



LOW EMISSION
CAPACITY BUILDING
PROGRAMME



International Partnership
on Mitigation and MRV



REPUBLIC OF LEBANON
MINISTRY OF ENVIRONMENT



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NAMA Design and Preparation: Consultation on Selecting Priority NAMAs for Lebanon

**May 22, 2013
Beirut, Lebanon**

Summary Report



Federal Ministry for the
Environment, Nature Conservation
and Nuclear Safety



An Australian Government Initiative

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Overview

The national workshop¹ on “Nationally Appropriate Mitigation Action Design and Preparation: Consultation on Selecting Priority NAMAs for Lebanon” was held on May 22, 2013 in Beirut, Lebanon, by the Lebanese Ministry of Environment (MoE) and the United Nations Development Programme (UNDP), supported by the International Partnership on Mitigation and MRV, and KPMG. The workshop took place within the framework of the Low-Emission Capacity Building Project (LECB) in Lebanon.

The workshop allowed experts and stakeholders² from public and private institutions as well as the academic sector, to get acquainted to the concept of NAMAs, requirements under the NAMA Registry, available funding sources, a case-study on NAMA development and an overview of the various mitigation options locally identified as a first NAMA list.

The one-day workshop was based on an approach combining theory and practical case-study. The first part featured a conceptual overview of NAMAs, focusing on the required steps to develop a NAMA and opportunities for implementing them. In the second part of the workshop, the proposed selection criteria were presented, with feedback from the stakeholders. Following which, 13 NAMA ideas, developed by various national entities were presented and discussed. The originally planned prioritization exercise was not done, in order to give more time in the discussion of the selection criteria. The workshop resulted in the addition of two “requirement criteria” that would make the NAMAs eligible, followed by another 2 criteria added on the proposed selection criteria.

Objectives of the workshop

- To serve as a learning exercise of a process that will be conducted periodically in Lebanon (Review of NAMA-ideas) – capacity building of the relevant stakeholders
- To understand the national process and the approach used in moving the NAMA portfolio forward
- To validate the selection criteria proposed by the Ministry of Environment
- To showcase the first group of identified NAMA ideas and discuss the way forward

National Policy Context for the development of NAMAs in Lebanon

- 1993: Establishment of the Ministry of Environment
- 1994: Ratification of the United Nations Framework Convention on Climate Change
- 1999: Submission of the Initial National Communication to the UNFCCC
- 2002: Promulgation of Law 444 (Protection of the Environment)
- 2003: Preparation of the 1st Technology Needs Assessment
- 2006: Ratification of the Kyoto Protocol

¹ Agenda in annex 1.

² List of Attendees is attached in Annex 2.

- 2007: Designation of the Ministry of Environment as the Designated National Authority for the Clean Development Mechanism under the Kyoto Protocol³
- 2009: Voluntary commitment of 12% renewable energy by 2020
- 2010: Approval of the Policy Paper of the Energy Sector developed by the Ministry of Energy and Water (including 12% target by 2020)
- 2011: Submission of the Second National Communication to the UNFCCC
- 2011: Approval of the National Energy Efficiency Action Plan
- 2012: Preparation of the 2nd Technology Needs Assessment
- 2012: Establishment of the National Council for the Environment
- 2013: Designation of the Ministry of Environment as the National Coordinator of the Nationally Appropriate Mitigation Actions
- 2013: Decision 99/1 on Guidelines for GHG Reporting

Coordination by the Ministry of Environment to promote low emission development in Lebanon

The Ministry of Environment, with funding from the Lebanon Recovery Fund, has established a climate change coordinating unit under the pseudonym of “The National Action Programme to Mainstream Climate Change into Lebanon’s Development Agenda”. Overall, this project will pave the way for a national Low Emission Climate Resilient Economy, by providing directives through the elaboration of national low emission climate resilient development strategies, and by mainstreaming climate change concepts and tools into national and sector development plans and by developing pilot projects and initiatives. Through the National Council for the Environment, the unit will coordinate and involve the various ministries in a high-level discussion on climate change, encompassing NAMAs, and study the appropriate multiple instruments for climate change finance, including market based instruments, grants or concessional finance and fiscal instruments, in close coordination with the Ministry of Finance.

Workshop Proceedings⁴

Following the welcoming note delivered by the representatives of the United Nations Development Programme and the Ministry of Environment, the workshop started with an introductory presentation on the objectives of the Global Low Emission Capacity Project, followed by the components of the local LECB project.

The Mitigation and MRV Partnership’s NAMA tool – a step-by-step guide for moving a NAMA from idea towards implementation was then presented, providing a brief instructions on how to develop a NAMA (http://mitigationpartnership.net/sites/default/files/nama_tool_8_6.pdf), navigating through the relevant information, knowledge, instruments, and publications available.

³ To date, Lebanon succeeded in registering 7 CDM projects.

⁴ Presentations are attached in Annex 3. They can also be accessed at: <http://www.mitigationpartnership.net/workshop-nama-design-and-preparation-consultation-selecting-priority-namas-lebanon>

Information on the UNFCCC's NAMA Registry (https://unfccc.int/cooperation_support/nama/items/6945.php) with potential funding sources was then provided.

A case-study on developing a NAMA (Transport) was presented providing an overview of “on the ground” experience and difficulties while developing a NAMA.

A six-steps NAMA governance was then presented to the stakeholders, explaining the procedures to follow in Lebanon while developing a NAMA⁵. The proposed selection criteria, along with the suggested weights for multi-criteria analysis were then introduced to the stakeholders for consideration, discussion and validation as indicated in table 1.

Table 1. The proposed selection criteria with their weights

Criteria	Weights	Comments
GHG reduction potential	1.5	The GHG reduction potential is expressed in terms of amount of CO _{2eq} avoided every year from the implementation of each NAMA project idea. It is roughly estimated at this stage and will be more elaborated at the project preparation stage.
Co-benefits	1	
– Economic co-benefits		It includes economic growth, improved livelihoods, increased household income, energy security, etc.
– Social co-benefits		It includes poverty reduction, improved lifestyle, improved use of time, improved public services etc.
– Environmental co-benefits		It includes improved local air quality, improved waste management, etc.
– Adaptation to Climate Change		It includes improved water availability, reduced soil erosion, reduced deforestation, etc.
High level political support	2	Proposed actions should be in line with the government's national or sectoral priorities and should build upon and feed into existing initiatives.
MRV- ability	1.5	The MRV-ability of a proposed NAMA is expressed in terms of availability of a baseline, indicators for actions and milestones that would facilitate the monitoring of the GHG reductions resulting from the project.
Institutional readiness to implement	2	The institution that has the mandate to execute the NAMA project idea should have the necessary institutional, technical, managerial and human capacities to implement the proposed project.

⁵ See Annex 4.

The afternoon session was dedicated to the presentation of 13 NAMA ideas encompassing the energy, waste and transport sectors:

1. Waste-to-Energy (75.5 MW) supporting the national 12% RE target – by the Ministry of Environment;
2. 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);
3. Photovoltaic power station (10 MW) supporting the national 12% RE target – by the Ministry of Environment (as part of the 2nd TNA outputs);
4. 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);
7. 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)⁶;
13. Bus mass transit on dedicated lanes – by the Ministry of Environment (as part of the 2nd TNA outputs).

The main discussion during the workshop revolved around three items: 1) proposed selection criteria; 2) proposed weights, and 3) suitability of the proposed NAMA ideas to be developed into NAMAs.

⁶ This and the previous NAMA idea (fuel efficient vehicles and hybrid electric vehicles) have been combined into one NAMA idea

Workshop Conclusions

From the proposed criteria, discussions stressed on the importance of “ownership” of the proposed NAMAs from the initial stages and the importance of institutional support to bring NAMA from initial concepts to a solid proposal.

The observations made during the workshop resulted in the addition of two “requirement criteria”, which would allow the Ministry of Environment to determine whether the 13 NAMA ideas comply with the following pass/fail “required criteria”:

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 in 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 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., whether the proposed NAMA idea is a one single action that would not lead to a e.g., market or policy transformation leading to a low emission strategy. 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.

Only the NAMA ideas that pass the pre-qualification selection will be further considered as part of the prioritization process.

Two additional criteria were proposed to the ones presented (see table 1):

1. Market readiness: to what extend the market is ready (barriers/opportunities) to pick up the proposed technology/plan/strategy;
2. Financial attractiveness: feasibility in attracting NAMA financing in terms of achieving maximum impact (catalytic in overcoming policy, market, financial, or technological barriers) with available funding , providing a sense of cost-effectiveness of the proposed NAMA.

As for the weights, initially, it was proposed to increase the “GHG reduction potential” and “co-benefits” weights from 1.5 to 2, and from 1 to 2 respectively. However, after intensive discussions it was agreed to have a two-level weighting approach; the first one ranging from 1 to 3 and indicating the **ranking** of the NAMA idea vis-a-vis the selection criteria (e.g., if the “GHG reduction potential” of the NAMA idea is high, then the score would be 3 – if medium, then 2 – if low, then 1; if the “institutional readiness to implement” is high, then the score would be 3 - if medium, then 2 – if low, then 1).

Following this ranking, ranking of the different criteria compared to each other is conducted (giving **preferential scores** out of 100 to the criteria that are deemed more important). The final score is the result of the multiplication of the **ranking score** with the **preferential score**. The total is obtained by

multiplying the relevance/ranking score with the preferential score. Table 2 depicts the new selection criteria with the weighting system.

Table 2. The selection criteria with their weights

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	

Other observations from the workshop included the benefits of using existing national documents (reports/policies/plans) such as the national communications and technology assessment reports, the policy paper for the energy sector, the national energy efficiency action plan, and the various renewable energy national potential assessments (wind atlas, and bioenergy potential) in drawing a first list of NAMA ideas.

However, the factsheets representing the NAMA ideas should have comparable level of details to better inform the prioritization exercise and to ensure a fair comparison process to assign priorities.

Next Steps

It is important to continue the engagement of the different stakeholders, and further clarify the NAMA process. Capacity building should also be assessed and the buy-in of the various institutions sought before taking further the NAMA ideas. This will be done on bilateral basis given that the number of the stakeholders presenting NAMA ideas (other than the Ministry of Environment) is not high.

The NAMA factsheets should be brought up to comparable levels in order to provide a more sound assessment tools. The project will conduct a series of bilateral meetings with the counterparts who proposed NAMA ideas during this workshop, in order to clarify the decisions taken during the workshop, and finalise the prioritization workshop. This would serve an opportunity to fine tune the proposals, and concentrate on the most promising NAMA ideas. Following that, the amended selection criteria and process will be shared with the stakeholders for scoring, in order to finalise the prioritization process. A follow-up workshop is planned to take place in August 2013 at the Ministry of Environment.

Annexes

Annex 1. Agenda

Annex 2. List of Participants

Annex 3. Presentations

Annex 4. NAMA institutional arrangements for Lebanon

Annex 1. Agenda

NAMA DESIGN AND PREPARATION:
Consultation on selecting priority NAMAs for Lebanon
Holiday Inn Verdun
Beirut – May 22, 2013

Agenda			
Time	Sessions	Potential speakers	Objective of the session
9.00-9.30	Registration		
9.30	Welcoming notes/opening	UNDP MoE	- To introduce the objectives of the workshop
9.35	Introduction of the Global LECB Programme & the national LECB project	Yamil Bonduki Vahakn Kabakian	- To introduce the context of the workshop within the LECB project
9.45	NAMA Tool part 1 Definitions and development of NAMAs: a step by step guide Q&A	MRV Partnership	- To defines NAMAs and the types of NAMAs - To present the steps needed to proceed from NAMA design to implementation (baseline, GHG reduction potential, etc.), including institutional arrangements
10.15	Coffee break		
10.40	NAMA Tool part 2 Technical aspects and requirements of NAMAs (other than GHG reduction) - National Capacity - Co-benefits - Elements of MRV Q&A	MRV partnership	- To present the elements to consider when developing a NAMA, - To explain the potential MRV consideration at the different NAMA development stages
11.10	International commitments of submitting NAMAs to UNFCCC NAMA Registry, and potential funding sources Q&A	Yamil Bonduki	- To present the NAMA Registry - To highlight the benefits and commitments of submitting NAMAs to the Registry - To present funding sources
11.30	Case Study: From design to implementation - private sector involvement and donor funding requirements Q&A	KPMG	- To illustrate a concrete example elaborating on the above sessions
12.00	National institutional arrangements and consultation on	Vahakn Kabakian	- To clarify the role of MoE as official coordinating entity



	NAMA selection criteria Consultation and Discussion session facilitated by Yamil Bonduki		- To present and validate the NAMA selection criteria
1.00	Lunch		
2.00	NAMA options for Lebanon – 1 st Long-list	MoE with partner institutions	- To showcase the potential concept ideas for Lebanon, based on prepared sectoral factsheets
3.00	Discussion: Prioritization of NAMAs concepts for Lebanon – simulation exercise	MoE/GSU/MRV/KPMG	- Prioritization exercise/simulation using Multi-criteria Analysis
3.45	Coffee break		
4.00	Discussion: Prioritization of NAMAs concepts for Lebanon – simulation exercise - continued	MoE/GSU/MRV/KPMG	- Prioritization exercise/simulation using Multi-criteria Analysis
4.45	NAMAs in Lebanon: Next Steps	MoE	- To draw the future steps and workplan

Annex 2. List of Participants

	Name	Institution	Email	Phone
1	Marwan Chalhoub	Linkers Online/NCE	mc@linkersonline.com	03-244878
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6	Lea Kai	UNDP-MoE	l.kai@moe.gov.lb	03-744252
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Annex 3. Presentations




The Low Emission Capacity Building (LECB) Programme: Overview

**NAMA Design and Preparation:
Consultation on selecting priority NAMAs for
Lebanon**

Holiday Inn Verdun
Beirut – May 22, 2013





Why reduce GHG emissions?

The international perspective

- Without global commitment, unable to achieve target of limiting average global temperature rise to 2C above pre-industrial levels
- Bali Action Plan (2007):** Parties agreed to targets for developed countries and NAMAs for developing countries
- To access the **Green Climate Fund**: Countries will submit programmes and funding plans based upon national development and climate change strategies

Why reduce GHG emissions?

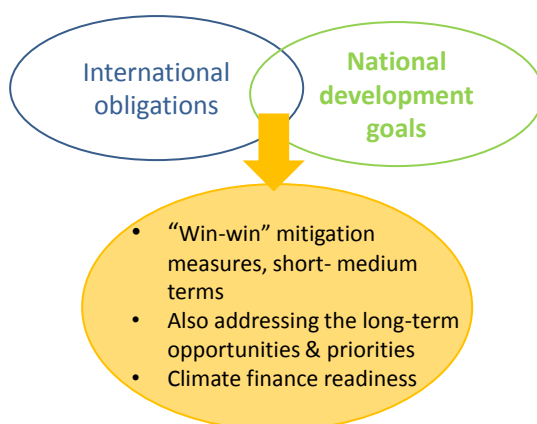


The national perspective

For most developing countries, mitigation must be seen in context of social and economic development, including poverty eradication

- **Cost savings:** \$1 additional invested in more efficient electrical equipment, appliances and buildings avoids more than \$2 of investment in electricity supply (IEA, 2006)
- **Energy Security:** CC mitigation can lead to greater energy security and resilience to energy price shocks
- **Private sector:** Attracted to new technology investment opportunities
- **Public health:** Improved (fewer airborne pollutants)

Looking for strategic opportunities



Low Emission Capacity Building Programme - overview



\$28 M (European Commission, the Government of Germany and the Government of Australia)

Six-year programme (2011-16), 25 countries

- 14 Phase 1 countries (from 2011)
- 11 Phase 2 countries (from 2012): including Lebanon

In late 2012:

- EC contributed with additional 5M Euro to establish “NAMA-Net”, a network of centres of excellence to provide technical backstopping to LECB countries
- Germany contributed with additional 5M Euro for enhanced support to select LECB countries in given areas

Countries can benefit from global exchange of experiences & lessons



Phase	Africa	Asia	LAC	Arab States	Europe/CIS
Phase 1	DRC	Philippines	Argentina	Egypt	
	Kenya	China	Chile	Morocco	
	Uganda		Colombia		
	Zambia		Ecuador		
			Mexico		
Phase 2			Peru		
	Ghana	Bhutan	Costa Rica	Lebanon	Moldova
	Tanzania	Indonesia	Trinidad & Tob.		
		Malaysia			
		Thailand			
		Vietnam			
Total #	6	7	8	3	1

Programme objective is to build capacities for mitigation action...



Objective: Build capacities to design and implement Low Emission Development Strategies and national mitigation actions in the public and/or industry sectors

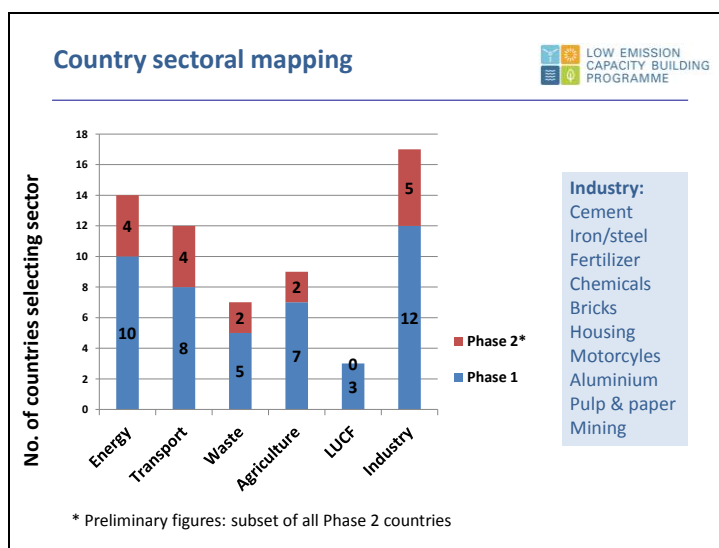
Five main work areas:

- GHG inventory management systems
- Nationally Appropriate Mitigation Actions (NAMAs)
- Low-Emission Development Strategies (LEDS)
- Measurement, Reporting and Verification (MRV)
- Mitigation actions in selected industries/private sector

Desired outcomes of the Programme



- **Holistic policies/programmes** to address climate change through mitigation action linked to development priorities
- **Removal of technical and institutional barriers** – strengthened capacities to support NAMAs, LEDS
- Strategies to direct public and private **investments** (international and national)
- **Improved scenarios and projections** that allow more informed decision making on GHG mitigation
- **South-south exchange** of knowledge, tools, approaches
- **Readiness for climate finance** to access a range of funding sources



Global Support Team offers support via:

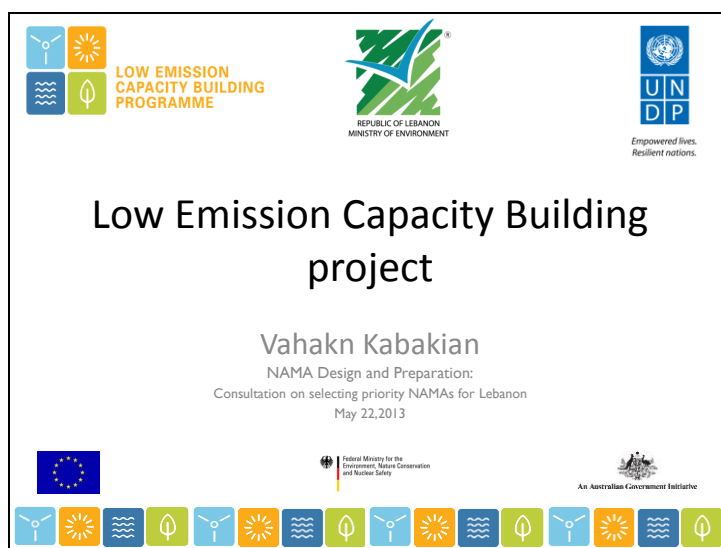
LOW EMISSION CAPACITY BUILDING PROGRAMME

Targeted technical assistance

- Targeted backstopping (in-country and on-line)
- Guidance on potential international/regional experts & centres
- Technical reviews of materials
- Guidance documents (templates and technical guidance)
- Knowledge exchange workshops and thematic trainings

Knowledge sharing, outreach & partnerships

- Partnerships with Centers of Excellence/Regional Networks
- South-south/north-south knowledge exchange
- Capture and sharing of best practices and lessons learned
- UNDP Teamworks site & external website



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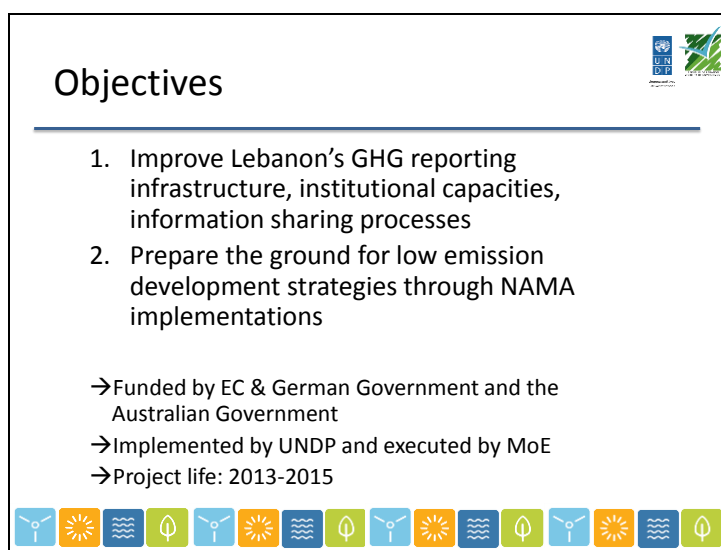
Low Emission Capacity Building project

Vahakn Kabakian
NAMA Design and Preparation:
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May 22, 2013

European Union

Federal Ministry for the Environment, Nature Conservation and Nuclear Safety

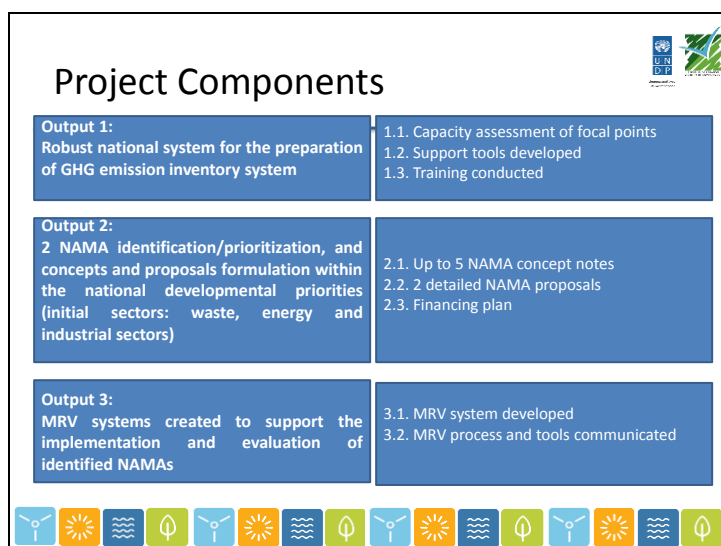
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Objectives

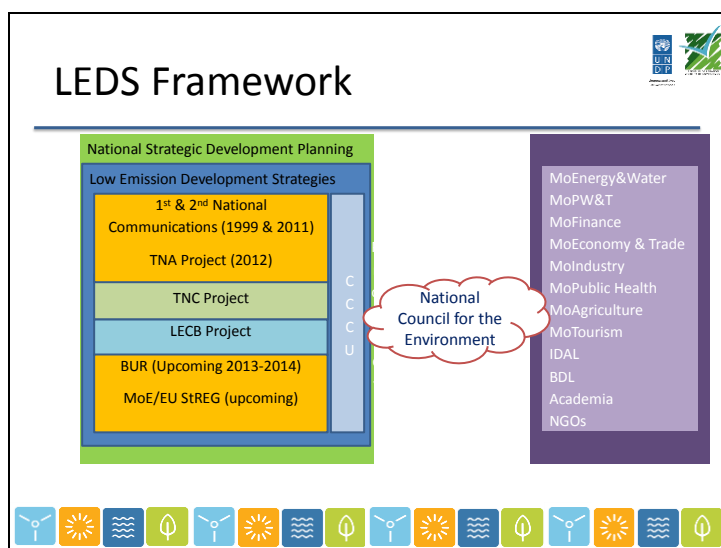
1. Improve Lebanon's GHG reporting infrastructure, institutional capacities, information sharing processes
2. Prepare the ground for low emission development strategies through NAMA implementations

→Funded by EC & German Government and the Australian Government
→Implemented by UNDP and executed by MoE
→Project life: 2013-2015



Project Components

Output 1: Robust national system for the preparation of GHG emission inventory system	1.1. Capacity assessment of focal points 1.2. Support tools developed 1.3. Training conducted
Output 2: 2 NAMA identification/prioritization, and concepts and proposals formulation within the national developmental priorities (initial sectors: waste, energy and industrial sectors)	2.1. Up to 5 NAMA concept notes 2.2. 2 detailed NAMA proposals 2.3. Financing plan
Output 3: MRV systems created to support the implementation and evaluation of identified NAMAs	3.1. MRV system developed 3.2. MRV process and tools communicated



- ## Today's event.....
1. Is part of Output 2: NAMA identification and prioritization leading to NAMA proposals to be submitted to potential implementers and to the NAMA Registry
 2. NAMA tool – step by step guide
 3. NAMA Registry and potential funding sources
 4. Case study (lessons learned)
 5. Institutional arrangement
 6. Selection criteria: discussion and validation
 7. Overview of the first NAMA long-list
 8. Simulation of a NAMA prioritization

- ## Keep in mind
- This is a learning exercise of a process that we have to conduct periodically
 - If a NAMA idea doesn't go through this time, it doesn't mean that it will not be considered in the next round
 - Other sectors will be covered later
 - The important thing is to understand the process and the approach


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NAMA Tool

NAMA Design and Preparation:
Consultation on selecting priority NAMAs for Lebanon
Beirut, 22 May 2013

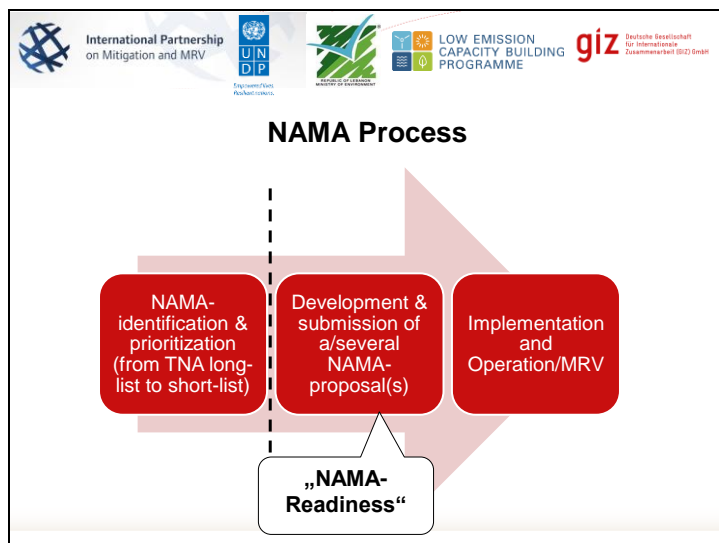
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What is a NAMA???

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International Partnership
on Mitigation and MRV




UNDP
United Nations Development Programme



MINISTRY OF ENVIRONMENT



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Objectives

- **Workshop**
 - ✓ selecting a couple of priority NAMAs for further development of comprehensive NAMA proposals and submission to potential implementers and to the **NAMA Registry** (country-driven selection)
- **The way ahead:** development of NAMA proposals respecting quality requirements by public and private financing partners
 - ✓ How to develop a “bankable” NAMA proposal using a step by step guide (GIZ “NAMA Tool”): background, definitions, elements and requirements of NAMA proposals
 - ✓ Selection criteria of the NAMA Facility



International Partnership
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UNDP
United Nations Development Programme



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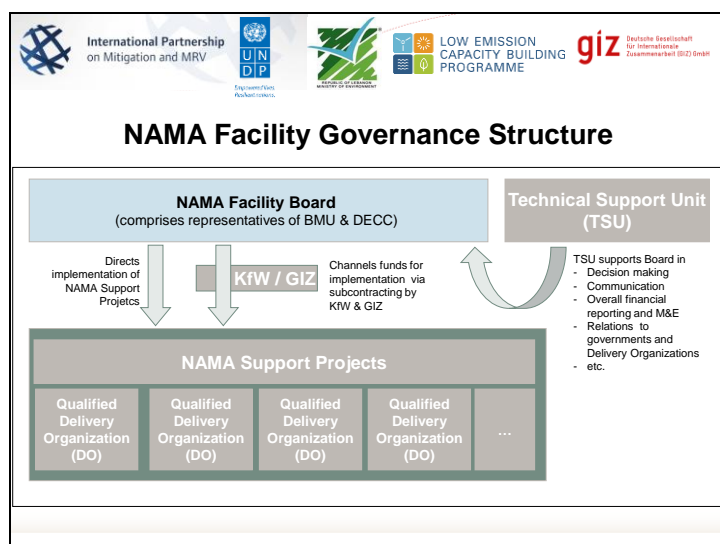
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CAPACITY BUILDING
PROGRAMME



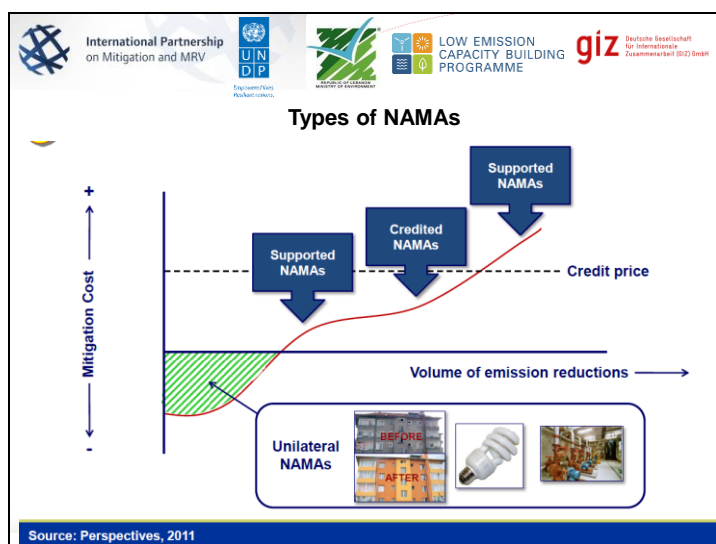
giz
Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

NAMA Facility



- Announced in Doha on 06.12.12 by German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) and UK Department of Energy and Climate Change (DECC)
- DECC committed £25m (ca. €30 million), BMU another €40m (ca. £30m) = Total of ca. €70 million
- Designed to support developing countries that want to **implement transformational** country-led NAMAs in the short term
- Financial support & technical cooperation/capacity building
- Financial instruments: grants & concessional loans
- Call for proposals
- <https://www.gov.uk/government/publications/information-about-the-nationally-appropriate-mitigation-actions-nama-facility>



The screenshot shows the homepage of the International Partnership on Mitigation and MRV. At the top, there are logos for UNDP, the Partnership on Mitigation and MRV, and the Low Emission Capacity Building Programme. The main navigation bar includes links for About, Partners, Topics, News, Project/Databases, Resources, Indices, and Links. The central banner features a group photo of workshop participants and the title 'Regional Workshop: Tracking Mitigation Actions in Africa'. Below the banner, there are sections for 'New Projects' and 'Founding Partners'. A callout box on the right side of the page points to the 'Resources' link in the navigation bar and contains the text 'Resources: Activity: „NAMA“'.








The Mitigation and MRV Partnership's NAMA tool on how to develop a NAMA can be accessed on the following link:
http://mitigationpartnership.net/sites/default/files/nama_tool_8_6.pdf




NAMA Registry and Financing Sources

**NAMA Design and Preparation:
Consultation on selecting priority NAMAs for Lebanon**


Holiday Inn Verdun
Beirut – May 22, 2013





Presentation outline

- UNFCCC NAMA Registry
- Potential funding sources



UNFCCC NAMA Registry: Mandate

- **COP 16:** Parties agreed to set up a registry to:
 - record NAMAs seeking international support
 - facilitate the matching of finance, technology and capacity-building support with these actions
 - recognize other NAMAs.
- **COP 17:** Decided to develop the registry as a dynamic, web-based platform
- **COP18:** Prototype registry to be deployed in April 2013
- Fully functional registry (based on user feedback) by **Oct. 2013**

UNFCCC NAMA Registry (1)



http://unfccc.int/cooperation_support/nama/items/6945.php

Prototype Registry hosts 4 NAMA templates:

- *NAMA seeking support for preparation*
 - *NAMA seeking support for implementation*
 - *Other NAMAs for recognition*
 - *Information on support for NAMAs*
-
- Key design element is **flexibility**, at request of Parties
 - A few **mandatory** fields of template are:
 - *Country*
 - *NAMA title*
 - *NAMA description*
 - *Contact details*

UNFCCC NAMA Registry (2)



For NAMA seeking support for development, can also include information on:

- *Sector*
- *Technology*
- *Type of action (goal, strategy, programme/policy, project, other)*
- *National implementing entity*
- *Expected timeframe*
- *Cost (and currency)*
- *Relevant national policies, plans, programs, and/or other NAMAs*

UNFCCC NAMA Registry (3)



For NAMA seeking support for implementation, can also include information on:

- *Estimated full cost and incremental cost of implementation*
- *Estimated GHG reductions (and methodology used to calculate)*
- *Other indicators of implementation*
- *Other relevant information (incl. co-benefits)*

Option exists for NAMA developer to edit information and update as need

NAMA Prototype Registry content



- **NAMAs seeking support for preparation**
 - 6 submissions between 19 Sept. 2012 and 27 Nov. 2012
 - Uruguay (3), Mali (2), Ethiopia (1)
- **NAMAs seeking support for implementation:**
 - 15 submissions between 20 Nov. 2012 and 17 April 2013
 - Serbia (7), Chile (3), Uruguay (1), Dominican Republic (1), Indonesia (1), Cook Islands (1), Dominica (1)
- **Other NAMAs for recognition**
 - 4 submissions between 22 Oct. 2012 and 17 April 2013
 - Uruguay (2), Chile (1), Serbia (1)

http://unfccc.int/cooperation_support/nama/items/6945.php

NAMA Prototype Registry content



NAMAs require central approval:

- **NAMA approvers:** full access to country registry (e.g. Focal point)
- **NAMA developers:** create NAMAs, edit/delete their NAMAs, search queries (e.g. project formulators)

Support does not require central approval

- **Support editors:** create support entries, edit/delete their entries, search queries
- **Actors:** government agencies, banks, foundations, private sector

NAMA Registry: Manual



Part I: Design and functioning of the registry (mechanics)”:

- access and user roles;
- The database and its sections;
- Workflows

Part II: how to fill in the templates

- NAMAs
- Support

NAMA Registry: Manual



- Participation is voluntary
- Not a requirement to receive or provide support
- Not an obligation to provide support or a guarantee that support will be provided
- Not a system for formally reporting on proposed actions or their results
- No requirements to verify the information. Responsibility lies within NAMA approver/support editor

Presentation outline



- UNFCCC NAMA Registry: International Commitments
- **Potential funding sources**

The Finance Challenge



Despite growing volume and variety of resources, developing countries face **three key challenges to climate finance**:

- **Uneven resources**: climate finance is not evenly spread, creating barriers to access, particularly for smaller countries
- **Need to catalyze private finance**: public finance alone is insufficient to meet demands of climate challenge, and so must catalyze private finance
- **Limited alignment between climate and development**: to drive an economy-wide transformation in production and consumption, climate finance must be mainstreamed into planning and development policy

Mitigation financing perspectives (1)



Cancun (2010): Long-term goal of mobilizing US\$100 billion per year by 2020 to support developing countries to address climate change

“In energy sector alone, additional investment of close to \$10.5 trillion needed globally in the period 2010-2030 to have 50% chance of maintaining GHG concentrations to less than 450 ppm.” (IEA, 2009)

Mitigation financing perspectives (2)



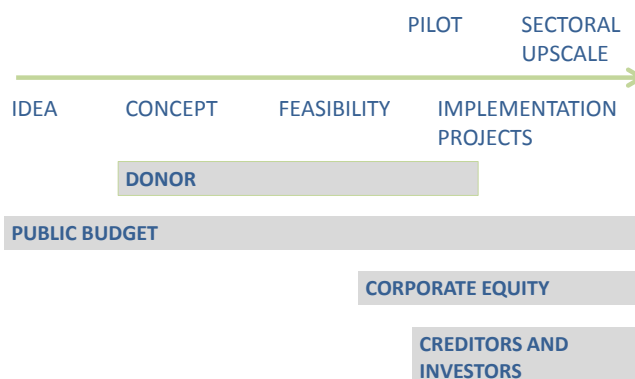
“At least USD 97 billion per annum of climate finance is currently being provided to support low-carbon, climate-resilient development.”

“The amount of private finance is almost three times greater than public finance.”

Climate Policy Initiative (CPI), 2011

Approximately 40% of the global additional investment needed in 2020 will come from households, 40% from businesses and remainder from governments (IEA (2009))

NAMAs likely to have phased financial structure (not just one source of finance)

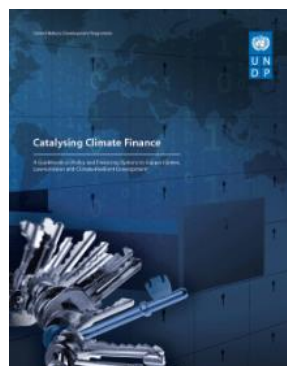


Catalyse climate finance to attract private sector investments



Determine the appropriate “policy-mix” and financing options to create an enabling environment for catalysing climate finance:

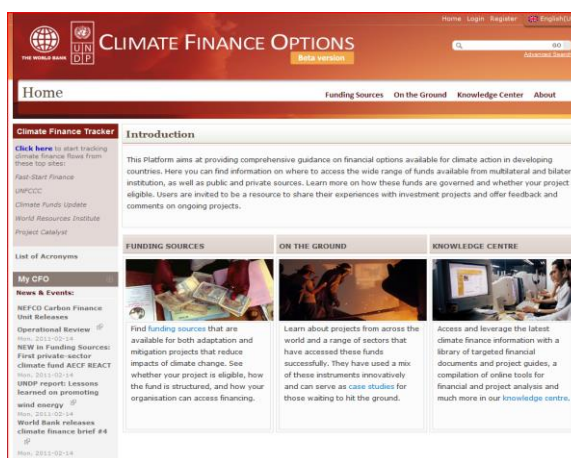
1. Identify appropriate mitigation and adaptation technology options
2. Assess barriers to diffusion
3. Determine appropriate policy-mix
4. Select financing options



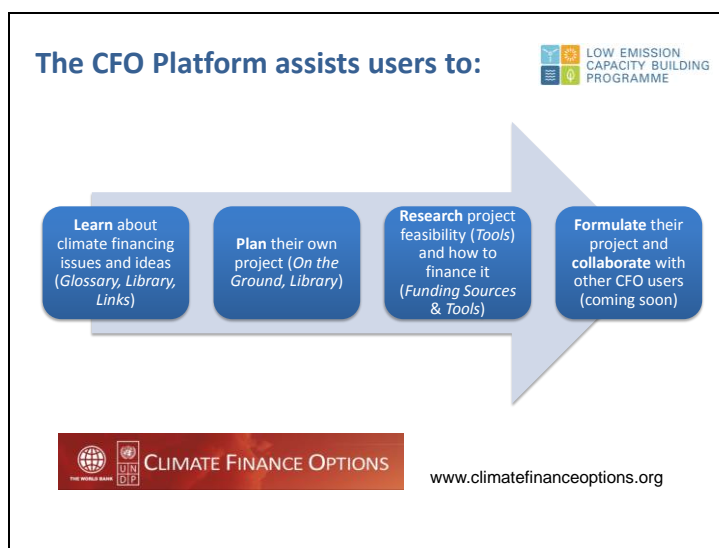
To date, GEF is largest provider of grant funds for CC mitigation



- GEF provides grant funding to create enabling environment and initiate a market transformation process
- Tends to focus on the removal of barriers, support for innovation, partial risk guarantees and demonstration efforts
- The GEF priorities for support are:
 - **Enabling activities** (national communications and technology needs assessments)
 - **Removing barriers to Energy Efficiency**
 - **Removing barriers to Renewable Energy**
 - **Reducing the long-term costs of low-GHG emitting energy technologies**
 - **Sustainable Transport**



Improved investment decision making through www.climatefinanceoptions.org



CLIMATE FINANCE OPTIONS

Home Log Out Register Help English(UK)

CLIMATE FINANCE OPTIONS

CL

Advanced Search

- **Expanding** resources for climate finance information:
 - **65** climate funding source analyses
 - **23** in-depth case studies
 - **Nearly 100** climate finance publications in library, plus guides, and project analysis tools in knowledge center
- **One-stop search** engine to pinpoint specific user needs
- **Climate finance tracking** page brings together top monitoring data on fast-start funding

CLIMATE FINANCE OPTIONS

www.climatefinanceoptions.org

CLIMATE FINANCE OPTIONS

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CLIMATE FINANCE OPTIONS

CL

Advanced Search


Broad categories of funding sources:

- **Bilateral (10 listed):** International Climate Fund (UK), International Climate Initiative (Germany), Global Climate Partnership Fund, the Hatoyama Initiative (Japan)....
- **Multilateral (46 listed):** ADB, AFD, CTI, EC, GEF, FCPF, KfW, IDB, MDB,
- **Foundations:** not listed
- **Private sector (5 listed):** Carbon Market Initiative, Africa Enterprise Challenge Fund: Renewable Energy and Adaptation to Climate Technologies, World Bank Carbon Funds and Facilities...

Key sources that will start playing a role in the future: the Green Climate Fund and the NAMA Facility (Germany and UK)

CLIMATE FINANCE OPTIONS

www.climatefinanceoptions.org




KPMG
cutting through complexity

Climate Finance

*NAMAs from design to implementation
Addressing barriers to private sector access to finance –
lessons learnt from Chile*

KPMG

KPMG Climate Change and Sustainability Services

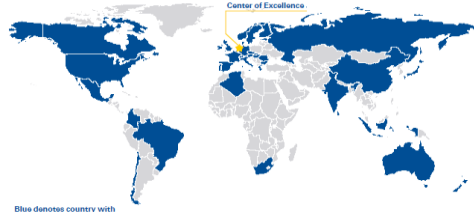


Introduction: KPMG's Climate Change and Sustainability practice

Climate change and sustainability issues are rising to the top of corporate and government agendas. Energy pricing and security, natural resource pressures, population growth, lifestyle changes, and consumer preferences are compelling private and public organisations to act

KPMG's Climate Change and Sustainability works with:

- developed and developing country governments to create financeable and implementable green growth strategies appealing to financiers and corporates
- with corporates to understand climate change related risks and opportunities and to develop strategies to maximise competitive advantage




Blue denotes country with KPMG sustainability effort.

KPMG's Climate Change and Sustainability Services

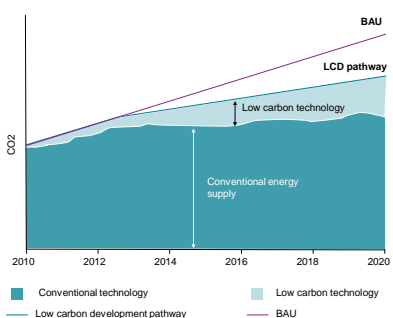
- >700 professionals
- > 40 countries
- Global Center of Excellence

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Low carbon development pathway

Development pathway for a developing country



CO2

2010 2012 2014 2016 2018 2020

BAU

LCD pathway

Low carbon technology

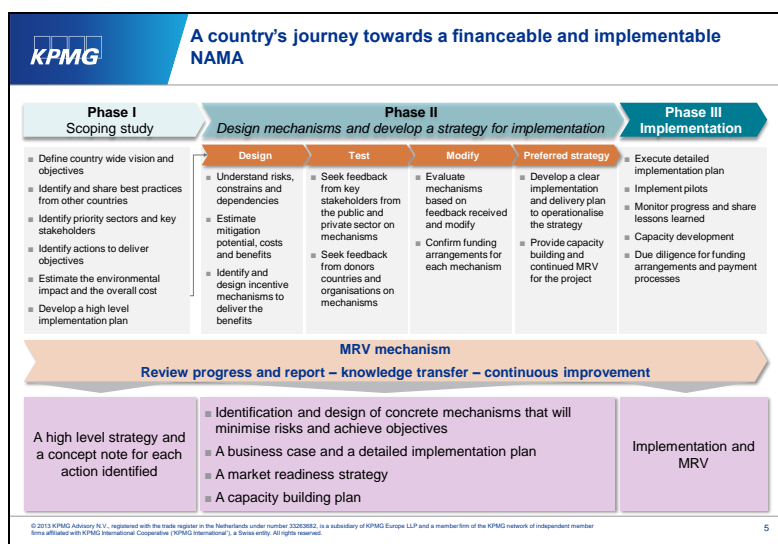
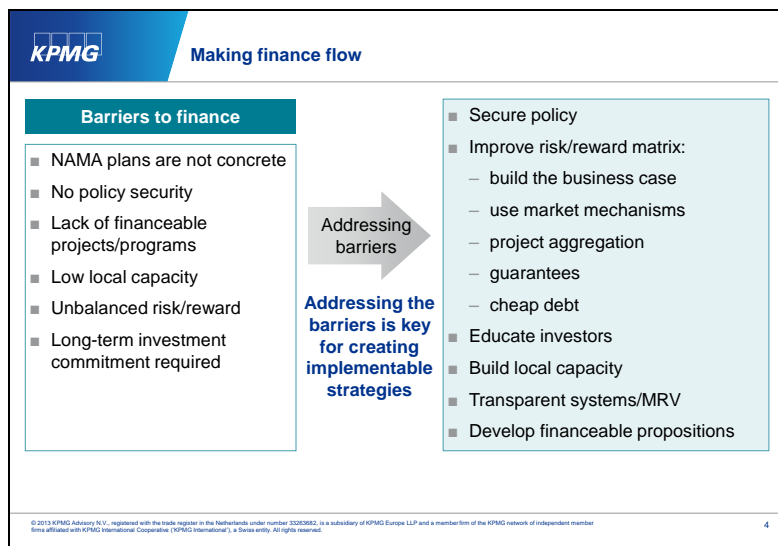
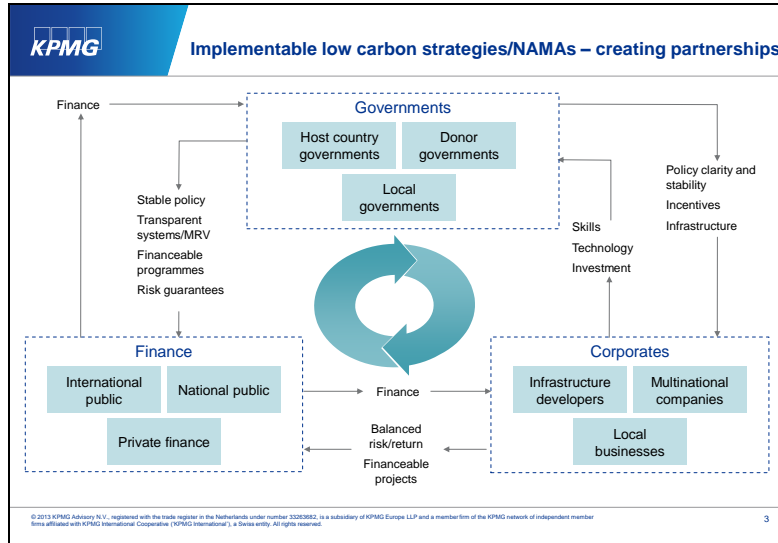
Conventional energy supply


Conventional technology

Low carbon development pathway

- **Policy:** setting policy frameworks that create and direct markets and investment towards greener choices.
- **Technology:** ensuring that green and more efficient technology is available in country.
- **Finance:** ensuring that the green transition is financed and investment flows to the underlying projects.


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Principles of a financeable and implementable NAMA

Set the vision	Identify goals & benefits	Engage stakeholders
<p>Provide a well articulated strategic vision for a particular sector</p> <p>Show how this NAMA project will help the country achieve the vision</p>	<p>Translate strategic vision into concrete goals</p> <p>Engage with key stakeholders, identify and clearly communicate the key benefits that the program will deliver</p>	<p>Analyse key stakeholders' business models and identify risks and opportunities</p> <p>Recommend options that specifically aim to overcome risks and capture opportunities</p>

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Principles of a financeable and implementable NAMA

Develop a clear strategy	Arrange finance	Implement, measure, sustain
<p>Evaluate each recommendation based on clearly defined criteria</p> <p>Define a strategy that includes pragmatic, technically and financially feasible to implement options</p>	<p>Conduct a financial assessment of your project and confirm funding arrangements for each strategic option:</p> <ul style="list-style-type: none"> ■ Private sector leverage ■ Donor country contribution ■ Host country contribution 	<p>Put in place a governance structure to support benefits' realization</p> <p>Develop a clear implementation and delivery plan to operationalise the strategy</p> <p>Provide capacity building and continued MRV of the project</p>

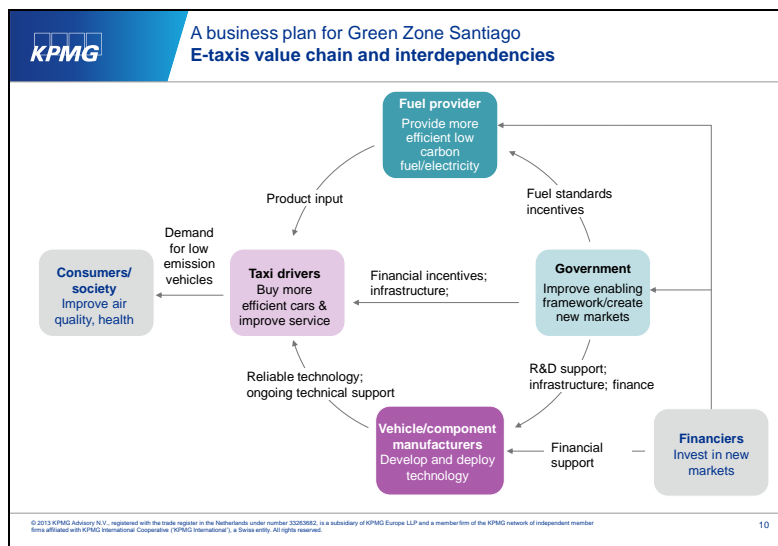
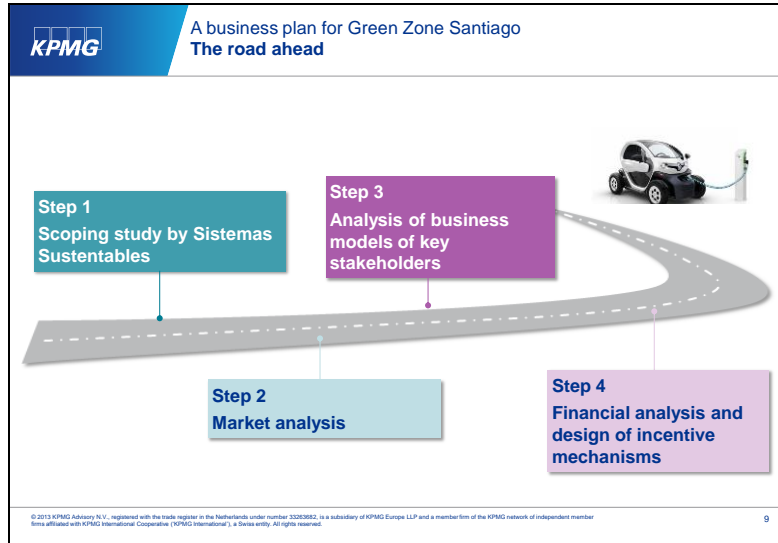
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Developing a business case for zero/low emission taxi vehicles in Chile

Building up the Santiago Transport Green Zone

KPMG
May 2013

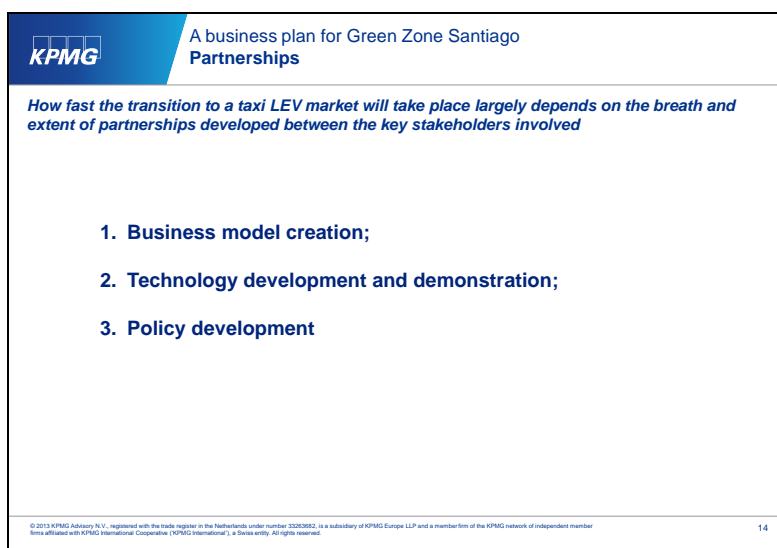
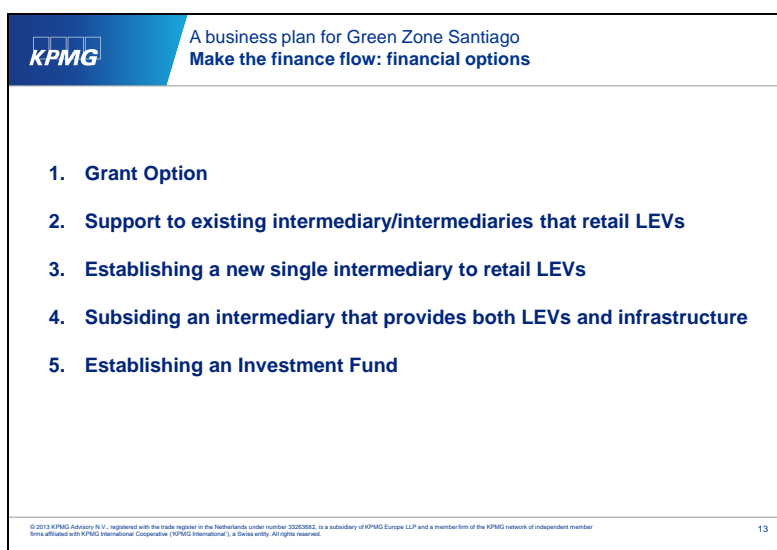
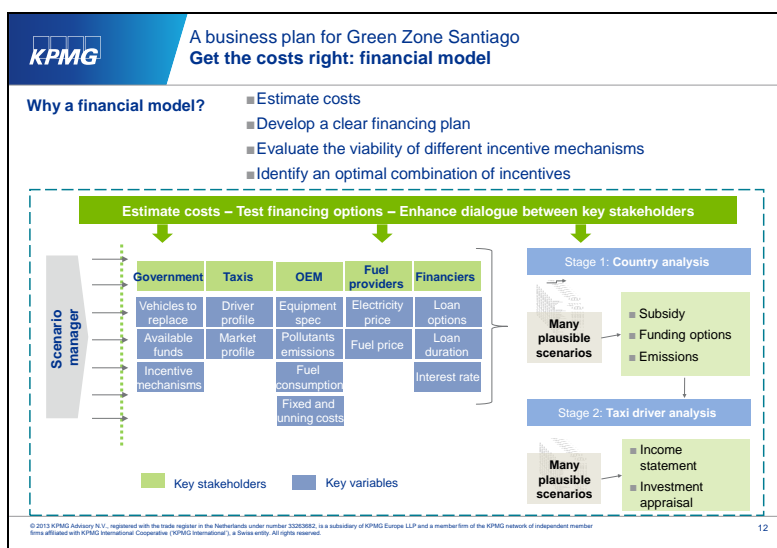
Mobilizing private sector investment in the context of NAMA




KPMG A business plan for Green Zone Santiago
Stakeholder engagement and our findings

	Lack of funding	Lack of coordination	Low market capacity	High capital cost	Technology immaturity	Model availability	Lack of incentives	Lack of infrastructure	Lack of business models	Key enablers
Government	●	●								<ul style="list-style-type: none"> Business plan Leadership Private sector investments Donor support
Taxi drivers	●		●	●	●	●	●			<ul style="list-style-type: none"> Reduce capital costs Increase awareness
Vehicle manufacturers							●	●	●	<ul style="list-style-type: none"> Systematic legislation Infrastructure Incentives Partnerships
Power sector		●				●	●			<ul style="list-style-type: none"> Incentives Business plan
Battery manufacturers			●				●		●	<ul style="list-style-type: none"> Partnerships
Financiers			●	●	●				●	<ul style="list-style-type: none"> Business models Incentives

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A business plan for Green Zone Santiago

Lessons learned

Conclusions

1. There is misalignment between government's vision for a green economy, the industrial policy and the structure of the financial system. This is constraining funding flows, restricting supply of projects and limiting the development of a green economy
2. Finance is not often the main problem – lack of capacity across funders, project developers and government to develop projects is. Worth noting though that there is a shortage of funding for early-stage, high risk initiatives and for moving projects from research & development stage to scale-up and commercialization.
3. Skills on finance, policy, strategy and technology are essential to develop financeable and implementable projects
4. Dialogue with key stakeholders early in the process is key to understand risks and opportunities and develop solutions that minimise risks and capture the opportunities

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A business plan for Green Zone Santiago

Lessons learned

Conclusions

5. Public-private partnerships offer promising solutions. A strong need for a key institution in the country to show strong leadership
6. Flexibility as to the forms of domestic support is necessary
7. Need for an independent party that doesn't have a political agenda and understands the private sector language
8. The costs and administrative burden of meeting the Monitoring, Evaluation and Reporting requirements of multilateral / bilateral funds reduces the appetite of local banks and project developers to access funding. This is limiting the uptake of multilateral / bilateral climate funds and limited implementation of projects by the private sector

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Recommendation

4 key actions to successfully implement the NAMA

To address the barriers identified s and develop a business plan for the successful implementation of NAMA four key actions will be necessary


1

Get the costs right




2

Make financing flow into the market




3

Develop new business models



4

Build partnerships



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REPUBLIC OF LEBANON
MINISTRY OF ENVIRONMENT



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Resilient nations.

Institutional Arrangements and Selection Criteria

Vahakn Kabakian
NAMA Design and Preparation:
Consultation on selecting priority NAMAs for Lebanon
May 22, 2013





































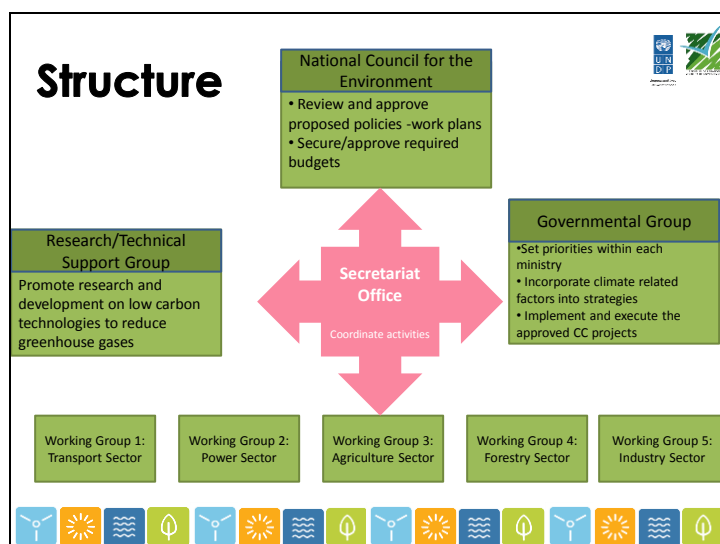


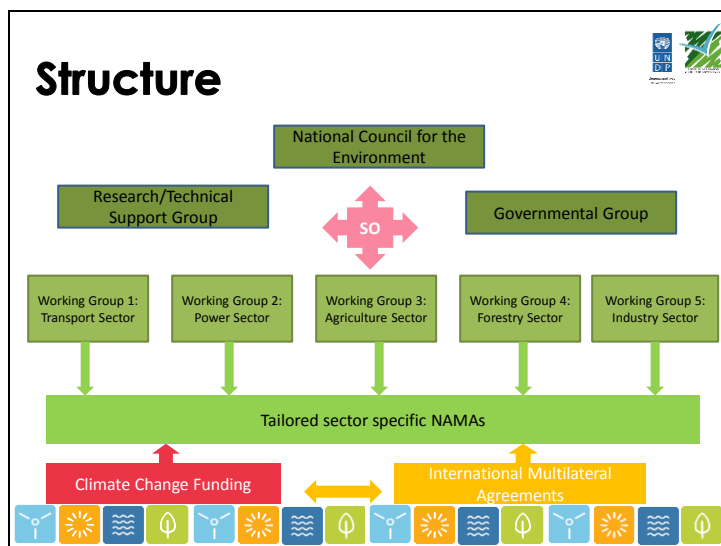
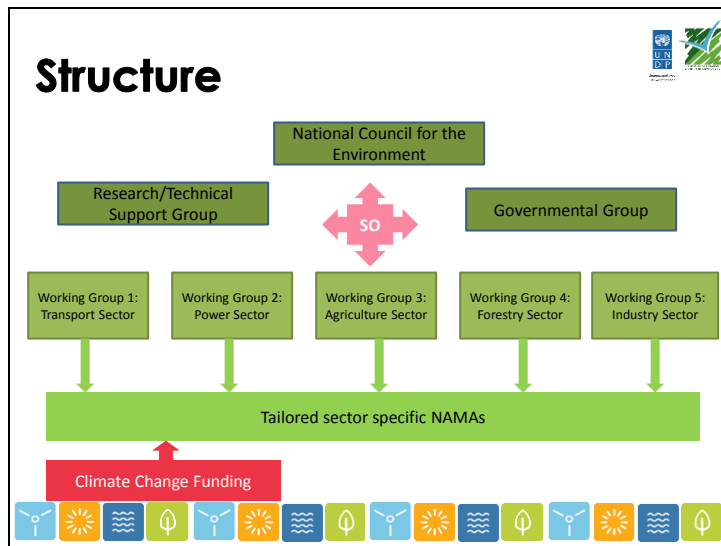
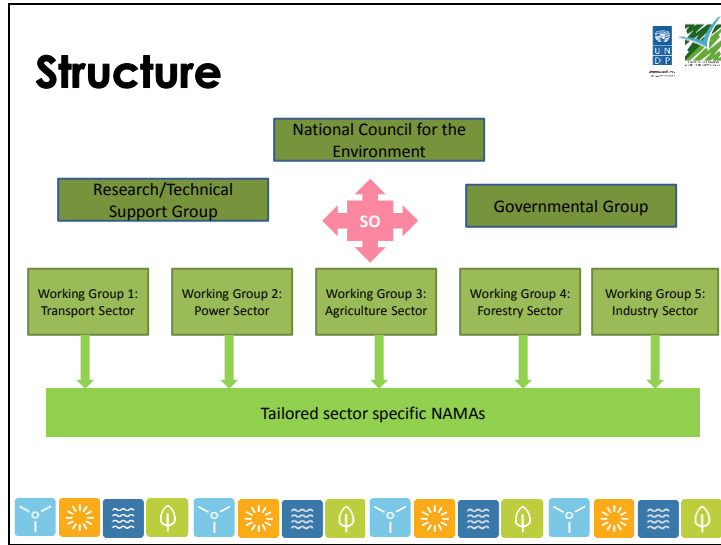




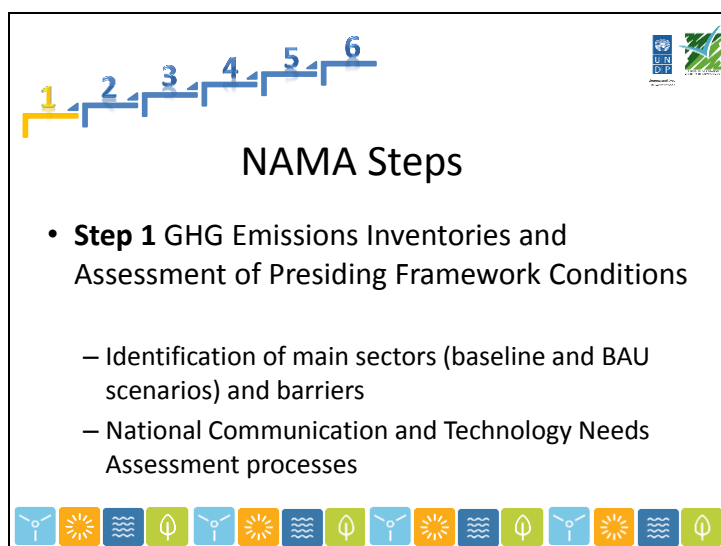
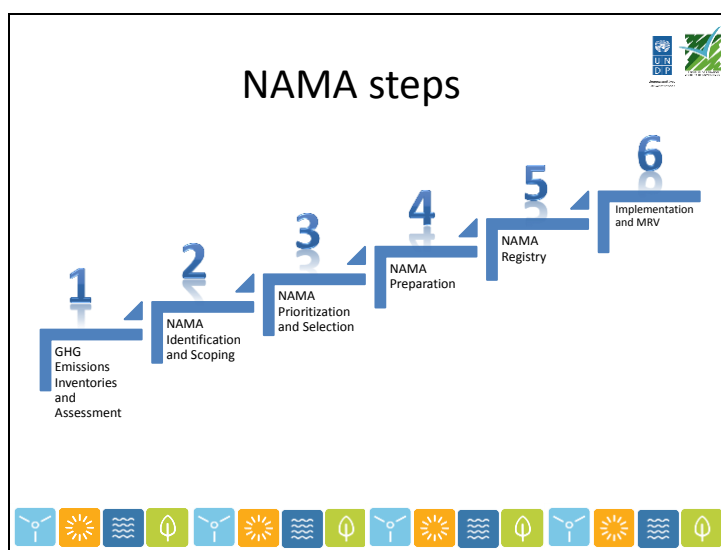
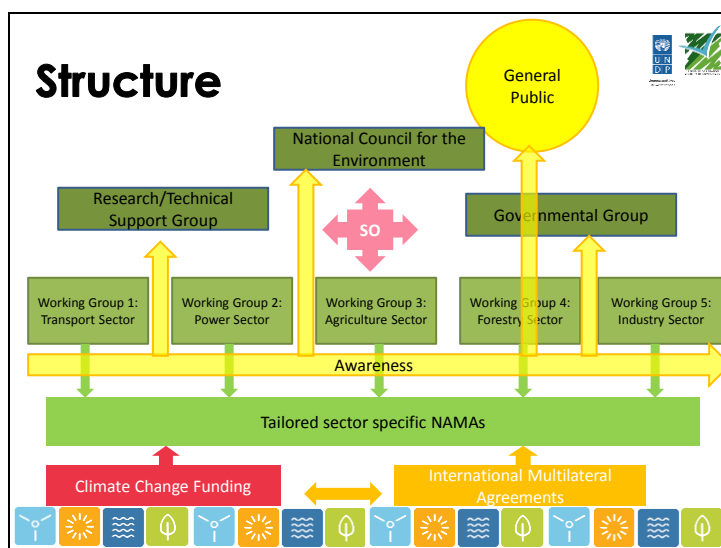
Institutional Arrangements


- Establishment of the National Council for the Environment (Decree 8157/24-5-2012)
- Council of Ministers appointed the Ministry of Environment as the National Coordinator of NAMAs (Decision 44/17-1-2013)
 - Requesting the MoE to start the process of NAMA preparation in coordination with the other ministries











NAMA Steps




- **Step 2** NAMA Identification and Scoping
 - Collection of ideas that have potential to become NAMA – long-list
 - GHG reduction potential
 - Associated costs
 - Co-benefits
 - Feasibility of implementation

NAMA Steps

- **Step 3** NAMA Prioritization and Selection
 - Shorten the long-list using a set of selection criteria


☒ GHG reduction potential
☒ Sustainable development co-benefits
☒ Institutional readiness to implement
☒ MRV-ability
☒ High-level political support
 - Decide the responsibilities of the different institutions per NAMA
 - Once a NAMA idea is selected, it can be developed into a NAMA concept note

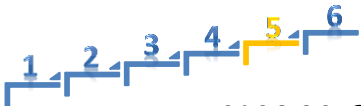




NAMA Steps

- **Step 4** NAMA Preparation
 - Develop the full proposal:


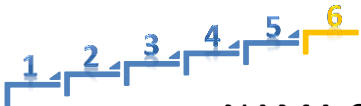
Full proposal template being developed
 - sources
 - ✓ Propose a plan of action with timelines and the role and responsibilities of associated actors






NAMA Steps

- **Step 5 NAMA Registry**
 - Once a NAMA is presented to, and approved by, MoE → MoE officially “uploads” the NAMA to the NAMA Registry:
 - NAMA seeking support for preparation
 - NAMA seeking support for implementation
 - NAMA for recognition


NAMA Steps

- **Step 6 Implementation and MRV**
 - Once funding is secured → start implementation
 - Continuously **Measure, Report, Verify** based on the elaborated MRV plan – includes reporting to the Ministry of Environment



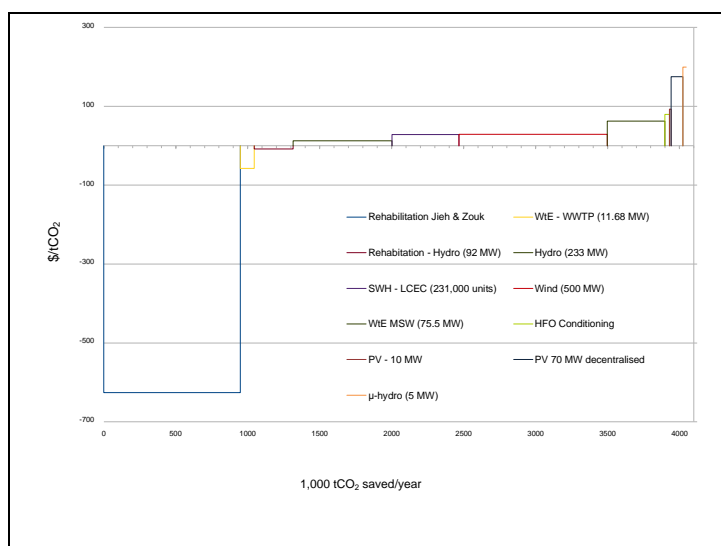
Selection Criteria

Criteria	Comments
1. GHG reduction potential	The GHG reduction potential is expressed in terms of amount of CO ₂ _{eq} avoided every year from the implementation of each NAMA project idea. It is roughly estimated at this stage and will be more elaborated at the project preparation stage.
2. Co-benefits	
- Economic co-benefits	It includes economic growth, improved livelihoods, increased household income, energy security, etc.
- Social co-benefits	It includes poverty reduction, improved lifestyle, improved use of time, improved public services etc.
- Environmental co-benefits	It includes improved local air quality, improved waste management, etc.
- Adaptation to Climate Change	It includes improved water availability, reduced soil erosion, reduced deforestation, etc.
3. High level political support	Proposed actions should be in line with the government's national or sectoral priorities and should build upon and feed into existing initiatives.
4. MRV- ability	The MRV-ability of a proposed NAMA is expressed in terms of availability of a baseline, indicators for actions and milestones that would facilitate the monitoring of the GHG reductions resulting from the project.
5. Institutional readiness to implement	The institution that has the mandate to execute the NAMA project idea should have the necessary institutional, technical, managerial and human capacities to implement the proposed project.



Criteria	Weights (% out of 100) Combine with 1-2-3 weights
1. GHG reduction potential (and cost)	
2. Co-benefits	
- Economic co-benefits	
- Social co-benefits	
- Environmental co-benefits	
- Adaptation to Climate Change	
3. High level political support	
4. MRV- ability	
5. Institutional readiness to implement (including legal)	
6. market readiness ??	
7. Financial attractiveness (how easy to implement from financial point of	

Selection criteria	GHG reduction potential	Co-benefits*				Average score of co-benefits	High level political support	MRV- ability	Institutional readiness to implement	TOTAL score
Weights	1.5				1		2	1.5	2	
Power – PV (10 MW)										
Power – Hydro (233 + 92 MW)										
Power – Wind (500 MW)										
Power – Biogas (15-25 MW)										
Power – Waste to Energy (75.5 MW)										
Bus Rapid Transit with dedicated lanes										
Hybrid electric cars										
Fuel Efficient cars										
Scoring values: The scoring numeric values are from 0 to 3, and determined by the following: 3: High 2: Moderate 1: Low 0: not applicable * The score of this criterion is the averaged score of the economic, social, environmental and adaptation co-benefits.										





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NAMA options for Lebanon

Partner institutions























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International Partnership
on Mitigation and MRV




REPUBLIC OF LEBANON
MINISTRY OF ENVIRONMENT

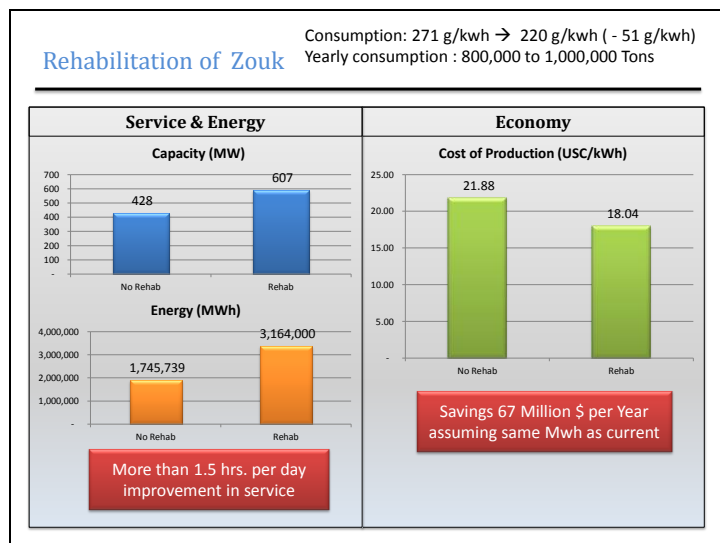


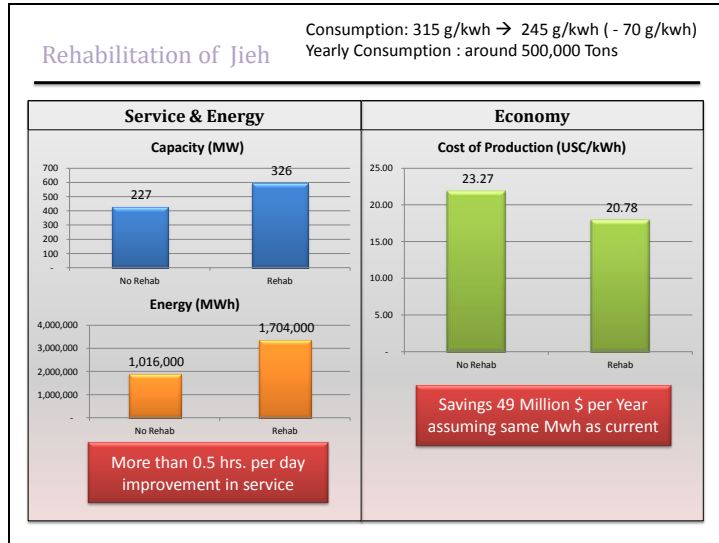
UN
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Rehabilitation of Zouk & Jieh P.P. Hydro Development Micro Hydro Energy Waste to Energy from WWTP HFO Conditioning

By Karim Osseiran
Energy Consultant at the MoEW
22 May 2013







Hydro Development Possibilities

1- Rehabilitation & Upgrade of Existing Hydro Plants :

Will increase the available Hydro generation capacity at least from 190 to 282 MW (+ 92 MW)

2- Installation of New Hydro Plants – Master Plan:

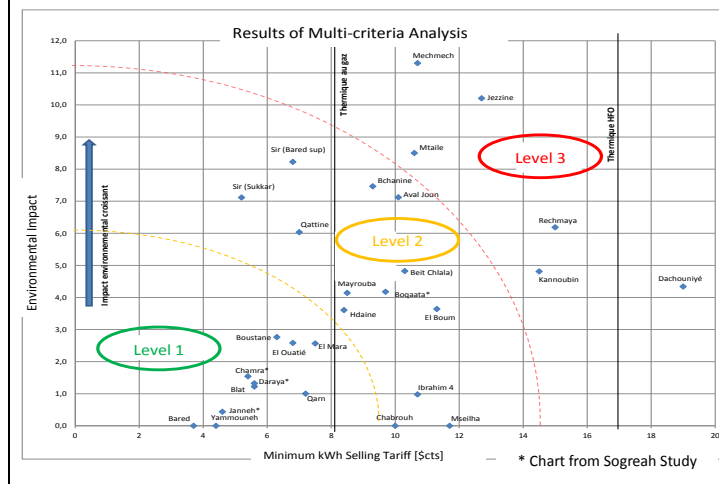
32 new sites were identified as follows:

- Around **263 MW (1,271 GWh/y)** with a cost of **667 M.\$** in Run of River scheme
- Around **368 MW (1,363 GWh/y)** with a cost of **772 M.\$** in Peak scheme

25 of these are economically viable with Minimum Selling Tariff < 12 \$c/kWh:

- Around **233 MW (1,126 GWh/y)** with a cost of **560 M.\$** in Run of River scheme
- Around **315 MW (1,217 GWh/y)** with a cost of **665 M.\$** in Peak scheme

New Hydro Sites Feasibility Multi-Criteria Chart



Non River Streams Micro Hydro Assessment

Micro Hydro Stream	Public Institution	No. of Studied Sites today	MW
Irrigation Channels & Conveyors	All Water Establishments, Ministry of Agriculture	4	1.270
Waste Water Treatment Plants Intakes & Outfalls	All Water Establishments, CDR	1	0.123
Electric Power Plants Outfall Channels	EDL Electric Power Plants	5	3.421
Municipal Water Distribution Networks	All Water Establishments, Municipalities	4	0.144

* Data from UNDP-CEDRO Study

Anaerobic Digestion Technology: Principle & Requirements

- Anaerobic digestion is a process in which organic matter from wet organic wastes (ie. Waste water sludge, liquid & solid manure, food processing wastes, slaughterhouse residues, agriculture residues etc.) is converted into Biogas by bacteria in the absence of oxygen.
- The Biogas including 60% Methane (CH₄) is then collected and may be used to generate Electricity & Heat (1 Nm³ Biogas ⇔ 0.6 liters LFO).
- Biogas reduces emissions by preventing methane release in the atmosphere. Methane is 21 times stronger than carbon dioxide as a greenhouse gas.
- In addition, the AD process creates potentially valuable by-products, such as High Ammonia content fertilizer from hygienized sludge, and/or liquid with available nutrients.
- Finally the AD process has the advantage of Odor Control & Sludge volume reduction to (1/3).

Waste to Energy from WWTP Summary

	Scenario 1: Sludge AD Only (6 Plants)	Scenario 2 : Sludge AD with Added Sludge (7 + 14 plants)	Scenario 3: Sludge AD with Added Sludge & Co-Digestion (7 + 14 plants)
Already Installed Generation Capacity (Tripoli)	3.09 MW	3.09 MW	3.09 MW
Additional Generation Capacity	4.23 MW	5.79 MW	8.59 MW
Total Generation Capacity	7.32 MW	+ 21.4 % 8.88 MW	+ 59.5 % 11.68 MW
Electric Energy	54,276 MWh/y	+ 27.5 % 69,223 MWh/y	+ 70.8 % 92,683 MWh/y
Heat Energy	57,059 MWh/y	72,774 MWh/y	97,437 MWh/y
CO₂ Reduction	- 20,500 T CO₂e/y	+ 25.4 % - 25,700 T CO₂e/y	+70.8% -35,000 T CO₂e/y
Self Generation	75%	83% to 112%	83% to 205%
Levelized Cost of Electricity*	N.A.	7.7 to 19.7 c/Kwh	7.1 to 10.7 c/Kwh

Scenario 3 represents 3% to 4% of Lebanon's Bioenergy Potential

* The heat & the fertilizers that are produced are an added benefit that has not been priced

HFO Conditioning Solution : Summary Table

Variable	Actual Baseline Level of Emission	Guaranteed Value of Improvement	Actual Results following a 6 months Trial Period on one Unit at Zouk
Particulate Matter – PM	536 mg/Nm3	50 % Reduction	87 % Reduction
Carbon Oxide – CO	841 ppm	80 % Reduction	91 % Reduction
Condensing Sulfur Trioxide – SO ₃	1.35 ppm	80 % Reduction	87 % Reduction
Nitrogen Oxides - Nox	510 ppm	15 % Reduction	24 % Reduction
Fly Ash Acidity - pH	4.2	3.5 Minimum	2.5 to 3.0
Boiler Cleanliness	Clogging due to hard Deposits	Clean	Clean & Old Deposits Removed
Boiler Efficiency – η	91.47 %	1% Increase	2% Increase

THANK YOU

Wind Farm NAMA

Hassan Harajli

22 May 2013


Large wind farm (500 MW) to support the national 12% RE target	
Introduction	Wind farm development in Lebanon, where Lebanon has at least 1500 MW of economically viable wind power to source.
Technology characteristics/highlights	<ul style="list-style-type: none"> • Renewable • Combustion-free • Competitive cost • Variable resource
Institutional and organizational requirements	<ul style="list-style-type: none"> • The government has released the first bidding document for a 50-100 MW wind farm, yet the regulatory framework of the released bid can be further solidified. • The large-scale renewable energy sector, esp. wind, needs a clear, transparent, and long-term regulatory framework to be established. • Local expertise does not exist since there are no wind farms to date in Lebanon. • More capacity building will be required for wider penetration • Utility requires training and upgrading (manpower and software) to enable them to handle the integration of variable resources of power.
Operation and maintenance	Technology is developed. Tenderers will have experienced operators on board.
Scale/Size of beneficiaries group	Nation-wide benefits, Lebanon will benefit as a whole in lowered blackouts
Disadvantages	<ul style="list-style-type: none"> • Variable resource • Can cause problems with migratory birds if not well mitigated

Costs & GHG Reduction


Costs	
Cost to implement mitigation technology	CAPEX: USD 819,020,000 (USD 200,000,000 for first 100 MW; then 10% less per additional 100 MW). OPEX: 1% of CAPEX
Incremental cost to implement mitigation technology, compared to "business as usual"	\$800-\$1,000/kW
GHG Reduction	
Baseline	Large scale wind power non-existent
Reduction potential	1,030,483 tCO _{2eq} /yr

Development impacts, direct and indirect benefits



Direct benefits	Added power to network to mitigate demand-supply deficit
Reduction of vulnerability to climate change, indirect	Fuel saving and combustion reduction
Economic benefits, indirect	<ul style="list-style-type: none"> • New businesses in installment, operation, logistics and maintenance. • Resources diversification • Rural income for landowners (and indirect economic benefits).
Social benefits, indirect Income, Education	<ul style="list-style-type: none"> • New jobs • Rural development • Pressures new education frontiers for wind integration • Awareness on renewables • Benefits to country as a whole in entering the large-scale wind farm (image)
Environmental benefits, indirect	<ul style="list-style-type: none"> • Reduction in GHG • Diversity of resources




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Local Context	
Opportunities and Barriers	<ul style="list-style-type: none"> • Wind resources available • Shortage of power available • Less costly than fuel oil generation (which is used in Lebanon currently) • Acquire large territories. • Variability and management of variability
Market potential	Grid assessment required, yet can integrate up to 15-20% of total electricity mix from wind power
Status	First bid underway, yet legality of bidding process an issue as the National Regulatory Authority has not been established as prescribed under Law 462
Timeframe	Medium term.



CEDRO Country Energy Efficiency and Renewable Energy Demonstration Project for the Recovery of Lebanon

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Scaling up renewable energy and energy efficiency in the Lebanese building sector

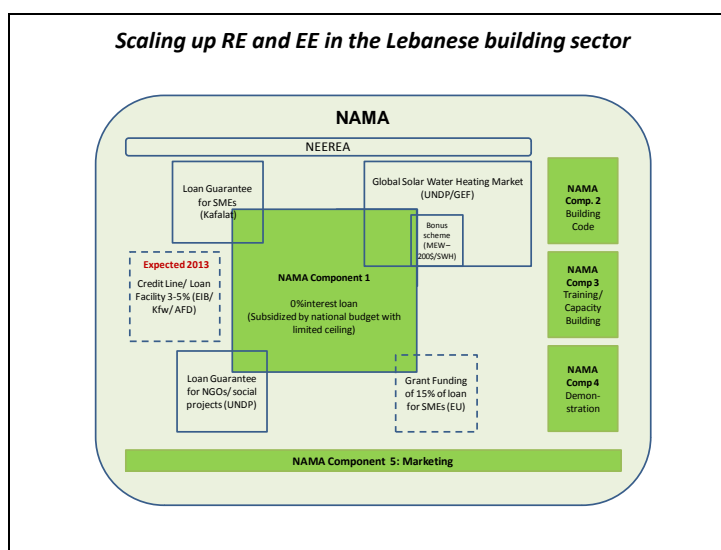
Rani Al Achkar, Energy Engineer
Lebanese Center for Energy conservation (LCEC)

22 May 2013



L.C.E.C.
Lebanese Center for Energy Conservation
المركز اللبناني لخفض استهلاك الطاقة

Scaling up RE and EE in the Lebanese building sector	
Introduction	The strategy aims to significantly increase the uptake of building integrated RE and EE technologies and measures across the entire building sector (residential, commercial as well as public building) in Lebanon. The principle objective of the strategy is to reduce rising GHG emissions associated with energy use in the built environment.
Technology characteristics/high lights	Building integrated renewable energy focusing in particular on SWH and PV systems, as well as the full range of technologies for building energy efficiency.
Institutional and organizational requirements	<ul style="list-style-type: none"> Upscaling of the financing mechanism Enactment of new building code and additional legislations Training/capacity building in both the private and public sectors required Demonstration and showcasing the best practice examples Ensure widespread dissemination
Scale/Size of beneficiaries group	The entire building sector in Lebanon covering all segments including residential, commercial as well as public buildings.
Disadvantages	<ul style="list-style-type: none"> The implementation of minimal energy efficiency standards would increase the cost of construction. Modest rate of return of some energy efficiency investments.



Costs & GHG Reduction	
Costs	
Cost to implement mitigation technology	USD 49,000,000
Incremental cost to implement mitigation technology, compared to "business as usual"	USD 17,000,000
GHG Reduction	
Baseline	<ul style="list-style-type: none"> Already installed 43,500 SWHs (2011), 615 kWp PV systems benefitted from the existing financing mechanism (since end of 2012). 3 million CFLs were distributed part of the Lebanese CFL Replacement CDM project (2010).
Reduction potential	Initial broad estimates suggest that the NAMA may lead to total GHG emission reductions of over 14 mtCO ₂ e until 2030.

Development impacts, direct and indirect benefits

Development impacts, direct and indirect benefits	
Direct benefits	<ul style="list-style-type: none"> Creation of new jobs in the energy technology and energy services sector; Improved energy system reliability and energy security leading to reduced energy costs and greater productivity.
Economic benefits, indirect	<ul style="list-style-type: none"> More reliable electricity supply and increased access to energy services for households. Reduced dependence on private self generators will increase disposable incomes of households given the high cost of private generation.
Social benefits, indirect Income, Education	<ul style="list-style-type: none"> Higher living standards and health benefits through improved building stock.
Environmental benefits, indirect	<ul style="list-style-type: none"> Improvement of local environmental quality, e.g. reduction of noise and pollution from diesel generators.

Local Context

Local Context	
Opportunities and Barriers	
Financial	<p>Higher cost of RE and EE technologies and high cost of retrofitting for older buildings</p> <p>Access to capital (esp. as smaller projects and energy efficiency projects are not attractive for commercial banks)</p> <p>Risk perception of banks of RE and EE technologies</p> <p>Customs increase on RE technologies by Lebanese authorities</p>
Information	<p>Lack of awareness and information (general public)</p> <p>Lack of technical expertise/ know how (institutions, banks, engineers)</p> <p>Lack of building data and weather data</p>
Regulatory	<p>The fact that Law 462 is not applied, which grants monopoly rights to EDL to supply electricity and prevents widespread access to feed into the national grid</p> <p>Lack of mandatory building code for energy performance</p>
Technical	<p>Urban structure (shading of buildings reduces solar efficiency)</p>

Local Context

Local Context (continued)	
Opportunities and Barriers (continued)	<ul style="list-style-type: none"> The barriers to a widespread adoption of sustainable energy technologies are only partly addressed by current programmes. There is a need to bring under one umbrella the activities envisaged to have them properly implemented and coordinated on ground.
Market Potential	<ul style="list-style-type: none"> The building sector accounts for 25-45% of the total national energy consumption.. Emissions are mainly associated with electricity use for lighting, water heating, cooling and space heating. With expected population growth, increasing urbanization and economic development over 300,000 new residential units will be built until 2030. Coupled with rising demand for household appliances as standards of living increase, there is a huge potential for both energy efficiency as well as building integrated renewable energy systems in this sector.

Local Context

Local Context (continued)	
Status	<ul style="list-style-type: none"> National Energy Efficiency Action Plan (NEEAP) approved by government in November 2011 Several initiatives have taken place in the development of the thermal standard for buildings. A net metering scheme was introduced in December 2011 The National Energy Efficiency and Renewable Action (NEEREA) was set up by the government in cooperation with the National Bank of Lebanon, providing 0% interest loan facility over 14 years for businesses as well as households for energy efficiency and renewable technology investments.
Timeframe	<ul style="list-style-type: none"> Preparation of the full NAMA proposal and implementation plan: during 2013 Implementation of the NAMA activities: 2014 to 2020

Thank you!

Ministry of Energy and Water (MEW)
Corniche du Fleuve, 1st Floor
Room 303, Beirut, Lebanon

www.lcecp.org.lb

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Photovoltaic power station (10MW)
to support the national 12% RE
target

Dr. Farid Chaaban

22 May 2013


Title of NAMA	
Introduction	Technology for direct transfer of solar power to electricity via photovoltaic cells. These cells generate dc power which can be stored, or used, after inversion into AC.
Technology characteristics/highlights	<ul style="list-style-type: none"> • Renewable • Combustion-free • High cost • Still developing
Institutional and organizational requirements	<ul style="list-style-type: none"> • It will require new policies and laws (e.g., feed in tariffs) with some incentives. • Local expertise does exist, however very few households have installed PV cells • More capacity building will be required for wider penetration.
Operation and maintenance	Technology is developed, however improvements in terms of efficiency (R&D) will lead to higher acceptance. In terms of O&M, minimal effort is required.
Scale/Size of beneficiaries group	Small-scale applications due to high cost and availability of other renewable resources.
Disadvantages	<ul style="list-style-type: none"> • High cost. • Low conversion efficiency. • High maintenance cost.

Costs & GHG Reduction


Costs	
Cost to implement mitigation technology	CAPEX: USD 30,000,000 OPEX: USD 300,000
Incremental cost to implement mitigation technology, compared to "business as usual"	
GHG Reduction	
Baseline	Limited number of PV (mostly stand-alone) installed.
Reduction potential	11,777 tCO _{2eq} /yr

Development impacts, direct and indirect benefits


Direct benefits	Continuous generation with no shedding periods.
Reduction of vulnerability to climate change, indirect	Fuel saving and combustion reduction
Economic benefits, indirect	<ul style="list-style-type: none"> • New businesses on manufacturing, installment, and maintenance. • Resources diversification.
Social benefits, indirect Income, Education	<ul style="list-style-type: none"> • Capacity building is deemed necessary • New jobs
Environmental benefits, indirect	<ul style="list-style-type: none"> • Reduction in GHG, • Diversity of resources




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Ministry of Environment




UNDP
Empower People
Accelerate Progress

Local Context	
Opportunities and Barriers	<ul style="list-style-type: none"> High cost of PV cells and the relevant electronic components for power inversion. Lack of incentives. Acquire large territories.
Market potential	Medium market potential since the cost is consistently dropping, and efficiency rising.
Status	Not adopted yet.
Timeframe	Medium term.







Federal Ministry for the
Environment, Nature Conservation
and Nuclear Safety




An Australian Government Initiative




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Waste treatment through anaerobic digestion and electricity generation (15-25MW)

Dr. Farid Chaaban

22 May 2013

Title of NAMA	
Introduction	Solid waste is used as an alternative fuel to generate electricity. It is part of both national and sectoral policies of the energy and solid waste sectors
Technology characteristics/highlights	<ul style="list-style-type: none"> Anaerobic digestion of organic waste, which produces biogas (mainly methane) that is used for power generation.
Institutional and organizational requirements	Relevant regulations for waste collection needed. Capacity building is also required. Private sector should be encouraged to adopt the technology.
Operation and maintenance	High technical skills required. Capacity building and training needed. Municipalities should be brought in.
Scale/Size of beneficiaries group	The whole power network will benefit.
Disadvantages	Intricate operational requirement Odors

Costs & GHG Reduction

Costs	
Cost to implement mitigation technology	CAPEX: USD 47,500,000 (USD 1,900/kW) OPEX: USD 1,187,500 (2.5%/yr of CAPEX)
Incremental cost to implement mitigation technology, compared to "business as usual"	
GHG Reduction	
Baseline	No biomass or waste to energy plant is installed or operational.
Reduction potential	95,688 tCO _{2eq} /yr

Development impacts, direct and indirect benefits

Direct benefits	80%- efficient conversion process.
Reduction of vulnerability to climate change, indirect	GHG emissions reduction. Smaller solid waste management problem.
Economic benefits, indirect	New jobs. Better solid waste management.
Social benefits, indirect Income, Education	New expertise to be developed. Additional income for municipalities.
Environmental benefits, indirect	Reduces amount of landfilled waste GHG emissions reduction, from the sectors



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Local Context	
Opportunities and Barriers	<ul style="list-style-type: none"> Lack of awareness could pose a problem.
Market potential	Private sector involvement would result in good market potential for the technology.
Status	Adopted by government
Timeframe	Medium term (5-7 years)







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***Implementation of the National solid
waste Strategy using WtE Technology***

Bassam SABBAGH
Head of Urban Environment Service
- Ministry of Environment -

22 May 2013

Title of NAMA	
Introduction	Electricity Generation using solid waste as an alternative fuel
Technology characteristics	<ul style="list-style-type: none"> • Very Advanced Technology, especially in last 10 – 15 years • Low % in volume after incineration • Generation of electricity from solid waste
Institutional and organizational requirements	<ul style="list-style-type: none"> • Issuing of an integrated solid waste management law with its applicable decrees. • Adopting a financing and cost recovery system. • Specific Actions to be taken by the government considering incentives, awareness, indirect taxes, adoption of "polluter pays" principle • Some relevant regulations for waste collection needs to be amended. • Capacity building is required. • Private sector participation.
Operation and maintenance	<ul style="list-style-type: none"> • O & M done by the private sector • Initial cost paid by the government • Cost of waste collection is the responsibility of the Municipalities
Scale/Size of beneficiaries group	<ul style="list-style-type: none"> • Large benefit - EDL Economy financial sector lower pressure on LF Environment • Indirect benefit - Health Tourism
Disadvantages	<ul style="list-style-type: none"> • Lack of awareness • Technology not very well known by the public • High cost (but not higher than what we are paying now)

Costs & GHG Reduction

Costs	
Cost to implement mitigation technology	CAPEX: around 1 Billion \$ OPEX: 36 Million \$

GHG Reduction	
Baseline	No Incinerations installed
Potential reduction	<ul style="list-style-type: none"> 400,122 tCO₂eq/yr (from fossil fuel replacement). Additional reduction from the entire solid waste management strategy is anticipated.

Impacts and Benefits	
Direct benefits	<ul style="list-style-type: none"> Energy sector Solid Waste Management sector
Reduction of vulnerability to climate change, indirect	<ul style="list-style-type: none"> Reduction of GHG emissions from electricity production and from illegal dumpsites and Landfills
Economic benefits, indirect	<ul style="list-style-type: none"> New Jobs and market Better solid waste management Financial savings
Social benefits, indirect Income, Education	<ul style="list-style-type: none"> New expertise and technology to be developed
Environmental benefits, indirect	<ul style="list-style-type: none"> Less landfill area requirement GHG emissions reduction Closure of all open dumps Less fuel used for electricity generation



Local Context	
Opportunities and Barriers	<ul style="list-style-type: none"> Less usage of fuel Less costly than fuel Lack of awareness
Market potential	<ul style="list-style-type: none"> Reuse of Bottom ash in construction projects Private sector involvement
Status	<ul style="list-style-type: none"> Adopted by the Government – Sept. 2010 Preparation of the feasibility study (phase 1)
Timeframe	<ul style="list-style-type: none"> Medium term (5 to 7 years)





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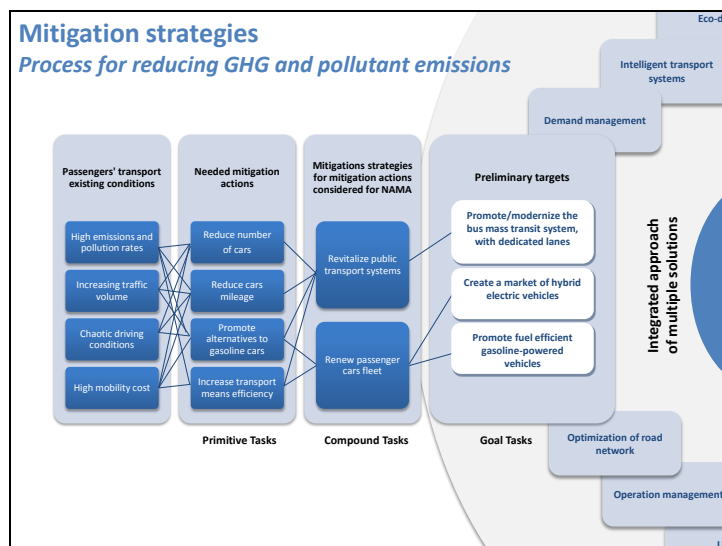
United Nations
Environment Programme

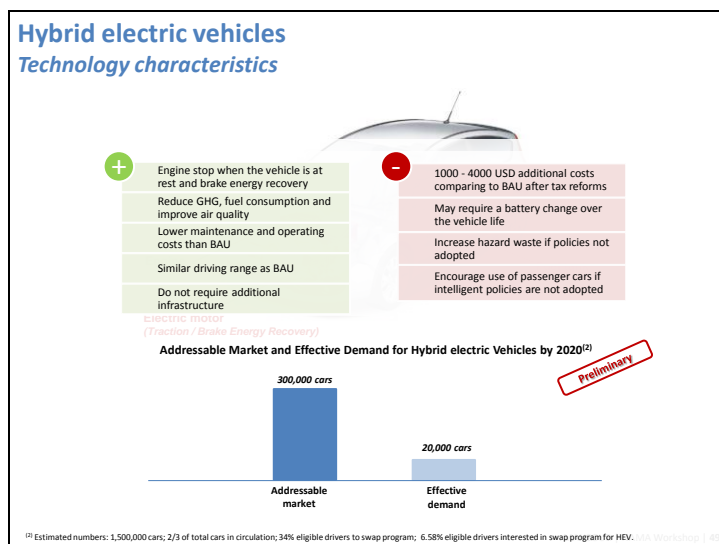
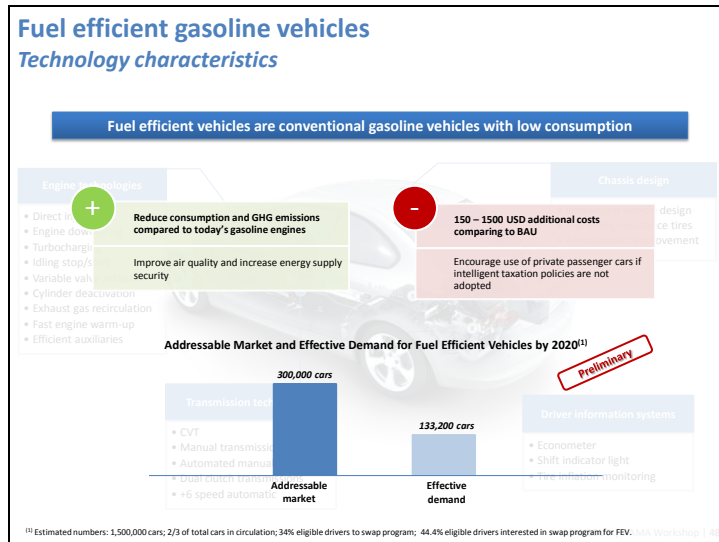
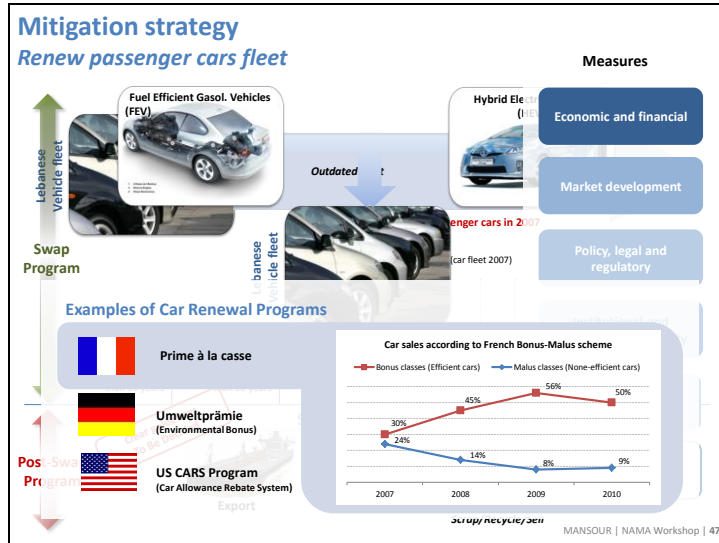
NAMA Design and Preparation:
Consultation on selecting priority NAMAs for Lebanon

Transport Sector Mitigations Actions:
passenger cars swap program
bus mass transit on dedicated lanes

Charbel MANSOUR, Ph.D.
 Assistant Professor, Lebanese American University

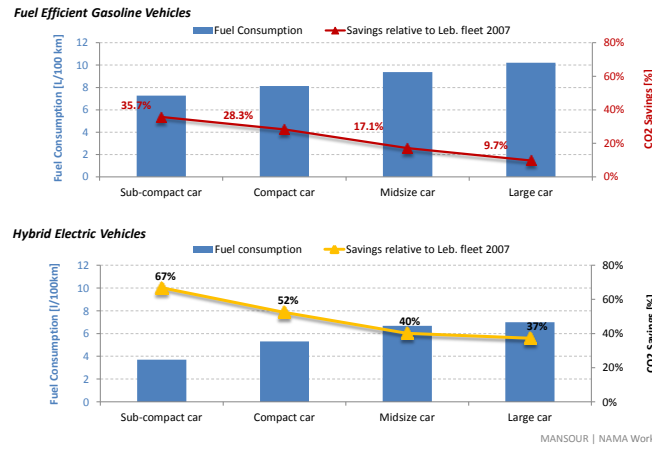
Wednesday May 22nd, 2013
 Holiday Inn Dunes Hotel-Verdun





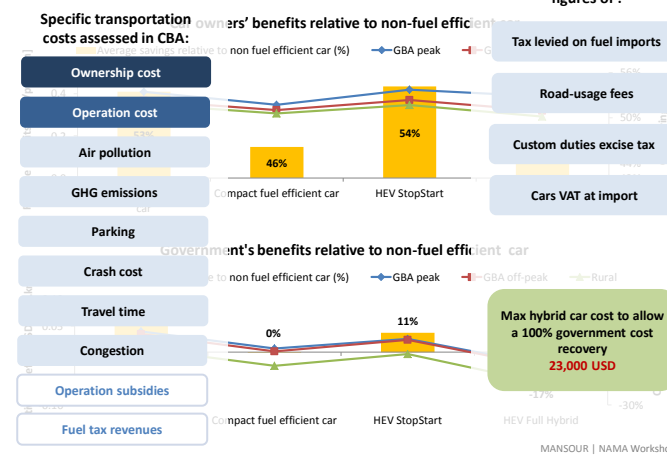
Renew passenger cars fleet

Fuel and CO2 savings potential in Greater Beirut Area (Baseline 2007)



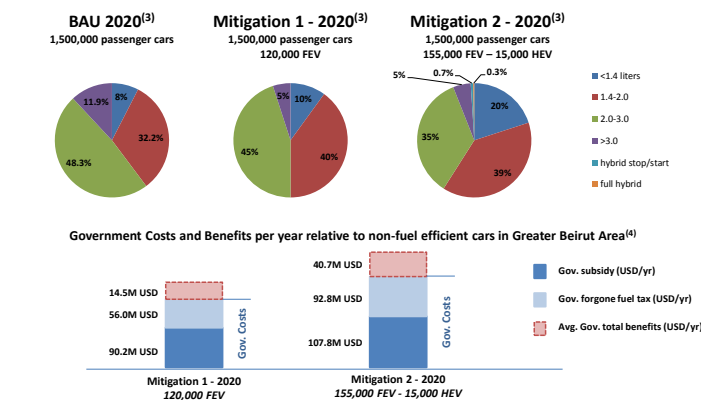
Renew passenger cars fleet

Cost benefits analysis



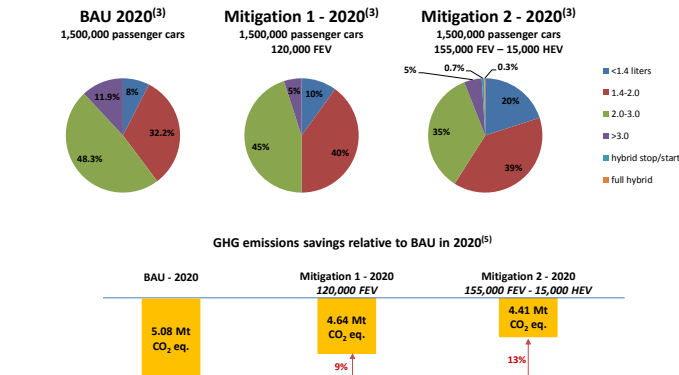
Renew passenger cars fleet

Government's cost and benefits: BAU 2020 v/s Mitigation Scenarios



Renew passenger cars fleet

GHG emissions savings: BAU 2020 v/s Mitigation Scenarios



⁽³⁾ BAU 2020 total emissions are assumed based the IEA increase rate of Lebanon GHG emissions between 2000 and 2007.

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Renew passenger cars fleet

Action plan for FEV-HEV swap program

Type	Priority sequence	Measures
Economic and financial measures	1 Create market (give incentives)	Exemption from custom and excise fees, registration fees, and road usage fees at registration.
	2 Stop the bleed	Adopt a Bonus-Malus tax policy where polluters pay more annual road-usage fees, and where taxes like the road usage fees are reconsidered according to fuel efficiency and/or emissions rather than engine displacement.
Market development	3 Remove old cars	Create a car termination plant that deals with the car termination process after the swap in the scrappage program
Policy, legal and regulatory	4 Regulate car imports	Update decree 6603/1995 relating to standards on permissible levels of exhaust fumes and exhaust quality to cover all types of vehicles
Institutional/organizational capacity	5 Close the tap	Set up a mechanical inspection unit at the port of Beirut. In charge of checking up the emissions and safety standards of imported pre-owned cars before entering the country
Social awareness	6 Reform wrong perception	Establish awareness campaign
Project monitoring and validation	7 Monitor the progress	Create Mobility Monitoring Indicators (MMI) framework

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Mitigation technology

Bus technologies on dedicated lanes



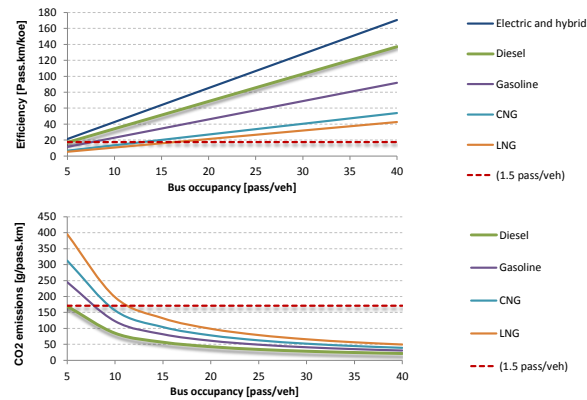
12-meter bus:
Diesel
Gasoline
CNG
LNG
Electric and hybrid

+	<ul style="list-style-type: none"> Reduce total vehicle mileage Reduce congestion, energy consumption and GHG emissions Improve air quality Reduce mortality Social equality and poverty reduction Increase energy supply security Increase road capacity and speed 	-	<ul style="list-style-type: none"> Need urban space for dedicated lanes Need an optimized network to serve all regions in the city High government investment expense Limited around scheduled timetables, delays are expected if not well managed Average speed could be lower than passenger cars if not using dedicated lanes
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Bus mass transit on dedicated lanes

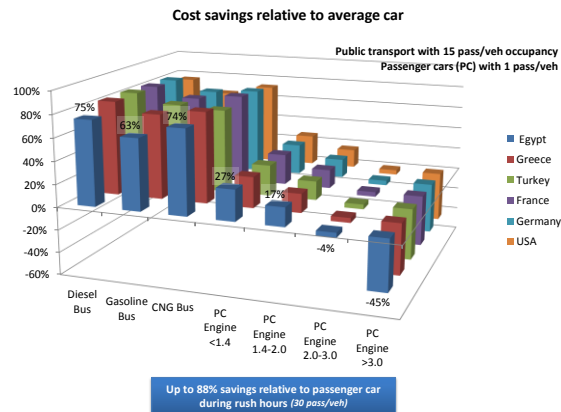
Development impacts: Fuel and CO₂ savings



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Bus mass transit on dedicated lanes

Fuel cost savings

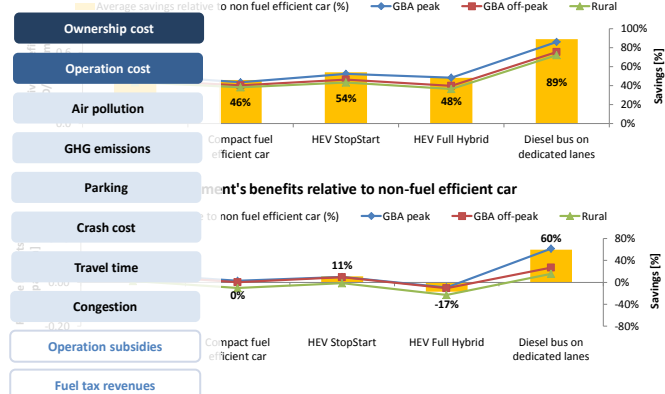


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Bus mass transit on dedicated lanes

Cost benefits analysis

Specific transportation costs assessed in CBA:



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Bus mass transit on dedicated lanes

Action plan

For discussion

Type	Priority sequence	Measures				
Economic and financial measures	1 Develop supply chain	Design a bus network covering all boroughs within GBA and reserve lanes for bus operation	Ensure sufficient number of transit buses with proper powertrain technology	Exempt mass transit buses (and spare parts) from custom/excise fees, and registration fees		
	2 Shift travel demand	Establish smart card ticketing schemes with appropriate reduced tariffs	Create employee package for taxi drivers including social benefits, insurance, retirement plans, etc.			
Market development	3 Deploy effective infrastructure	Optimize the operation management of the bus transit system: conserve a clear and regular bus operation, implement real-time information system, deploy personalized travel planning tools, implement transit signal priority, set up stringent maintenance and cleanliness program, construct relevant maintenance and repair workshops				
Policy, legal and regulatory	4 Set regulatory framework	Set clear regulations specifying the operation maneuvers of private bus operations and taxi owners	Draft new amended laws for increasing parking space and reserving lanes for buses			
Institutional/organizational capacity	5 Manage demand	Develop technical expertise among TMO staff and high level management				
Social awareness	6 Stimulate passengers demand	Provide information on CO2, fuel and cost savings comparing to passenger cars				
Project monitoring and validation	7 Monitor the progress	Create Mobility Monitoring Indicators (MMI) framework				

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Federal Ministry for the Environment, Nature Conservation and Nuclear Safety


An Australian Government Initiative

Thank you for your attention

Charbel MANSOUR, PhD charbel.mansour@lau.edu.lb

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Nationally Appropriate Mitigation Actions (NAMAs)

Definition

Nationally Appropriate Mitigation Actions are voluntary emission reduction proposals submitted by developing countries to the United Nations Framework Convention on Climate Change (UNFCCC). These government-prioritized actions aim at reducing GHG emissions from various sectors, and are expected to be the main vehicle for mitigation action in developing countries such as Lebanon under a future climate agreement.

As the name implies, NAMAs are nationally appropriate actions. They can be implemented at national, regional, or local levels, contribute to **sustainable development**, and are supported and enabled by technology, financing and capacity building, in a **measurable, reportable** and **verifiable** manner. Support can be requested for either the preparation of the NAMA concept or for its implementation. Lebanon can also choose to submit domestically-funded (or unilateral) NAMAs for recognition for which international support is not requested.

Box 1: Key aspects of NAMA

- ☑ Voluntary in nature
- ☑ In line with national or local development priorities
- ☑ Supported (technology, capacity building and financing) from domestic and/or international sources
- ☑ Reduces GHG emissions
- ☑ Transparent; Measurable

Types of NAMAs

Three broad types of NAMAs have been identified:

Unilateral NAMAs: domestically funded and implemented without any support from an external funding source;

Supported NAMAs: implemented with financial, technological and/or capacity building support from an external funding source;

Credited NAMAs: generate revenues from selling carbon credits resulting from emissions reductions (NB: this market mechanism is not yet agreed on in the UNFCCC).

Furthermore, NAMAs can be:

Strategies: such as a national renewable strategy – wind, solar, etc.

Policies: such as an energy efficiency standard, a feed-in-tariff, etc.

Programmes: such as an energy efficient lighting programme, etc.

Projects: such as a bus rapid transit lane, etc.

In addition to requesting support for full-scale NAMA implementation, Lebanon can receive support for:

- 1) Capacity building and readiness for NAMA development;
- 2) Pilot projects that are part of a broader NAMA strategy and would help the development of such a strategy.

UNFCCC - United Nations Framework Convention on Climate Change:

An international environmental treaty produced at the 1992 Earth Summit in Rio de Janeiro with the objective to stabilize greenhouse gas concentrations in the atmosphere. Lebanon has been a Party to the UNFCCC since 1994.

KP - Kyoto Protocol:

An international agreement linked to the UNFCCC adopted in Kyoto, Japan, in 1997 that sets binding targets for industrialized countries to reduce their emissions. Lebanon became a Party to the KP in 2006.

GHG emissions - Greenhouse gas emissions:

Atmospheric gases that contribute to the greenhouse effect by absorbing infrared radiation produced by solar warming of the Earth's surface. They include carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O).

Benefits of NAMAs

The primary function of NAMAs is the direct reduction of GHG emissions. In addition, NAMAs should have important social, economic and environmental benefits. Since NAMAs in the various sectors are considered discrete set of measures that feed into the transition to a low-emission development, they provide an opportunity to achieve long term transformational change supporting sustainable economic growth in Lebanon. NAMAs also provide a great opportunity to engage with the private sector.

Measurement, Reporting and Verification requirements - MRV

The requirements for MRV of NAMAs entails having a strong, credible and transparent system for tracking GHG emissions that is consistent, comparable, complete and accurate. Therefore, one of the main challenges when designing and implementing a NAMA is its "MRV-ability". The MRV in turn provides assurances that the NAMAs are contributing to emissions reduction, and that this reduction is monitored, the progress is reported and the results verified. NAMAs receiving international support are subject to both domestic and international MRV, while domestically-funded NAMAs are only subject to domestic MRV. All MRVs will be "in accordance with guidelines to be developed under the UNFCCC."

The Clean Development Mechanism and NAMAs

CDM and NAMAs use divergent approaches, but both reduce GHG emissions. The primary difference is their rationale: whereas the CDM provides additional ways for **developed countries** to meet their emission reduction commitments under the KP through the purchase of project-based emissions reductions from developing countries, NAMAs are primarily conceived as a means for **developing countries** to reduce domestic emissions in the context of sustainable development. Programmatic CDM – "Programmes of Activities (POAs)" – is closer to the NAMA concept in terms of scale, since PoAs can cover policies and measures rather than individual projects. However, PoAs still generate credits. The differences between CDM and NAMAs are summarized in [Table 1](#) below.

Table 1: Differences between CDM and NAMAs - Evaluation

	CDM	NAMA
Definition	One of the flexible mechanisms of the KP It allows a developed country with an emission-reduction commitment to implement an emission-reduction project in a developing country	Voluntary Commitment under the UNFCCC Internationally supported NAMAs will be subject to both domestic and international MRV, while unilateral NAMAs will be subject to domestic MRV
Actions	Projects and programmes of activities	Policies, strategies, programmes and projects
Initiator	Typically Private sector or public sector	Typically Public Sector
Return on investment	Certificates (Certified Emission Reductions, CERs) CERs are issued by the CDM Executive Board based on project verification reports. CERs can be traded on carbon markets	Financial and technical support Developed countries provide enhanced financial, technological and capacity building support for the preparation and implementation of NAMAs of developing countries
Preconditions	Reductions in emissions must be additional to any that would occur in the absence of the certified project activity CDM to assist developing countries in achieving sustainable development	A NAMA, framed in the context of sustainable development, aims at achieving a deviation in emissions relative to 'business as usual' emissions in 2020
Requirement	Project supports sustainable development (proven by Government letter)	Action is nationally appropriate (proven by government registration under the UNFCCC)
Financing	Upfront financing, generally through the private sector. Certificates are issued ex-post based on regular verification reports. CERs are sold on a carbon market	Domestic resources and/or international support (e.g. through bilateral/multilateral agreements, development banks) for the preparation and implementation of NAMAs
Rulebook	Marrakech Accords and subsequent body of CDM Executive Board decisions	Relevant guidance, including MRV guidelines being developed under the Convention

Source: adapted from GIZ and BMU. 2011.CDM and NAMAs – Overview and Differences. Transport and Mobility.

Steps for NAMA preparation in Lebanon

In Lebanon, the Ministry of Environment, as the National Coordinator for NAMAs appointed by the Council of Ministers, will consider a six-step NAMA process:

Step 1 GHG Emissions Inventories and Assessment of Presiding Framework Conditions

The first step serves at identifying the main GHG emission sources and sectors and preparing baseline and business-as-usual scenarios for the different sectors. In parallel, the assessment of the national framework conditions for mitigation, including the governance framework and general barriers for climate policy implementation, are considered. The Ministry of Environment has already undertaken this work, within the broader national context, through the **National Communication** and **Technology Needs Assessment** processes. These will serve as a starting platform since both processes were conducted with extensive stakeholder involvement (Reports available at <http://undp.org.lb/communication/publications/index.cfm>)

Step 2 NAMA Identification and Scoping

The Ministry of Environment, with inputs from **stakeholders**, will identify opportunities for mitigation actions that can be packaged as potential NAMAs for Lebanon. The evaluation of emission reduction potential, associated costs at both national and sectoral levels, co-benefits, and feasibility of implementation are important at this stage because once **Lebanese NAMAs** are submitted and financing is secured, they **are** subject to the agreed MRV requirements.

The long-list of identified NAMAs will be categorized into two sets: 1) NAMAs that request support from international funding sources for preparation or implementation, and, 2) NAMAs that will be implemented through national efforts (e.g. funding source is the national budget), i.e. domestic NAMAs.

Step 3 NAMA Prioritization and Selection

Based on a national consensus, the long-list of NAMAs (step 2) will be shortened by using two “requirement criteria” : 1) financing source and type, and 2) transformational aspect of the NAMA idea. Prioritization of the most feasible options to be further elaborated according to specific selection criteria developed for Lebanon (Box 2) will then be done. Prioritized NAMAs can be developed into **concept notes** aimed at policy-makers that provide a brief explanation of how each NAMA would work.

This step is led by the Ministry of Environment as the National Coordinator and requires strong stakeholder involvement, with a clear identification of the roles and responsibilities of the different institutions at this stage, especially in terms of who would be leading the preparation of the NAMAs in different sectors in order to avoid duplication of work, and secure buy-in of the relevant stakeholders.

Step 4 NAMA Preparation

With guidance and assistance provided by the Ministry of Environment, concerned Ministries/institutions will develop fully detailed NAMA proposals and submit them to the Ministry of Environment to be a basis for negotiation of support and implementation conditions between the government and sources of support. Key challenges anticipated in the development of a full NAMA proposal are the elaboration of robust financing and MRV plans.

Box 2: Selection Criteria

- ☑ GHG reduction potential
- ☑ Sustainable development co-benefits
- ☑ Institutional readiness to implement
- ☑ MRV-ability
- ☑ High-level political support
- ☑ Market readiness

Box 3: Requirements for NAMA proposals

- ☑ Set the reference/baseline scenarios
- ☑ Set sector-wide targets
- ☑ Provide details on the MRV component
- ☑ Provide details on the costs and possible financing sources
- ☑ Propose a plan of action with timelines and the role and responsibilities of associated actors

Step 5 NAMA Registry

The UNFCCC has set up a NAMA registry to record submitted NAMAs and to facilitate the matching of finance, technology and capacity-building support for those NAMAs seeking international support. NAMA proposals should be presented and approved by the Ministry of Environment, to be officially submitted to the NAMA registry on behalf of the Lebanese government.

There are three types of relevant submission templates that can be used, depending on the request put forward:

- 1) NAMA seeking support for **preparation**;
- 2) NAMA seeking support for **implementation**;
- 3) NAMA for **recognition**;

The templates are available at: http://unfccc.int/cooperation_support/nama/items/6945.php.

Step 6 Implementation and MRV

The last step is the implementation of the NAMA within the relevant sectors once funding is secured and terms of the implementation agreed upon with the supporting countries. Throughout the lifetime of the action, there is a need for **measuring, reporting and verifying** the different aspects of NAMAs according to the MRV plan elaborated and agreed with the investor.

In general, the more specific and quantified the NAMA is, the easier it will be to define a metric for MRV. Both the development and the implementation of the MRV system are a shared responsibility of the NAMA implementer and the Ministry of Environment, as different types of NAMAs require “custom-made” MRV systems. It is important that government departments willing to develop and implement NAMAs do so in close coordination with the Ministry of Environment. This will also facilitate progress during the implementation phase of the NAMA, since NAMA implementers will have to report to the Ministry of Environment on the progress of their respective NAMAs.

Biennial Update Reports and International Consultations and Analysis and NAMAs

The Convention requests developing countries, including Lebanon, to prepare and submit **Biennial Update Reports (BURs)** on a two-yearly basis. Among other things, the BUR provides information on mitigation actions – including NAMAs under implementation and planned – including a description of associated methodologies and assumptions, analysis of impacts, financial support received, and an update on implementation progress. The MRV report submitted by the NAMA implementer to the Ministry of Environment (in [Step 6](#)) serves as a basis for the BUR. The BUR is then subject to an **International Consultations and Analysis (ICA)** process conducted by an independent technical body of experts in consultation with Lebanon, which will result in a detailed analysis report available to the public.

For more information: <http://www.moe.gov.lb/climatechange/contact.html>

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