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NAMA Design and Preparation: Consultation on Selecting Priority NAMAs for Lebanon – follow-up meeting

August 13, 2013 Beirut, Lebanon

Summary Report





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Overview

The follow-up national workshop¹ on "Nationally Appropriate Mitigation Action Design and Preparation: Consultation on Selecting Priority NAMAs for Lebanon" was held on August 13, 2013 in Beirut, Lebanon by the Lebanese Ministry of Environment (MoE) and the United Nations Development Programme (UNDP). The workshop took place within the framework of the Low-Emission Capacity Building Project (LECB) in Lebanon.

The follow-up workshop allowed experts and stakeholders² from public and private institutions, to revisit the outcomes of the first national NAMA workshop which was help on May 22, 2013, as well as start discussion on the national MRV framework, and the nationally developed NAMA submission forms.

The follow-up workshop allowed to further the discussion on the selection criteria, and the reason for the introduction of the "required criteria" (transformational aspect of the NAMA and the financing sources), and subsequently led to the elimination of some of the NAMA concepts identified during the first workshop, the introduction of the new set of criteria which was decided on during the first workshop as well. The follow-up workshop also served as the opportunity to start discussion at the national level on the MRV framework and institutional requirements, and the introduction of the nationally developed NAMA submission forms for both types of NAMAs: those requesting support for preparation and the ones requesting support for implementation.

Objectives of the workshop

- To brief the stakeholders on the final outcomes of the previous NAMA workshop
- To revisit the 13 NAMA concepts and apply the "required criteria"
- To disseminate the selection criteria and explain the process
- To introduce the NAMA submission forms developed by the Ministry of Environment
- To discuss the possible MRV institutional arrangements and its link to NAMA proposals

Workshop Proceedings and Conclusions

Following the welcoming note delivered by the Low Emission Capacity Building Project manager on behalf of the Ministry of Environment, the workshop started with an introductory presentation on the objectives of meeting, followed by the outcomes/results of the NAMA workshop held on May 22, 2013.

The two sets of NAMA prioritization criteria were presented with explanatory notes on the changes from the original sets as indicated in table 1, in addition to the pass/fail "required criteria":

¹ Agenda in annex 1.

² List of Attendees is attached in Annex 2.

- 1. Identified financing source and type, i.e., whether the proposed idea has already an allocated budget in which case it could be further considered as a "unilateral NAMA", and whether the funding is from a national source as opposed to an external funding source not originally allocated/earmarked as climate financing but is official development assistance to Lebanon. If the entire NAMA idea is funded by Official Development Assistance (ODA), it cannot be considered as NAMA-able. If a portion of the funding is already secured from ODA or government funding, only the additional funding requirements can be requested through a NAMA process in which case the allocations have to be clearly identified and tracked.
- 2. Transformational, i.e., the proposed NAMA idea is an action that would lead to a e.g., market or policy transformation leading to a low emission strategy as opposed to a single action that does not have a e.g. sectoral impact. That is a NAMA should strive for strategic, long-term sustainable development benefits beyond mere GHG emissions reductions and aim at catalysing transformation of the national or sectoral development towards a less or low carbon development path.

Criteria	Ranking score (1, 2 or 3)	Preferential score (out of 100, i.e. the total of this column should be 100)	Total
GHG reduction potential	1 (3)	30	
Co-benefits	2 (1)	30	
 Economic co-benefits 			
 Social co-benefits 			
 Environmental co-benefits 			
 Adaptation to Climate Change 			
High level political support	2 (3)	15	
MRV- ability	3 (2)	10	
Institutional readiness to implement	1 (2)	5	
Market readiness	2(1)	5	
Financial feasibility	1 (3)	5	

Table 1. The selection criteria with their weights

The 13 NAMA ideas encompassing the energy, waste and transport sectors, originally developed were revisited:

- 1. Waste-to-Energy (75.5 MW) supporting the national 12% RE target by the Ministry of Environment;
- Anaerobic digestion and electricity generation (15-25 MW) supporting the national 12% RE target by the Ministry of Environment (as part of the 2nd TNA outputs);
- Photovoltaic power station (10 MW) supporting the national 12% RE target by the Ministry of Environment (as part of the 2nd TNA outputs);

- Enhancing hydropower potential (233 MW new generation + 92 MW rehabilitation) supporting the national 12% RE target – by the Ministry of Energy and Water (as part of the Policy Paper of the Energy Sector);
- 5. Large wind farm (500 MW) supporting the national 12% RE target by the UNDP Country Energy Efficiency and Renewable Energy Demonstration Project for the Recovery of Lebanon (as part of the Policy Paper of the Energy Sector);
- 6. Enhancing micro-hydropower potential (5 MW & more) supporting the national 12% target by the Ministry of Energy and Water (as part of the Policy Paper of the Energy Sector);
- Rehabilitation of the Zouk and Jieh power plants to restore performances and reduce emissions

 by the Ministry of Energy and Water (as part of the Policy Paper of the Energy Sector);
- 8. Waste-to-Energy from Wastewater treatment plants: Energy from Waste water Sewage Sludge in Lebanon (7.32 MW to 11.68 MW) by the Ministry of Energy and Water;
- 9. HFO conditioning solution for the conventional thermal power plants of Zouk, Jieh and Hreiche to reduce emissions and HFO consumption by the Ministry of Energy and Water (as part of the Policy Paper of the Energy Sector);
- 10. Scaling up renewable energy and energy efficiency in the Lebanese building sector by the Lebanese Center for Energy Conservation (as part of the National Energy Efficiency Action Plan);
- 11. Passenger cars swap programme by fuel efficient vehicles by the Ministry of Environment (as part of the 2nd TNA outputs);
- 12. Passenger cars swap programme by hybrid electric vehicles by the Ministry of Environment (as part of the 2nd TNA outputs)³;
- 13. Bus mass transit on dedicated lanes by the Ministry of Environment (as part of the 2nd TNA outputs).

The participants agreed on the following 5 NAMA proposals based on the prequalification "required criteria":

- 1. Waste-to-Energy (75.5 MW) supporting the national 12% RE target by the Ministry of Environment;
- Enhancing hydropower potential (233 MW new generation + 92 MW rehabilitation) supporting the national 12% RE target – by the Ministry of Energy and Water (as part of the Policy Paper of the Energy Sector);
- 3. Large wind farm (500 MW) supporting the national 12% RE target by the UNDP Country Energy Efficiency and Renewable Energy Demonstration Project for the Recovery of Lebanon (as part of the Policy Paper of the Energy Sector);
- 4. Scaling up renewable energy and energy efficiency in the Lebanese building sector by the Lebanese Center for Energy Conservation (as part of the National Energy Efficiency Action Plan);
- 5. Passenger programme by fuel efficient vehicles and hybrid electric vehicles by the Ministry of Environment (as part of the 2nd TNA outputs)⁴.

³ This and the previous NAMA idea (fuel efficient vehicles and hybrid electric vehicles) have been combined into one NAMA idea

⁴ The 5th NAMA concept is the combination of the 11th and 12th concept presented during the first NAMA workshop.

The discussion then revolved around the involvement of the Ministry of Finance during the negotiation phase of the NAMA (parts related to the financing) and it was noted that such an option will send a clear indication to the donors on the country ownership of the proposed NAMA, and therefore political support for the proposed NAMA. It will also show coherence and involvement of various parties. For example, if an Energy NAMA proposal is being negotiated, one scenario could be that MoE works on MRV, MoEW works on the technical part, and Ministry of Finance discusses financial agreements. This is important because of the financial repercussions of the NAMA funding type (e.g., grant vs loan). With respect to the funding type, the potential benefits of NAMA financing was discussed, given that such financing is conditional. Lebanon already has access to capital markets and to concessional loan financing from bilateral and multilateral agencies without the NAMA financing conditions – and therefore receiving NAMA financing from such means/sources would increase the number of conditions for such financing, i.e., why would Lebanon work on financing through a NAMA if it might be less complicated (ex. less donors involved, no MRV) to request funding through more traditional tools?

If the NAMA is government owned, the Council of Ministers has to issue approval on the type of funding with Parliamentary ratification needed for loans. If the NAMA has value added because funding for NAMAs should be additional to existing ODA, then it is more likely that the Ministry of Finance would not recommend applications other than for grants depending on the project.

The Ministry of Finance would need to revert on which financing schemes that are currently options for NAMAs it is willing to consider.

The discussion then was directed towards the MRV arrangements at the national level. It was brought to the attention of the participants that the Ministry of Environment is planning to request from the NAMA developers, to allocate as part of the MRV component of the NAMA proposal, funds for the MoE; these funds will be used by MoE for capacity building, institutional set-up and to MRV the activities during the implementation phase of the NAMA. The requested fund per NAMA amounts to USD 150,000-200,000. It was proposed, in case this was accepted nationally as part of the NAMA process, to explore the option of having such an overhead in annual installments instead of a lump-sum, and to differentiate between NAMA projects based on the specific MRV requirements.

As a final agenda item, the nationally developed NAMA submission templates were introduced. The two forms (one for NAMA requesting support for preparation and another one for NAMA requesting support for implementation) were discussed. It was emphasized on the fact that the NAMA submission form will serve as a tool to unify the available information into a single format with comparable information, but also it will serve as a checklist to make sure that the proposed NAMAs have a complete documentation/information. The checklist required for NAMAs requesting support for implementation includes 7 items as indicated below:

- 1. Letter of Confirmation (Willingness) from the Beneficiary(ies)
- 2. Financial Analysis Report
- 3. GHG Emission Reduction Estimation Methodology Report
- 4. Baseline Scenario Report
- 5. MRV Arrangements Report
- 6. Contribution to Sustainable Development Report
- 7. Stakeholder Consultation Report

Next Steps

The participants decided to score the 5 NAMA options using the new scoring system; the criteria with the explanations on how to score, as well as the proposals will be shared with the participants by email, where a deadline to score and submit their scores by email.

The MoE requested feedback on the NAMA submission forms prepared for Lebanon. Once the forms are shared with the participants, comments are welcomed.

The participants decided to have the third meeting on NAMA process during the week of September 9, 2013 where the above-mentioned two items will be on the agenda – therefore finalizing the NAMA selection prioritization process, further the discussion on the national MRV arrangements and finalize the format of the nationally developed NAMA submission forms.

Annexes

Annex 1. Agenda

Annex 2. List of Participants

Annex 3. NAMA submission forms

Annex 4. Photos from the workshop





NAMA DESIGN AND PREPARATION:

Consultation on selecting priority NAMAs for Lebanon

Follow-up meeting

Green Room – Ministry of Environment

Beirut – Tuesday, August 13, 2013

Agenda			
Time	Sessions	Potential speakers	Objective of the session
09.45 - 10.00	Arrival/Registration		
10.00 - 10.30	Welcoming notes/opening/Briefing on previous meeting outcomes	MoE/UNDP	 To introduce the objectives of the meeting Update on previous meeting outcomes
10.30 - 11.00	Revisiting the NAMA proposals	MoE/UNDP/Participants	 To go over the potentially promising NAMA proposals and decide on ways forward
11.00 - 11.15	MRV (Measuring, reporting, Verifying) institutional requirements	MoE/UNDP	 To start the discussion on the institutional structure of the MRV process in Lebanon and its link to the NAMA proposals
11.15 - 11.30	Nationally developed NAMA submission templates	MoE/UNDP	 To present the draft NAMA submission templates developed by the Ministry of Environment
11.30 - 12.00	Open discussion and Other matters raised by participants	Participants	
	Lunch		



Federal Ministry for the Environment, Nature Conservation and Nuclear Safety



An Australian Government Initiative

Annex 2. List of Participants

	Name	Institution	Email	Phone
1	Lea Kai	UNDP-Ministry of	l.kai@moe.gov.lb	03-744252
		Environment		
2	Vahakn Kabakian	UNDP-Ministry of	vahakn@moe.gov.lb	03-527679
		Environment		
3	Ramzi Shasha	Ministry of	Ramzi_shasha@yahoo.com	71-794522
		Industry/National		
		Council for the		
		Environment		
4	Melda Jabbour	Lebanese Center for	melda.jabbour@lcecp.org.lb	03-112766
		Energy Conservation		
5	Lea Hakim	UNDP- Ministry of	leah@finance.gov.lb	01-981057
		Finance/National		
		Council for the		
		Environment		
6	Walied Sayegh	UNDP – Ministry of	walidsa@finance.gov.lb	70-249672
		Finance		
7	Jihan Seoud	UNDP E&E	Jihan.seoud@undp.org	01-962493
8	Charbel Mansour	Lebanese American	charbel.mansour@lau.edu.lb	
		University		
9	Dietmar	Italian Development	dietmar.ueberbacher@esteri.it	76-725249
	Uberbacher	Cooperation		
10	Bassam Sabbagh	Ministry of	b.sabbagh@moe.gov.lb	01-976555
		Environment		
11	Yara Daou	UNDP-Ministry of	<u>y.daou@moe.gov.lb</u>	01-976555
		Environment		
12	Bernard Ammoun	Green Arms	bammoun@rationalfinancial.com	70-850525
13	Carla Nassab	UNDP-CEDRO	carla.nassab@undp-	01-981944
			lebprojects.org	
14	Jean Stephan	Ministry of	dr.jeanstephan@gmail.com	03-814109
		Agriculture		
15	Jessica Obeid	UNDP-CEDRO	jessica.obeid@undp-	01-981944
			lebprojects.org	
16	Hassan Harajli	UNDP-CEDRO	Hassan.harajli@undp-	01-981944
			lebprojects.org	

Annex 3. NAMA submission forms

REQUIRED INFORMATION BY THE NATIONAL COORDINATING AUTHORITY – MINISTRY OF ENVIRONMENT FOR NATIONALLY APPROPRIATE MITIGATION ACTIONS REQUESTING SUPPORT FOR PREPARATION

A. General Information

Title of the NAMA:	
Date of submission:	

Name of entity(ies) submitting the project:	
Role of entity(ies) in the submitted project: Describe the expected role and task of each entity in the proposed NAMA	
Signature of the entity(ies): Confirmation on willingness to take the above described responsibilities	
Date(s) of signature(s):	
Organisational Category of each entity <i>Please provide the type of organization as well as</i> <i>contact details of all entities participating in the</i> <i>NAMA (use as many as required to match the total</i> <i>number of entities).</i>	 a. Public Sector b. Municipality – Local Administration c. Private Sector d. Not-for-profit Non-Governmental Organisation e. Other, please specify:
Contact Person(s)	
Full Address	
Telephone/fax	
Email:	

B. Description

Description of the Mitigation Action	
Describe the contents of the proposed mitigation	
actions/measures relevant to GHG emission	
reduction	
Coverage	Sector (which sector the NAMA belongs to):
	GHG (indicate which GHG(s) will be reduced):
	Reduction (indicate amount of GHG expected to
	reduce in CO _{2eq} .):
	Type and location of Beneficiaries:
	Type and location of beneficialles.
	Number of Beneficiaries:
	Number of Beneficialies.
Implementation Schedule	Current status (latest progress – e.g., feasibility
	study completed, etc.):
	Expected Start date (technical implementation
	of NAMA):
	Duration of the project (number of months for
	completion):
Technology/measure	
Describe in detail the technology or measure to be	
introduced by the NAMA (use a separate sheet if	
needed)	
	<u> </u>

Location/site Indicate the exact address, if applicable. Otherwise, name of municipality, city, village, geographical coordinates, etc. where the NAMA will take place. (Attach a map)	
Beneficiary(ies) ⁵ Indicate whether there is buy-in from the potential beneficiary(ies)	 Has (have) the beneficiary(ies) been contacted: 1. Yes (attach letter of confirmation on willingness to participate) 2. No
Expected cost of <u>Preparation</u> : Describe the expected cost required for the formulation of the NAMA (feasibility study, technical design, establishment of monitoring plan, etc.)	
Amount co-shared: Indicate any amount already secured for the preparation of the NAMA.	
Amount requested: Indicate the amount to be requested as financial support	
Financing sources: <i>Describe any identified financing sources (partial or otherwise) for the NAMA.</i>	

⁵ This might include ministries, local governments, etc.

Support required for <u>Preparation</u> :
1. Amount of Financial support requested:
2. Technical (e.g., feasibility study, provision of information on technology, financial analysis, etc.):
3. Capacity Building⁶: (e.g., capacity building on available technology, establishment of MRV procedure and system, etc.):
4. Other, Specify:
5. Financial support – Type and Source: indicate what type of financing is being sought (loan, concessional loan, debt swap, grant, equity, foreign direct investment, etc.)

 $^{^{6}}$ It is mandatory for all NAMA proposals to include an institutional capacity building component on the national MRV system. The financial support for the MRV component (for both NAMA types – i.e., seeking support for preparation and seeking support for implementation) – an amount of USD 150,000 to 200,000 per NAMA for MRV should be added as a grant to the Ministry of Environment to sustain the institutional requirements for MRV throughout the lifetime of the NAMA project

D. Other Information

Stakeholder consultation:	
Describe the stakeholder consultation process that	
is envisaged to be undertaken. Be as specific as	
possible, with information on potential	
stakeholders, and approximate date(s) provided.	

E. Contact Information

Organization: Ministry of Environment
Service: Environmental Technology
Department: Air Quality
Contact Person: Ms. Rola El-Sheikh
Title: Head of Service
Phone: +961-1-976555 ext. 434
Email: rola.sh@moe.gov.lb

REQUIRED INFORMATION BY THE NATIONAL COORDINATING AUTHORITY – MINISTRY OF ENVIRONMENT

For NATIONALLY APPROPRIATE MITIGATION ACTIONS REQUESTING SUPPORT FOR IMPLEMENTATION

F. General Information

Title of the NAMA:	
Date of submission:	

Name of entity(ies) submitting the project:	
Role of entity(ies) in the submitted project: Describe the expected role and task of each entity in the proposed NAMA	
Signature of the entity(ies): Confirmation on willingness to take the above described responsibilities	
Date(s) of signature(s):	
Organisational Category of each entity <i>Please provide the type of organization as well as</i> <i>contact details of all entities participating in the</i> <i>NAMA (use as many as required to match the total</i> <i>number of entities).</i>	 f. Public Sector g. Municipality – Local Administration h. Private Sector i. Not-for-profit Non-Governmental Organisation j. Other, please specify:
Contact Person(s)	
Full Address	
Telephone/fax	
Email:	

G. Description

Description of the Mitigation Action Describe the contents of the proposed mitigation actions/measures relevant to GHG emission reduction	
Coverage	Sector (which sector the NAMA belongs to):
	GHG (indicate which GHG(s) will be reduced):
	Reduction (indicate amount of GHG expected to reduce in CO _{2eq} .):
	Type and location of Beneficiaries:
	Number of Beneficiaries:
Implementation Schedule	Current status (latest progress – e.g., feasibility study completed, etc.):
	Expected Start date (technical implementation of NAMA):
	Duration of the project:
Technology/measure Describe in detail the technology or measure to be introduced by the NAMA (use a separate sheet if needed)	

Location/site Indicate the exact address, if applicable. Otherwise, name of municipality, city, village, geographical coordinates, etc. where the NAMA will take place. (Attach a map)	
Beneficiary(ies)⁷ Indicate whether there is buy-in from the potential beneficiary(ies)	 Has (have) the beneficiary(ies) been contacted: 3. Yes (attach letter of confirmation/ willingness to participate) (see checklist)
	4. No
Expected cost of <u>Implementation</u>: Describe the expected cost required for the implementation of the NAMA (equipment purchase, O&M, etc.)	
Amount co-shared: Indicate any amount already secured for the implementation of the NAMA.	
Amount requested: Indicate the amount to be requested as financial support	

⁷ This might include ministries, local governments, etc.

H. Information on Support Requested	
Indicate what type of support are needed for the completion of the proposed NAMA:	Support required for Implementation:
Use as many options as applicable	1. Amount of Financial support requested:
	2. Technical (e.g., provision of equipment/ technology, etc.):
	3. Capacity Building: (e.g., capacity building/development of human resources for sustainable operation, MRV component, etc.):
	4. Other, Specify:
	5. Financial – Type and Source: Describe the type of financing that is being sought (loan, concessional loan, debt swap, grant, equity, foreign direct investment, etc.)
Financial Analysis: Results of financial analysis of the proposed NAMA using indicators such as <u>Investment Profitability</u> <u>Analysis</u> (Simple Rate of Return /pay-back period); <u>Discounted Cash-Flow</u> (internal rate of return/net present value); and <u>Return on Investment Analysis</u> (Liquidity analysis/Capital structure analysis); etc. <u>Please attach the complete report (see checklist)</u>	

I. Expected GHG Emission Reductions		
Indicate the expected GHG emission reduction potential of the proposed NAMA: Indicate the GHG emission reduction estimations on tonnes of CO_{2eq} . If the emission reduction is from non- CO_2 gases, such as CH_4 and N_2O , kindly convert into CO_{2eq} using the IPCC SAR 100-year GWPs ⁸ .	 Annual reduction in tCO_{2eq}: Total reduction in tCO_{2eq} over the lifetime of the NAMA: 	
Methodologies:Indicate the methodology(ies) used for the GHG emission reduction estimation (see annex A).In case of any deviation from the methodologies described in Annex A, provide in a separate report (see checklist) a clear description of any modification and the reason/justification for such a deviation.In case where a new methodology is developed, a full description in a separate report (see checklist) is needed with assumptions and justifications. Calculation steps, including used equations, and detailed sources of data should also be provided.		
Calculation of emission reduction: Describe briefly the methodology(ies) applied as indicated above. Use as many data/parameter as applicable	 Data/parameter: a. Unit: tCO_{2eq}. b. Description: c. Source of data: d. Value applied: e. Any additional comment: 	
	2. Data/parameter:a. Unit:b. Description:	

⁸ <u>http://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html#table-2-14</u>

	c. Source of data:
	d. Value applied: e. Any additional comment:
Baseline scenario: Describe what would be the situation in the future if the proposed NAMA does not take place, e.g., the current situation will continue (no new technology will be installed or no improvement/efficiency achieved) due to financial/technical/institutional constraints. Use a <u>separate report</u> (see checklist) for the baseline scenario.	<u>Sources</u> , <u>amount</u> and <u>type</u> of GHG emissions in the baseline scenario:

J. Measurement, Reporting and Verification (MRV)

Monitoring Plan and Structure: Describe the overall MRV plan and the structure for the proposed NAMA. Include the organizational chart, institutions, personnel/departments responsible for monitoring	
and reporting each activity. A <u>separate report</u> (see checklist) for the MRV arrangements will have to be submitted.	

Monitoring plan	1.		Indicator:
Data and parameters to be monitored:		a.	Unit:
Specify the indicator that will be monitored			
throughout the implementation of the proposed		b.	Description:
NAMA; this will serve to account for the GHG			
emission reduction achieved by the NAMA.			
Use as many as applicable.			
		_	Course of data
		c.	Source of data:
		d.	Means of verification:
		e.	Monitoring frequency:
		_	
		f.	Responsible Party:
		g.	Any additional comment:
	2.		Indicator:
		a.	Unit:
		_	
		b.	Description:
		с.	Source of data:
		d.	Means of verification:
		e.	Monitoring frequency:
			÷ ,
		f.	Responsible party :
			,
		g.	Any additional comment:
		9.	.,

K. Other Information

Contribution to Sustainable Development Indicate how the proposed NAMA will contribute to sustainable development. For analyzing and scoring the contribution to sustainable development of the proposed NAMA, use the multi-attribute utility theory (MAUT) analysis approach. For sustainable development criteria and weights, please refer to Annex B. A <u>separate report</u> (see checklist) for the Contribution to Sustainable Development will have to be submitted.	Description:
	Score (see Annex B) :
Stakeholder consultation: Describe the stakeholder consultation process that took place during the preparation phase. Use a <u>separate report</u> (see checklist) for the Stakeholder Consultation process.	

L. Contact Information

NAMA National Coordinating Authority:	Organization: Ministry of Environment
	Service: Environmental Technology
	Department: Air Quality
	Contact Person: Ms. Rola El-Sheikh
	Title: Head of Service
	Phone: +961-1-976555 ext. 434
	Email: rola.sh@moe.gov.lb

M. Checklist

Checklist:

In addition to the current form ("Required Information by the National Coordinating Authority – Ministry of Environment for Nationally Appropriate Mitigation Actions Requesting Support for Implementation), the following documents should be attached:

8. Letter of Confirmation (Willingness) from the Beneficiary(ies) (Section B, page 3)	
9. Financial Analysis Report (Section C, page 4)	
10. GHG Emission Reduction Estimation – Methodology Report (Section D, page 5)	
11. Baseline Scenario Report (Section D, page 6)	
12. MRV Arrangements Report (Section E, page 7)	
13. Contribution to Sustainable Development Report (Section F, page 9)	
14. Stakeholder Consultation Report (Section F, page 9)	

Annex A: Methodologies for GHG emission reduction estimation

Methodology	Sectors	Reference link
CDM	 Energy industries Energy distribution Energy demand Manufacturing industries Chemical industries Construction Mining/mineral production Metal production Fugitive emissions from production and consumption of halocarbons and sulphur hexafluoride Solvent use Waste handling and disposal Afforestation and reforestation Agriculture 	http://cdm.unfccc.int/methodologies/index.html
IPCC revised 1996 guidelines	 Energy Industrial processes Agriculture Land use, land use Change and forestry Solvent and other product use Waste 	http://www.ipcc-nggip.iges.or.lp/public/gl/invs1.html
UNEP	 Transport (mobile fuel combustion) Stationary fuel combustion (e.g., electricity consumption in buildings, heating, hot water and cooking) Fugitive emissions (e.g., leakage of GHG from refrigeration and air-conditioning equipment) 	http://www.unemg.org/Resources/UnitedNationsGreenhouseGasC alculator/tabid/102178/Default.aspx
IFC Carbon Emissions Estimator	 Fuel consumption Refrigeration/Air conditioning Waste 	http://www1.ifc.org/wps/wcm/connect/Topics_Ext_Content/IFC_E xternal_Corporate_Site/CB_Home/Policies+and+Tools/GHG_Accou nting

Tool	- Wastewater	
1001		
	- Gas flaring	
	- Electricity	
	- Cement	
	- Metal industry	
	- Geothermal gases	
	- Reservoirs and dams	
	- Forestry	
	- Land use	
	- Livestock	
	- Chemicals	
	- Glass production	
	- Lime production	
	- Oil and mining	
	- Process inputs and materials used	
	- Landfill gas capture	
	- Manure Management	
World Bank	 Energy (including transport) 	http://documents.worldbank.org/curated/en/1998/09/1976183/gr
	 Industry and infrastructure 	eenhouse-gas-assessment-handbook-practical-guidance-document-
	- Land use (forestry, soil conservation, watershed	assessment-project-level-greenhouse-gas-emissions
	management, etc.)	
OECD-IEA	- Energy (Electric power sector)	http://www.oecd.org/env/cc/documentsonelectricityandclimatech
		ange.htm
ADB	- Energy	http://www.adb.org/publications/transport-and-carbon-dioxide-
	- Transport	emissions-forecasts-options-analysis-and-evaluation
GEF	- Energy (energy efficiency and renewable energy)	http://www.thegef.org/gef/node/313
JICA	- Forestry and natural resources (afforestation, forest	http://www.jica.go.jp/english/our_work/climate_change/mitigatio
	conservation)	<u>n.html</u>
	- Transport (MRT, BRT)	
	- Energy efficiency in industrial facilities	
	- Energy (fuel switch, improved efficiency in power	
	generation facilities)	
	 Renewable Energy (wind, biomass) 	
		1

	-	Sewage and urban hygiene	
JBIC	-	Energy (thermal power generation, electric power generation, thermal energy supply from biomass residue, and waste heat recovery and use) Energy efficiency	http://www.jbic.go.jp/en/about/environment/j-mrv/
WRI-WBCSD	-	Industry (cement, iron and steel, pulp and paper) Office-based and service sectors	http://www.ghgprotocol.org/calculation-tools
Gold Standard	- - -	Energy Energy efficiency Transport	http://www.cdmgoldstandard.org/project-certification/gs- methodologies
CCB Standards	-	Forestry (afforestation and reforestation, sustainable forest management, forest recovery)	http://www.climate-standards.org/ccb-standards/
CCAR	- - -	Local government operations Power/utility Cement	http://www.climateregistry.org/tools.html





Annex 4. Photos from the workshop



