

# Introduction

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## 1.1 General Project Framework

Lebanon ratified the United Nations Framework Convention on Climate Change (UNFCCC) in 1994 by virtue of Law 359, with a primary objective of achieving the stabilization of greenhouse gas (GHG) concentrations in the atmosphere at a level that would prevent dangerous anthropogenic activities from interfering with the climate system.

In terms of Articles 4.1(c), (j) and 12 of the Convention, countries are periodically required to submit reports to the Conference of Parties on various topics regarding their attempts to address climate change. In order to fulfill these requirements, Lebanon has submitted its Initial National Communication (INC) in 1999, and its Second National Communication (SNC) in 2011 through funding from the Global Environment Facility (GEF), management of the United Nations Development Programme (UNDP), and execution by the Ministry of Environment (MoE). National Communications established Lebanon's national inventory of greenhouse gases from 1994 to 2004, assessed and updated Lebanon's vulnerability to climate change, and proposed appropriate mitigation and adaptation measures Lebanon has also prepared its first national report on Technology Needs Assessment (TNA) and Technology Transfer (TT) in 2002.

UNFCCC Decision 2/CP.4 requested GEF to provide funding to developing country Parties to enable them to identify and submit to the COP their prioritized technology needs. Following a first round of Technology Needs Assessments conducted from 2000 to 2004 in 92 countries, the GEF allocated USD 50 million to support 35 to 45 countries to carry out improved Technology Needs Assessments within the framework of the UNFCCC. Lebanon has been selected to take part of this exercise, in order to complement the findings and proposals resulting from the SNC, and to build on the momentum that was created through this period on climate change issues.

This project comes to complement all the efforts the government of Lebanon is undertaking to combat climate change and aims at providing

new and additional information that responds to concerns, generates new findings for policy reform and shapes action plans for intervention.

## 1.2 Objectives of the TNA Project

The Technology Needs Assessment project, funded by the Global Environment Facility, managed by United Nations Environment Programme RISOE Center (URC) and executed by the Ministry of Environment (MoE), aims at assisting Lebanon in identifying and analysing priority technology needs to mitigate GHG emissions and reduce the vulnerability of sectors and livelihoods to the adverse impacts of climate change and to form the basis for a portfolio of Environmentally Sound Technology projects and programmes. Technical support for the implementation of the project is provided by Environment and Development Action (ENDA)-Senegal.

The main objectives of the project are:

- To identify and prioritize through country-driven participatory processes, technologies that can contribute to mitigation and adaptation goals of Lebanon, while meeting the national sustainable development goals and priorities;
- To identify barriers hindering the acquisition, deployment, and diffusion of prioritized technologies;
- To develop Technology Action Plans (TAP) specifying activities and enabling frameworks to overcome the barriers and facilitate the transfer, adoption, and diffusion of selected technologies in Lebanon;
- To develop proposals/concept notes for selected technologies in prospect for future funding.

## 1.3 TNA relevance to national development priorities

The TNA project is being undertaken to introduce technologies that could improve Lebanon's developmental and environmental integrity. The main

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objective is to identify and assess environmentally sound technologies that have synergies between reducing the impact of climate change and the rate of GHG emissions and Lebanon's national development objectives. The resulting TNA and TAP report will be used to:

- Identify a portfolio of technologies that have the potential to combat climate change, reduce environmental pollution, and contribute to Lebanon's sustainable development
- Communicate Lebanon's climate change technology requirements to the global community
- Facilitate the access to international sources of funding for the implementation of mitigation and adaptation activities
- Support Lebanon's position in climate change negotiations in the area of technology transfer

## 1.4 Lebanon's institutional response to climate change

Lebanon, like other developing countries, faces the dual challenge of protecting the environment while pursuing economic growth in a sustainable manner. All development paths induce an increase in levels of GHG emissions, which impose stresses on the human and natural systems. In this way, mitigation and adaptation strategies are dynamically connected to sectoral development plans. Numerous activities have been conducted recently by the Lebanese Government, intergovernmental agencies and non-governmental organizations not only to reduce emissions and increase the adaptive capacity of socio-economical systems but also to tackle specific national environmental problems such as air pollution, urban sprawl, traffic and electricity shortages. The following is a non-exhaustive list of direct climate change related projects/activities that are being or have been implemented in the country:

- The National Action Plan (NAP) for combating desertification: the plan was developed in 2003 by the Ministry of Agriculture (MoA) and

submitted to the United Nations Convention to Combat Desertification (UNCCCD). The plan is expected to help reduce GHG emissions and increase resilience of the sector through the promotion of sustainable agriculture, improved rangelands management and soil conservation practices.

- Sustainable Land Management Programme for Livelihood Development in Lebanon: the programme established at the Ministry of Agriculture assists the Lebanese Government in reducing land degradation and achieving sustainable land management through assessing alternatives in agricultural production to enhance market linkages and expand the agri-business and local SMEs.
- HASAD project : the Hilly Areas Sustainable Agriculture Development (HASAD) Project is a large scale water capturing programme at the Ministry of Agriculture funded by a loan from IFAD which promotes water and soil conservation (water harvesting, irrigation networks, technical assistance for improved soil and water conservation practices) and provides technical support to farmers (creation of Farmer service centers, marketing support, etc) in the desertification prone areas of Lebanon.
- National Water Sector Strategy (NWSS): the NWSS was officially launched in 2012 aiming to ensure water supply, irrigation and sanitation services through 16 initiatives involving institutional & organizational reforms as well as financial, commercial and environment initiatives such as modifying Law 221, refining climate change knowledge on water sector and preparing the sector for private sector participation.
- Lebanese Center for Energy Efficiency and Conservation: : the LCEC, established at the Ministry of Energy and Water is working on promoting the energy efficiency market, particularly in the industrial and domestic sector, through private Energy Saving Companies (ESCOs). Technical capacity building programmes, national energy saving

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campaigns and financial mechanisms are being implemented to encourage demand-side management especially that the Government pays a high subsidy cost for electricity. the LCEC serves as a national advisory unit on energy conservation that lobbies for energy efficiency at the policy-level while pushing the local market towards increasing demand-side management.

- Community Energy Efficiency and Renewable Energy Demonstration Project for the Recovery of Lebanon (CEDRO): The project is supporting early recovery activities by installing energy efficiency and renewable energy equipment in selected public buildings and facilities (schools, hospitals, municipal street lighting, etc.) in highly affected areas by the July 2006 conflict. The project also monitors the direct impacts of the installed equipment on the beneficiaries' energy bills to set the basis for future national sustainable energy strategies. CEDRO published in 2011 Lebanon's wind atlas which measures the wind potential in Lebanon and identifies potential hot spots for wind harnessing. It also published in 2012 Lebanon's bioenergy resource assessment which assesses the biomass potential in the country, identifies the most suitable conversion technologies and formulates Lebanon's National Bioenergy Strategy.
- Copenhagen Declaration: at the COP15 in Copenhagen, the Government of Lebanon has committed itself to voluntarily introduce 12% renewable energy in its energy mix by the year 2020. Lebanon's Copenhagen Declaration, which was later noted by the Policy Paper of the Energy Sector and adopted by the Council of Ministers in 2010.
- Policy Paper of the Ministry of Energy and Water: The MoEW has prepared and issued in 2010 a new plan for the reform of the electricity sector in Lebanon. While it primarily aims at increasing power generation, the plan is based on the use of renewable sources of energy, which can significantly reduce Lebanon's national emissions. An increase in generation capacity

is planned to reach 4000MW by 2014, and 5000MW after 2015. This additional capacity will be supplied through the construction of new power plants, dams, wind farms and waste-to-energy plans. The fuel sourcing will be mainly on natural gas (66%) with multiple sources of supply, and 12% on renewable energies. In addition, energy saving laws such as encouraging the use of CFL bulbs, solar water heaters, and public light saving mechanisms will be prepared and issued by MoEW.

- National Energy Efficiency Action Plan (NEEAP): the National Energy Efficiency Action Plan (NEEAP) for the years 2011-2015 was developed and adopted by the government in 2011, and provides Lebanon's strategy in energy efficiency and renewable energy through 14 national initiatives that contributes in achieving the national target of 12% renewable energy by 2020.