energy Development Plan in BAU and NAMAs

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

Activity2:
GHG Emissions Calculation

Fig 2. GHG Emissions in BAU and NAMAs

	2012	2020
BAU	XXX t/CO2	X,XXX t/CO2
NAMAs	-	X,XXX t/CO2

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

Proposed Steps for NAMA Development

(1) Collection of Info on relevant policies and strategies

Collect and analyze relevant policy documents of development, climate change and related sector

(2) Collection data for BAU in the sector

Collect data for calculating BAU emission with bottom-up approach (eg. List all individual landfills, and collect respective waste volumes in the waste sector)

(3) Quantification GHG emissions of BAU

Quantify GHG emissions based on (2) data, and
a) Identify the calculation formulas
b) Calculate respective emission in BAU
c) Aggregate respective emissions

(4) Examination and selection of NAMAs options

Select possible NAMAs options and technologies based on (1) policies and mitigation strategies and additional consideration.

(5) Quantification GHG emission reduction by NAMAs

Quantify GHG emissions with (4)NAMAs assumptions
a) Set the calculation formulas
b) Calculation
c) Aggregate potential with reduction by NAMAs

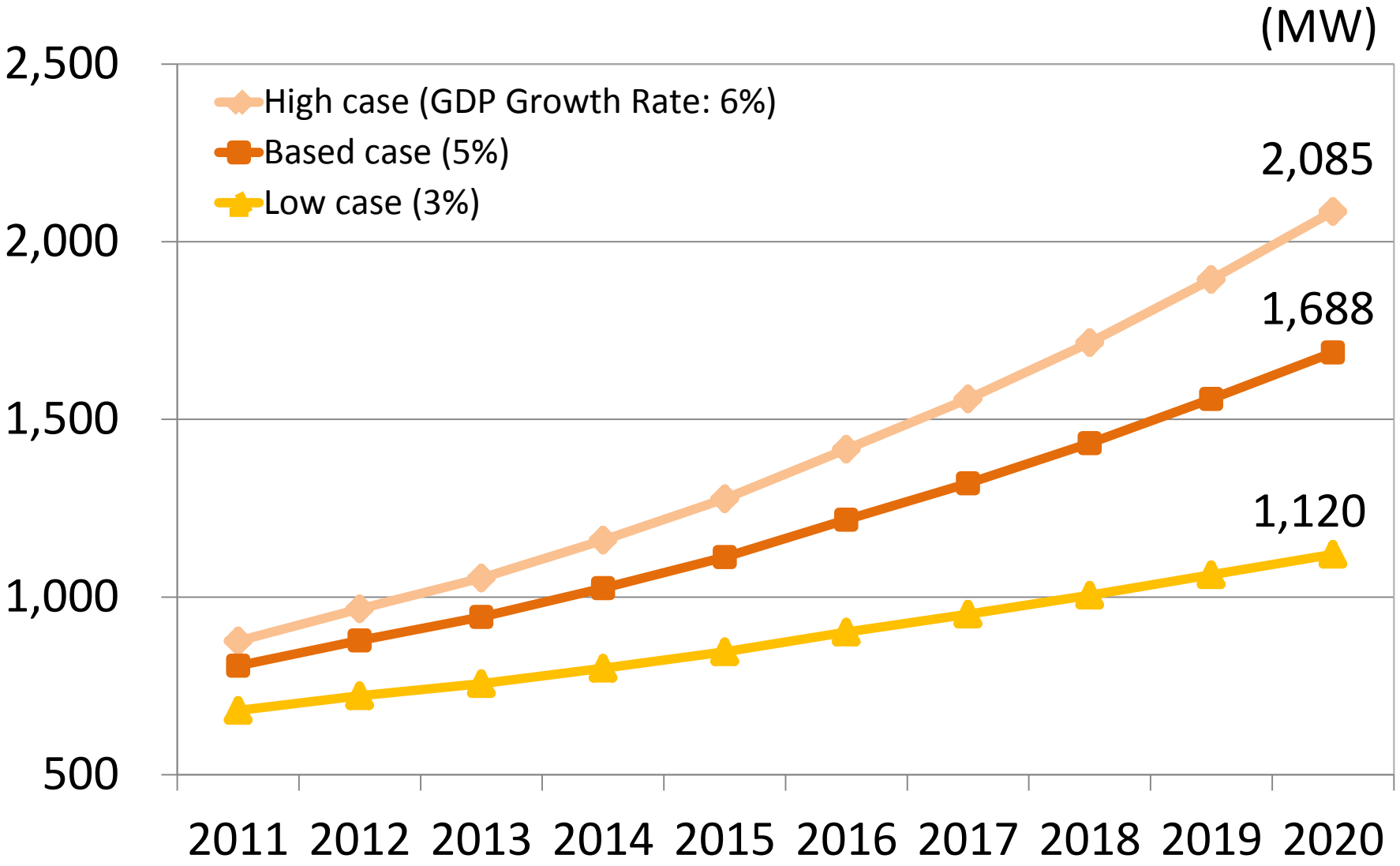
Low-carbon technology survey

Examination MRV methods

Capacity-buildings in Vietnam for NAMAs implication

Source: OECC 2012

BAU: Energy Demand Projection in County A



Source: OECC (Overseas Environemtnal Cooperation Center, Japan) 2012

BAU: Power Development Plan in Cambodia

*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	
11	270 MW Phase 1 of the 700MW Coal Fired Power Plant	Coal	270	2014 ~2015	PPA singed
12	100 MW Coal Fired Power Plant	Coal	100	2016	PPA singed
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		

Source: OECC 2012

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

Source: OECC 2012

GHG Emissions Reduction with mitigation measure

***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 tCO2/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-CO2/MWh)	**625,700 t-CO2**

Source: OECC 2012

Possible Institutional Arrangement

Mongolia
NAMA committee
(verification at macro level)

Secretariat of the Committee (MEGD)

Report

Possible Verification at macro level

- Assessment of Plan
- Verification of the progress report
- Review of aggregated GHG emission reduction
- Assessment of challenges and further needs(PDCA cycle)
- Submission and Report to UNFCCC

Ministries and institutions in charge

Ministry | Ministry of Energy | MEGD | Ministry | Ministry | Ministry

Implementation and verification at micro level* (ER from individual projects)

* For a policy measures not as a project-based(such as taxation policy, etc) may be MRVed at the macro level but still need to have some ways for QA/QC of collected data within its programme.

Verification varies by different financial schemes	
Non-market	Regular monitoring and data collection procedure (such as that of energy regulatory committee's)
JCM/BOCM	JCM meth, third party verification
CDM	CDM meth, monitoring, DOE verification

3. Activities in 4 partner countries

Mongolia

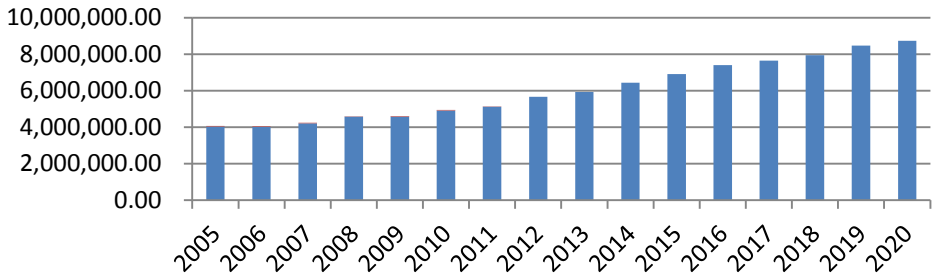
Selected Sector: Energy Supply Sector

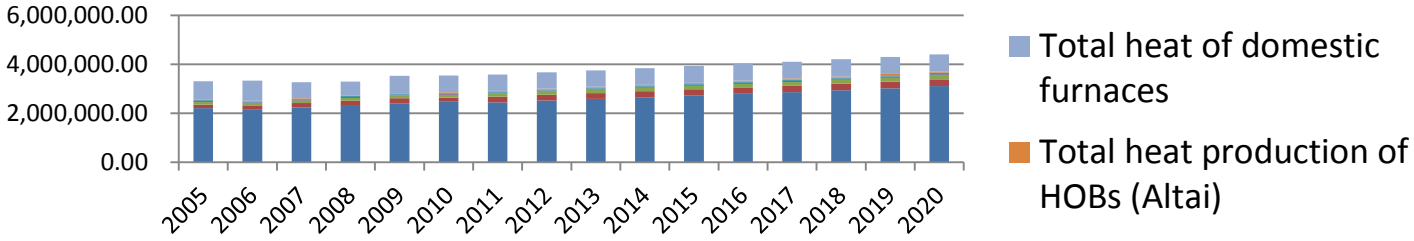
NAMAs: Improvement of CHP Plants

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

Results:

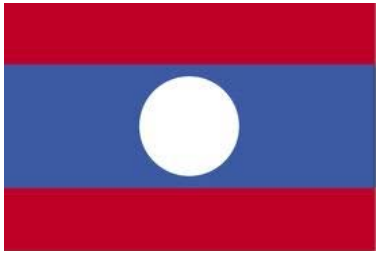
- Calculated BAU and ER by NAMAs ex ante both for power and heat supplies for CHP3 and CHP4
- Sorted out reporting process of activity data (ie Energy Regulatory Committee)
- Discussed technology options for application in NAMAs, including process diagnosis in CHP





Diagnosis by energy technology experts from Japan at CHP

Lao PDR

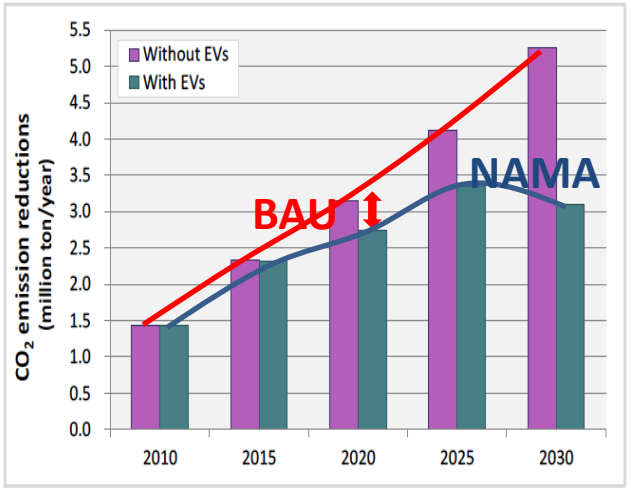


Selected Sector: Transport Sector

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



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

	Motorcycle	Passenger car	Paratransit/ Minibus	Large Bus	Total
Baseline Emissions					
Baseline fuel economy (km/liter)	40	13	6	7.5	
Driving distance (km/day)	16	25	100	50	
CO_2 emission factor ($kgCO_2$/liter)	2.32	2.32	2.58	2.58	
Days per year	365	365	365	365	
Baseline emission (tCO_2/year/vehicle)	0.3	1.6	15.7	6.3	
Project Emissions					
Driving distance (km/day)	16	25	100	50	
Project electricity economy (kWh/km)	0.006	0.110	0.124	0.125	
Grid electricity emission factor (tCO_2/MWh)	0.1	0.1	0.1	0.1	
Days per year	365	365	365	365	
Project emission (tCO_2/year/vehicle)	0.0	0.1	0.5	0.2	
Emission reduction (tCO_2/year/vehicle)	0.3	1.5	15.2	6.0	
Number of EV	697500	45000	12800	500	
Total Emission Reduction (tCO_2/year)	233,813	68,764	195,103	3,025	500,705

Viet Nam

Selected Sector: Waste Sector

NAMAs: National Biodigester Programme

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

Results:

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

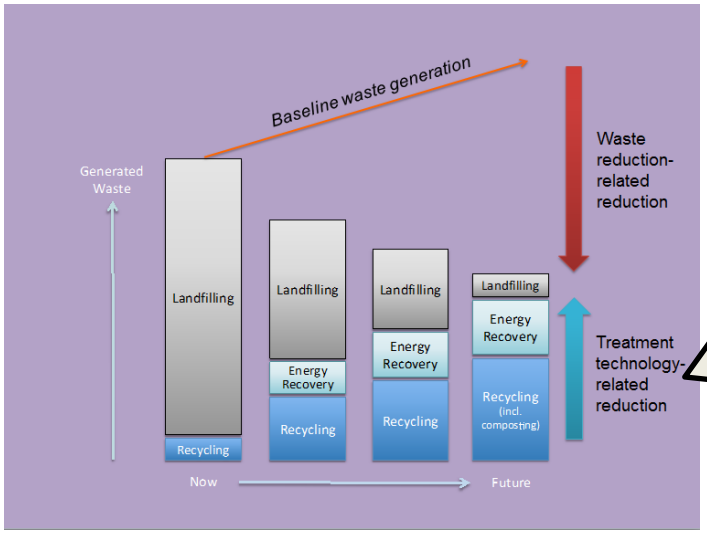


Image of CH4 mitigation while realizing 3R (reuse, reduce, and recycle) society

http://www.mmechanisms.org/event/details_121126COP18sideevent.html

Cambodia

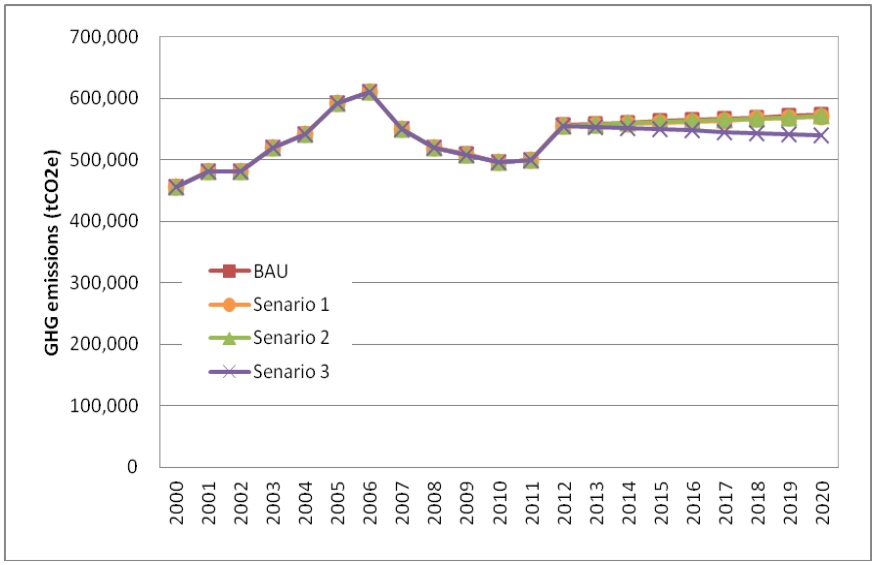
Selected Sector: Agricultural Sector

NAMAs: National Biodigester Programme

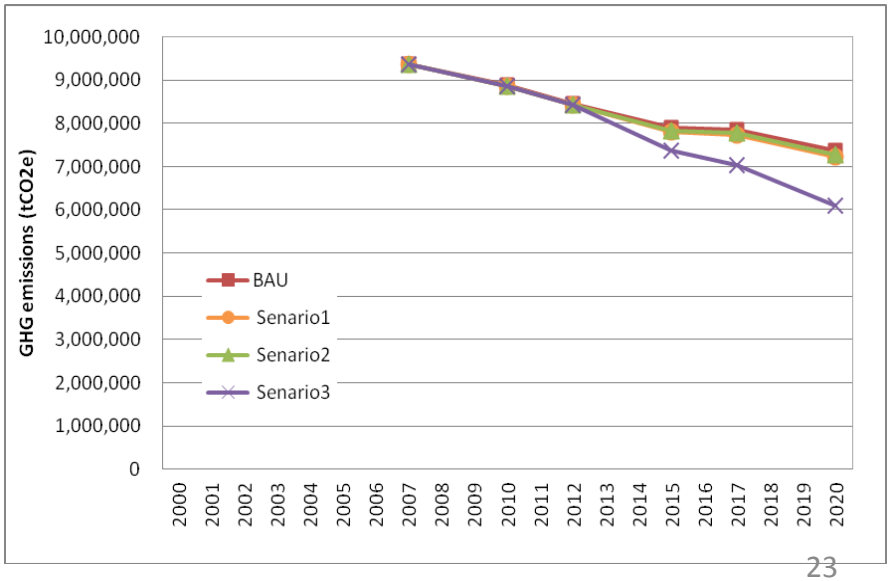
Working Group: MOE, MPWT, MIME chaired by MOE DG

Results:

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



CH4 Emission from animal manure and its Reduction by biodigester Programme



CO2 reduction from non renewable biomass by different fuels


TOSHIBA

Thank you very much!

Reference materials

BALI ACTION PLAN (1/CP.13)

I.b.(ii) **Nationally appropriate mitigation actions** by developing country Parties in the context of sustainable development, supported and enabled by *technology, financing and capacity-building*, **in a measurable, reportable and verifiable manner**;

COPENHAGEN ACCORD(2/CP.15 ANNEX)

5. Mitigation actions(..)including national inventory reports, shall be communicated through national communications(..)**every two years** (..). **Mitigation actions taken by Non-Annex** I Parties will be subject to their **domestic measurement, reporting and verification** the result of which will be reported through their national communications(..). **Nationally appropriate mitigation actions seeking international support** will be recorded in a registry along with relevant technology, finance and capacity building support. (...and) will be subject to international **MRV measurement, reporting and verification**(...)

COPENHAGEN ACCORD(2/CP.15 ANNEX) ….CONTINUED

8. **Scaled up, new and additional, predictable and adequate funding as well as improved access shall be provided to developing countries,** …… The collective commitment by developed countries is to provide new and additional resources, including forestry and investments through international institutions, approaching **USD 30 billion for the period 2010–2012** with balanced allocation between adaptation and mitigation. …… [D]eveloped countries commit to a goal of mobilizing jointly **USD 100 billion dollars a year by 2020** to adress the needs of developing countries……..A significant portion of such funding should flow through the Copenhagen Green Climate Fund.

CANCUN AGREEMENT(1/CP.16)

48. Agrees that developing country Parties will take **NAMAs** (..), aimed **at achieving a deviation in emissions relative to 'business as usual' emissions in 2020**;

50. Invites developing countries (..)to voluntarily **inform** the COP of their intention to implement **NAMAs** (..)**to the secretariat**;

61. Decides that **internationally supported NAMAs** will be MRV-ed, and will be subject to **international MRV** accordance with **guidelines** to be developed under the Convention;

62. Decides that **domestically supported mitigation actions** will be **MRV-ed domestically** in accordance **with general guidelines** to be developed under the Convention;

64. Decides that **information** (in BUR..) should include the national GHG inventory report, **information on mitigation actions**, including a description, analysis of the impacts and associated methodologies and assumptions, progress in implementation and information on domestic MRV, (…);

65. Encourages developing countries **to develop low-carbon development strategies or plans i**n the context of sustainable development;

DURBAN OUTCOME(2/CP.17)

32. **Encourages** developing country Parties who are yet to **submit information on NAMAs** to do so**;**

34. **Invites** developing country Parties(..)to submit(..)**more information relating to NAMAs** , including underlying assumptions and methodologies, sectors and gases covered, global warming potential values used, support needs for implementation of NAMAs outcomes;

35. **Invites** developing country Parties **to submit this information** (..) by 5 March 2012(...);

38. **Encourages** developing country Parties **to develop low-emission development strategie**s, recognizing the need for financial and technical support (..) for the formulation of these strategies, (..);

DURBAN OUTCOME(2/CP.17) CONTINUED...

Biennual Updated Report (BUR)

39. **Adopts the guidelines**,(..), for the preparation of biennial update reports by non-Annex I Parties(..),

40. Affirms that **the Guidelines shall respect the diversity of mitigation actions** and provide flexibility for non-Annex I Parties to report information, while providing an understanding of actions taken;

41. Decides:

(a) That non-Annex I Parties, (..)**should submit their first biennial update report by December 2014**; (..);

(f) That non-Annex I Parties shall **submit a biennial update report every two years**, either as a summary of parts of their national communication in the year when national communication is submitted or as a stand-alone update report; (..);

DURBAN OUTCOME(2/CP.17) ANNEX III

UNFCCC biennial update reporting guidelines for Parties not included in Annex I to the Convention

I. Objectives

II. Scope

III. National greenhouse gas inventory (page 40)

IV. Mitigation actions (page 41)

11. Non-Annex I Parties should provide information, in a tabular format, on actions to mitigate climate change, by addressing anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol.

12. For each mitigation action or groups of mitigation actions including, as appropriate, those listed in document FCCC/AWGLCA/2011/INF.1, developing country Parties shall provide the following information to the extent possible:

(a) Name and description of the mitigation action, including information on the nature of the action, coverage (i.e. sectors and gases), **quantitative goals and progress indicators;**