

5 OTHER INFORMATION: PUBLIC AWARENESS, EDUCATION AND CAPACITY BUILDING

This section presents an analysis of the enabling environment for the effective implementation of climate change mitigation and adaptation measures. Existing conditions were reviewed, constraints and gaps identified, and measures to improve the enabling environment were proposed.

It is partly based on the review of previous national general and sector-specific studies (MoE et al., 1999; MoE et al., 2002a; MoE et al., 2002b; MoE et al., 2007), and analyzes aspects of the enabling environment such as the institutional and policy framework, access to technology, climatic systematic observation, climate research, education, training and awareness, capacity building and information sharing.

5.1 INSTITUTIONAL AND POLICY FRAMEWORK

Law 690/2005 has stipulated the inclusion of climate change into the main mandate of the Ministry of Environment, specifically under the Service of Environmental Technology.

Apart from Law 359/1994 and Law 738/2006 relating to the ratification of the UNFCCC or the Kyoto Protocol respectively, no major legislation directly addresses climate change. However, a number of regulations have addressed issues that could be linked to climate change, such as the reduction of air pollution from transport (Law 341/2001), the reduction of energy import by developing local energy including renewable energies (Council of Ministers, decision No 13/2004), energy efficiency standards and labels, or other decisions relating to the ratification of conventions such as the UN Convention on Biodiversity or the UN Convention to Combat Desertification. Additionally, a draft law on the Protection of Air Quality is currently being reviewed by the Council of Ministers prior to enactment. It includes a section on emissions control which would positively reflect on GHG emissions in Lebanon.

Several climate change-related projects have been conducted primarily by the MoE, and other non-governmental and academic organizations. Nevertheless, only recently has the Lebanese context

featured the necessary political awareness and will to start addressing climate change through an appropriate legal, institutional and policy framework. However, no inter-governmental and inter-institutional coordination and cooperation mechanisms are in place, which undermines the government's ability to carry out cohesive and synergetic response measures.

Whereas it is clear that most climate measures can only be effective if integrated into existing and planned policy frameworks and strategies, the mainstreaming process is still at its very early stages in Lebanon.

The idea of creating a National Committee for Climate Change and Desertification (NCCCD) has been brought forward in the 2009 Ministerial Declaration (under the Protection of the Environment section). Given the multi-sectoral nature of climate change policies, a way forward is for the NCCCD to be composed of line ministries, and other relevant national academic/research groups and NGOs whose activities and coordination mechanism will have to be further elaborated. Each ministry will work within its mandate as assigned by existing laws and regulations to mainstream to the extent required climate change concepts into sectoral development plans and policies. It is important to note that the MoE would remain the designated national focal point to the UNFCCC as well as the Designated National Authority (DNA) of the Clean Development Mechanism (CDM).

5.2 ACCESS TO TECHNOLOGY

In Lebanon, there is a significant need to upgrade existing technologies to achieve lower energy consumption and lower emissions (MoE et al., 2007). Major barriers to effective technology transfer identified include the outdated available policies and legislations that often preclude new technologies or restrict their market, the lack of funding for cost-intensive new technologies, the competitiveness with already well-established products, the immaturity of new technologies, the lack of skilled human resources and of technical resources, and the lack of public awareness.

Most technologies remain expensive and un-incentivized. Solar water heaters, however, have gained a competitive share of the Lebanese market, with several local dealers offering technical expertise and competitive prices, and several banks providing targeted loans. A Memorandum of Understanding (MoU) has been signed between the Central Bank and the United Nations Development Program (UNDP) for technical cooperation on launching

a National Energy Efficiency and Renewable Energy Account (NEEREA). The MoU includes a complete funding mechanism that would allow organizations from different sectors to implement models of energy conservation at 0% interest rates with full risk guarantees.

However, direct and tangible incentives remain hard to perceive. The need to make economic incentives more obvious through tax adjustments and awareness raising is important.

The most significant policy options for accelerating technology transfer to Lebanon include the adjustment of energy prices through the development of suitable market based programs and development of proper regulation including incentives/taxing, customs policies processes, quality control systems and norms, etc. The engagement of private sector is highly encouraged.

5.3 CLIMATIC SYSTEMATIC OBSERVATION

Monitoring and observation are essential for establishing a proper understanding of climate change trends, contributions to climate change, and risks related to it. Lebanon still lacks a comprehensive national monitoring system within a cohesive climate research framework. A limited number of studies and reports have been made available in various sectors, however often serving specific interests and purposes without fitting into a nation-wide monitoring plan.

Existing systematic monitoring frameworks in Lebanon include a relatively modern network of meteorological and atmospheric monitoring systems, operated by the Lebanese Meteorological Service (LMS) (8 synoptic and 35 standard meteorological stations). Other networks are operated by the Lebanese Agricultural Research Institute (LARI), private universities and research institutes (AUB, USJ, ICARDA and TEDO). Lebanon is also equipped with a less modern oceanographic monitoring system (3 coastal moored buoys) installed by LMS that is in need of upgrading. Additionally, the National Center for Marine Sciences measures water quality parameters on a periodical basis. In addition, Lebanon has a terrestrial and ecological monitoring system, where some systematic monitoring is available for terrestrial observations (soil temperature by LMS, AUB and ICARDA, and radiation measurements by LMS), but practically none for ecological ones. The Litani River Authority (LRA) performs regular river flow measurements. Few researchers have been working on bio-indicators for climate such as reptiles and insects, but research has not yet been translated into systematic

monitoring activities. This category is thus in need of an upgrade, financial resources to start generating appropriate homogenized information and proper centralized dissemination of data, increase expertise and proper coordination and cooperation among research and observatory bodies. It is also recommended to establish institutional and legal frameworks for systematic observation networks that comprehensively encompass all environmental media by identifying priority indicators as well as vulnerable areas.

5.4 CLIMATE RESEARCH, EDUCATION, TRAINING AND AWARENESS

Lebanon still lacks comprehensive formal education directly addressing climate change, as no academic or vocational programs directly tied to climate change are available so far. However, several faculties and research institutes and departments within the different universities (AUB, USJ, LAU, NDU, LU) do offer programs indirectly related to climate change as part of environment-related curricula. Other non-academic research institutes (NCSR, NCMS, LARI, IRI) are also involved in research related to climate change.

Similarly to the case of systematic observation, academic and non-academic research in Lebanon is driven by the availability of funds, without clear national guidance and directions. Interdisciplinary research and coordination between researchers also remain limited.

Civic education within the school curricula already addresses environmental issues and could be extended to further focus on climate change. Similarly, technical and vocational institutes and programs need to integrate climate change science, especially with regards to specific skills in the fields of renewable energy technologies, water and energy efficiency techniques, green buildings, hybrid cars, etc.

On another front, public interest and awareness on the issue of climate change has been growing globally, regionally and nationally for the last several years. Wide media coverage had actually followed the recent developments in international negotiations and contributed to general awareness raising through further exposing the issue and its implications.

The Ministry of Energy and Water is playing a particular role in promoting awareness related to energy efficiency and conservation in Lebanon.

In addition to governmental initiatives, Non-Governmental Organizations (NGOs) play a key role in raising awareness. The work of NGOs covers a wide array of topics related to climate change, from policy papers (IndyAct) to activities concerned with reforestation, biodiversity conservation, etc. (AFDC, GeenLine, SPNL), and activities related to the development and promotion of renewable technologies (ALMEE). Stronger participation of civil society at international negotiations and in international events can also help raise local awareness and interest.

5.5 CAPACITY BUILDING

Training of designers and technicians on the installation and maintenance of renewable energy systems is essential. Although experience has been gained in the country with regard to solar water heaters, more capacity should be invested in concentrated solar panels, photovoltaics, and wind energy systems. Trainings also need to target car technicians to improve their skills and knowledge of hybrid cars.

On the level of research and systematic observation, the modernization and reorganization of climate monitoring services is needed, with a view of increasing data availability and quality. Training of individuals and research institutions on data base establishment and on anthropogenic emission assessment, as well as on climate modelling, are also recommended. Modern technologies

as well as skilled and qualified human resources are necessary.

Also, both public and private sector need to be enabled to benefit from Clean Development Mechanisms. This requires strengthening the capacity of the Designated National Authority (DNA) to develop a clear strategy to promote the implementation of CDM projects in Lebanon.

5.6 INFORMATION SHARING

Available information published in newsletters, factsheets, and progress reports is generally distributed among several agencies, research bodies and private units. Such information is generally hard to retrieve.

Access to information is therefore quite complicated given the scarcity of data and the absence of a data management mechanism, resulting in redundant and conflicting data.

In order to facilitate access to information and potentially increasing data availability and data sharing, data sharing agreements and protocols between the different ministries and national agencies are necessary. Also, cooperation among research institutions through the preparation of Letters of Agreement is encouraged. The creation of a virtual platform (website, online forums, etc.) where information can be freely shared is necessary.