Republic of Lebanon
National Capacity Self-Assessment (NCSA)
MoE/UNDP/GEF

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NCSA Cross-cutting Synthesis Report: LEBANON
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ACRONYMS

CDR	Council for Development and Reconstruction
CDM	Clean Development Mechanism
CNRS	National Council for Scientific Research
CoP	Conference of the Parties
CO2	Carbon Dioxide
EIA	Environmental Impact Assessment
ENP	European Neighborhood Policy
EU	European Union
GEF	Global Environment Facility
GHG	Greenhouse Gas
LAS	League of Arab States
LD	Land Degradation
LEDO	Lebanese Environment and Development Observatory
MDG	Millennium Development Goal
MEA	Multilateral Environmental Agreement
MoA	Ministry of Agriculture
MoE	Ministry of Environment
MoEW	Ministry of Energy and Water
MoIM	Ministry of the Interior and Municipalities
NAP	National Action Program (desertification)
NEAP	National Environmental Action Plan
NCSA	National Capacity Self-Assessment
NCSR	National Council for Scientific Research
NGO	Non-Governmental Organization
INC	Initial National Communication (Climate Change)
NBSAP	National Biodiversity Strategy and Action Plan
SDATL	Schéma Directeur d'Aménagement du Territoire Libanais
SEA	Strategic Environmental Assessment
SNC	Second National Communication (Climate Change)
UN	United Nations
UNCBD	United Nations Convention on Biodiversity
UNCCD	United Nations Convention on Combating Desertification
UNDP	United Nations Development Program
UNEP-MAP	United Nations Environment Program-Mediterranean Action Plan
UNFCCCC	United Nations Framework Convention on Climate Change
WB	World Bank

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A. INTRODUCTION AND OBJECTIVES

In June 2005, Lebanon approved the terms of a Global Environment Facility (GEF) grant to undergo a two-year project entitled "National Capacity Self Assessment (NCSA) for Global Environmental Management." The overall objective of this NCSA process--managed by the UNDP and executed by the Ministry of Environment (MoE)--is to determine national priorities for capacity development in the area of global environmental management, and specifically under the three UN Conventions negotiated at the 1992 Rio Earth Summit: the Convention on Biodiversity (UNCBD), the Framework Convention on Climate Change (UNFCCCC), and the Convention on Combating Desertification (UNCCD).

The principle objectives of the NCSA process for Lebanon is to (a) *identify capacity constraints* with regard to the implementation of these three Rio conventions; and (b) *prepare a National Strategy and Action Plan* that determines the necessary mechanisms for overcoming these constraints. To do so, the NCSA process also explores potential synergies between these multilateral environmental agreements (MEAs) and other environmental management and sustainable development projects and programs undertaken by Lebanon in order to help maximize both the efficiency and effectiveness of these inter-related projects.

The NCSA process consists of five substantive steps:

- Step 1: Inception (preparation of a work plan, stakeholder analysis and linkages plan);
- Step 2: Stock-taking (identification of all national activities, documents, laws, policies and strategies relevant to the Rio convention themes);
- Step 3: Thematic assessment (analysis of Lebanon's implementation of the Rio conventions, including its strengths and constraints);
- *Step 4: Cross-cutting analysis (assessment of capacity issues, constraints and needs covering the conventions); and*
- Step 5: Capacity action plan (identification of priority actions, funding possibilities, time frame, responsibilities and means of monitoring implementation and evaluation).

Steps 1-3 were completed between October 2005 and July 2007. This report addresses the fourth step, namely the cross-cutting analysis. The primary objective of this analysis is to **identify priority cross-cutting capacity issues/areas, constraints and needs/objectives; as well as priority opportunities for linkages and synergies among the conventions and between these conventions and other environmental/sustainable development programs/plans/policies**. The "NCSA Resource Kit" defines three key terms for the purposes of this project as follows:

- "linkages": connections among themes and issues addressed under multiple MEAs (e.g. forest management in UNCBD and UNFCCC); or formal and informal mechanisms to coordinate interrelated programs and activities being conducted several MEAs (e.g. convention reporting);

- "synergies": amplified positive impacts that result from coordinating or linking the implementation of two or more MEAs (i.e., multiple benefits for more than one convention resulting from a single program or action);
- "cross-cutting issues": issues common to more than one convention (including capacity strengths, constraints, needs and opportunities).

The premise for this cross-cutting analysis is relatively straight-forward. The thematic areas addressed by the three Rio Conventions—biodiversity, climate change, and land degradation/desertification—have been determined to be key at both the international and national levels; and yet the implementation of these MEAs remains lacking due in large part to a lack of capacity. Accordingly, given that there are a number of important issues that cut across the Rio conventions, it is imperative to identify synergies for capacity-building under the three thematic areas which can also address needs within the larger sustainable development context.

The cross-cutting analysis builds primarily from (and is, to a large extent, constrained by) the findings of the national thematic assessments, which identified capacity issues and constraints for each of the three thematic areas covered respectively by the Rio conventions. Other sources for this report include the stock-taking assessments (compiled during the first step of the NCSA process), the national reports to the respective conventions, strategy/action plans for the respective thematic areas, national policy documents or commitments (such as Lebanon's national MDG and WSSD reports, governmental policy statements), and the texts of the Rio conventions. It should be noted that the ToR for this report does not include verifying the information presented in the thematic reports or conducting new research per se. It assumes that the three reports are accurate, comprehensive (in terms of sources used) and up-to-date. As such, this report is *synthetic* in nature and aims to be as concise as possible in order not to add to the sheer bulk of reports and documents that already over-burden the focal points and staff of the relevant public authorities, particularly the Ministry of Environment (MoE). As we shall see, the overwhelming production of information that cannot be digested effectively is one of the main cross-cutting problems.

The NCSA exercise itself is an illuminating process because it uses a textbook rational policy process approach where no particular 'rational' process exists (at least not consistently). In other words, working backwards, the action plan that emerges from the NCSA process depends on the cross-cutting analysis, which in turn is largely dependent on the three thematic reports that build on the various national and sectoral reports collected during the stock-taking process. However, as all the reports actually note, it is clear that the information/data itself is questionable in terms of its accuracy and comprehensiveness. Moreover, this process has shown that there are various disconnects between and among decision makers, public policy experts, relevant institutions, the scientific (and research) community, civil society and the general public. As we shall see, if uncorrected, these basic deficits—in terms of data, knowledge and communication/ dissemination—complicate policy solutions that rely simply on 'rational' responses that posit reliable information and responsive mechanisms and institutions.

This report first explains the cross-cutting issues and synergies among the Rio conventions, explaining *why* it is in all countries' interest (including Lebanon) to realize the opportunities presented by such synergies. It then briefly assesses Lebanon's implementation and compliance record with each of the three Rio conventions, identifying the principle national priority issues in each of the three sectors that would promote more effective compliance. The report then identifies seven key priority capacity deficit areas that suggests a number of capacity development objectives that should be adopted to improve such compliance. In order to address these objectives, the major cross-cutting capacity constraints are analyzed in detail. Finally, the report identifies key opportunities to synergize compliance efforts across all three conventions.

B.   THE RIO CONVENTIONS: CROSS-CUTTING ISSUES AND SYNERGIES

As table 1 below illustrates, each of the Rio conventions (UNCBD , UNFCCCC, and UNCCD) has specific objectives and focuses on specific problems within particular thematic areas (biodiversity, climate change, and desertification). As such most countries have tended to implement them in relative isolation of each other.

Table 1: Overview of the Rio Convention Objectives

UNCBD: Conserving biological diversity, using its components sustainably, and sharing the benefits that arise from the utilization of genetic resources in a way that is fair and equitable (UNCBD, Article 1). Work programs undertaken under the UNCBD include agricultural biodiversity, dry and sub-humid lands biodiversity, forest biodiversity, inland water biodiversity and marine and coastal biodiversity. Cross-cutting issues addressed under each of these programs include access and benefit sharing, climate change and biodiversity, biodiversity and tourism, the ecosystem approach, indicators, protected areas, and sustainable use of biodiversity.

UNFCCCC: Stabilizing greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system (UNFCCCC, Article 2). Activities undertaken under this convention include the agreement on greenhouse gas emission targets, policies and measures for achieving these targets, the development of guidelines for the preparation of greenhouse gas inventories, development and transfer of technology, assessment and mitigation of adverse effects of climate change, research and systematic observation and funding.

UNCCD: Combating desertification and mitigating the effects of drought (UNCCD, Article 2). The Convention works principally on a regional basis and it is driven by National Action Programs which aim at identifying the factors

contributing to desertification and the practical measures necessary to combat desertification and mitigate the effects of drought.

Source: UNCBD, UNFCCC, UNCCD texts; UNFCCC (2002).

However, it is also clear that these conventions share common concerns within the larger framework of sustainable development—the ultimate goal of all states, including Lebanon—which seeks to integrate environmental protection and natural resource management with social and economic development. As such, the Rio conventions specifically acknowledge that activities or policies undertaken under one convention must also consider the others, and that collaboration among them is vital for progress on all fronts. The UNCCD, for example, specifically mandates in Article 8 that it coordinates with both UNFCCCC and UNCBD.

The Rio conventions have common cross-cutting environmental concerns (see table 2) and contain a number of overlaps in terms of both procedural (e.g., reporting) and substantive (e.g., deforestation policies, information dissemination) requirements (see table 3). For example, in the area of education there is a clear obligation to facilitate access to relevant information and raise awareness among both the public and specialized agencies. Other cross-cutting obligations include the need to assess needs on a continuous basis, carry out appropriate research and scientific assessments, collect and analyze data, prepare report guidelines, build capacity of institutions, individuals (e.g. negotiation skills training) and local communities, ensure the transfer of environmentally sound technologies, and predict and monitor impacts of relevant activities.

Table 2. Cross-cutting Thematic Areas and Activities Among the Rio Conventions

Technology development and transfer: Activities in this area generally aim at developing and transferring the knowledge/ expertise, technologies and financial support needed to pursue and implement the objectives of the conventions. Activities common to all three conventions relate to dissemination of information, assessment of needs, provision of methodologies and transfer of environmentally sound technologies.

Education and outreach: Activities in this area generally aim at providing information and training to stakeholders, and developing the means to actively involve them in the convention processes. Activities common to all three conventions relate to facilitating access to information, development, management and monitoring of information products and systems, sharing information on good practices and lessons learnt, development of strategies to raise awareness, training, and outreach to constituencies and international organizations.

Research and systematic observation: Activities in this area aim at synthesizing scientific information relating to the conventions. Activities common to all three

conventions relate to the elaboration and identification of indicators, scientific assessments, development of methodologies, analysis of data sets, and monitoring of processes and systems. The types of indicators, or what is assessed, may differ across the conventions.

Capacity-building: Activities in this area generally aim at building and enhancing the capacity of institutions, groups and individuals involved in the convention processes. Activities common to all three conventions relate to strengthening the capacities of countries with specific needs (least developed countries, small island developing states), improving capacities of institutions, training specific groups such as negotiators, and strengthening the capacities of farmers and indigenous and local communities.

Reporting: Activities in this area generally aim at exchanging and assessing information on the implementation of the conventions at the national level, while improving transparency and consistency of information provided. Activities common to all three conventions include data collection, storage and analysis, preparation of reporting guidelines, and development of national communications and profiles.

Impacts and adaptation: Activities in this area generally deal with adverse impacts on the environment. Activities common to all three conventions relate to predicting and monitoring impacts, and developing assessments and response measures, for example, methodologies, early warning systems and adaptation strategies.

Source: UNFCCC (2002)

Table 3. Selected Cross-cutting Requirements of the Parties to the Rio Conventions

Obligation	*UNCBD*	*UNFCCCC*	*UNCCD*
Development of National and Regional Acton Plans	Article 6(a); (b)	Article 4.1(b)	Articles 9,10
Data identification and monitoring	Article 8		Article 16
Legislation	Article 8 (k)	Preamble	Article 5 (e)
Research	Article 12 (b)	Article 5	Articles 17, 19 (b)
Public education	Article 13	Article 6	Articles 5 (d), 19, 6
Environmental impact assessment	Article 14	Article 4 (i) (d)	
Clearing house for	Article 18		Article 18

technical information			
Public participation	Article 9	Article 6 (i) (a) (iii)	Article 19 (4)
Information exchange	Article 17	Article 7	Article 16
Training	Article 12 (a)	Articles 6	Article 19
Examine obligations - assess implementation	Article 23	Article 7 (e)	
Report steps to COP	Article 26	Article 12	Article 26

Source: UNDP (1997)

With this in mind, it is worth asking why the parties to the three Rio conventions (including Lebanon) should be concerned about potential synergies among the three Rio conventions. The simple answer is that understanding the nature of these cross-cutting issues, and thus potential synergies, would allow member states with limited capacity to reduce the overall cost and burden of compliance, thus becoming more efficient and effective at the same time. There is, for instance, no need to collect data about land use or vegetation—issues that cut across all three conventions—in three different ways by three different focal points/experts in three separate institutions (see table 4). Rather, one systemized data collection agency can contribute to the more efficient compliance of all three. An in-depth UNDP report that assessed this question after looking at the experiences around the world, observed that:

> Experience in many countries has shown that the overlapping and sometimes duplicative commitments under multiple instruments can produce tremendous challenges. Commitments to prepare inventories, reports, plans, and public information programs, can lead to in-country conflicts, confusion, and wastage of resources, particularly for countries with limited financial, human, and institutional capacity. Yet the linkages between the instruments provide important opportunities as well. Because implementing countries are required to take a number of similar actions for each instrument, countries can carry out these obligations in ways that greatly leverage their participation by reducing costs, by relieving the burden of multiple reports and other requirements, and in general by producing greater effectiveness and efficiency (UNDP, 1997).

There are, to be sure, numerous barriers (including political and bureaucratic ones) on the international, national, and local levels to achieving synergy with regard to implementing the conventions. On the global level, the UN and convention secretariats are examining ways to further integrate synergies among the agreements into the planning process and implementation requirements for each. However, on the national (and local) level it is up to each country (with external support) to assess and then strengthen its own capacity to exploit potential synergies, and this is what the NCSA process is all about.

Table 4. Comparisons of Data Needs Across the Three Rio Conventions (selected)

Core Data Set Needs	Biodiversity	Climate Change	Desertification/LD

Land use (by type)	X	X	X
Vegetation (by type)	X	X	X
Forest (type, density, production, export..)	X	X	
Forest & land tenure	X		X
Solis (by type)	X	X	X
Agriculture (by type)	X	X	X
Livestock census	X	X	X
Wetlands	X	X	
Climate	X	X	X
Topography	X		X
Surface hydrology	X		X
Human settlements	X	X	X
Population			
Roads & other infrastructure	X	X	X
Power generation facilities	X	X	

Source: UNDP (1997)

C. **LEBANON'S PROGRESS IN IMPLEMENTING THE RIO CONVENTIONS AND NATIONAL PRIORITY AREAS IN BIODIVERSITY, CLIMATE CHANGE, AND DESERTIFICATION/LD**

In order to properly understand why synergizing efforts with regard to the implementation of the Rio agreements is so important, this section assesses Lebanon's record and identifies the major cross-cutting constraints. Lebanon ratified all three Rio conventions between 1994 and **1996** (see table 5 below).

Table 5. The Rio Conventions Ratified by Lebanon

Rio Agreement	Subject Covered	Ratification/ Accession Date	National Law	Focal Point
UN Convention on Biological Diversity (UNCBD)	Biodiversity Conservation	15-12-1994	Law 360	MoE
Cartegena Biosafety Protocol	*Biosafety/GMOs*	*Not yet ratified*	*N/A*	
UN Framework Convention on Climate Change (UNFCCC)	Manage climate change; reduce global warming	15-12-1994	Law 359	MoE

Kyoto Protocol		15-5-2006	Law 738	
UN Convention to Combat Desertification (UNCCD)	Desertification/ Land Degradation	8-12-1995	Law 469	MoA

Source: MoE, "International Agreements" (no date)

It has thus undergone the main formal *implementation* procedures, namely enacting specific national legislation (with the notable exception of the UNCBD's *Cartegena Protocol on Biosafety*, which though drafted in 2005 has yet to be ratified) and designating a competent national authority to coordinate all activities under the specific agreements ratified. The Services of (i) Nature Conservation and (ii) Prevention from Technological Impacts and Natural Disasters within the Ministry of Environment (MoE) serve as the respective focal points for the UNCBD and UNFCCCC, while the Directorate of Studies and Coordination within the Ministry of Agriculture (MoA) hosts the UNCCD focal point. The institutional lay-out for all three conventions are illustrated in Annexes 2A, 2B, and 2C respectively.

On the other hand, a recent MoE study that analyzed the extent to which Lebanon has *complied* with key obligations imposed by key MEAs (including the Rio agreements) concluded that there remains a large gap between implementation and effective compliance (Makdisi, 2006). It is useful here to recall the distinction between the two key concepts: *implementation* and *compliance* (Jacobson and Weiss, 2000):

- **Implementation** refers to the formal measures that states take to make international treaties effective in their domestic law.
- **Compliance** goes beyond implementation. It refers to whether countries in fact adhere to the provisions of the treaty and to the implementing measures that they have instituted. Compliance is more difficult to measure than implementation because it involves assessing the extent to which governments have followed through with their formal implementation procedures.

What the study found was that despite some notable progress in complying with key provisions of these agreements (particularly the UNCBD), Lebanon lacked both the capacity and the political will to effectively move on to the next level in terms of compliance. Specific cross-cutting obstacles (see Annex 3) were found such as a lack of synergizing across—and prioritizing the commitments within—the agreements, the lack of clear institutional mandates and inter-ministerial coordination, the failure to effectively mainstream the thematic issues within national developmental plans, the low level of research and reliable data, inconsistent reporting procedures, and poor public participation, education and awareness (Makdisi, 2006).

The three thematic assessments conducted as part of the NSCA process continued this analysis in a more comprehensive manner, identifying major priority areas for action.

UN Convention on Biological Diversity (UNCBD)

In comparison to other Mediterranean countries, Lebanon enjoys a relatively rich biodiversity with about 9,100 fauna and flora species, including 311 endemic species (representing 12% of the total). However, the political and socio-economic crises of the past decades, weak law enforcement, and low levels of awareness have lead to the overexploitation of these natural resources and thus severe ecosystem degradation. In terms of forest biodiversity, for instance, it is estimated that while up to 74% of Lebanon's surface area had historically been covered with forests, today this figure stands at only about 10% with an on-going annual deforestation rate of 0.4%. Considering the high economic value of Lebanon's forests, harmful activities such as grazing need to be more effectively controlled. Moreover, agriculture and rapid urbanization continue to be major contributors to habitat loss and land degradation in Lebanon.

In order to address these problems, Lebanon signed the UNCBD during the 1992 Earth Summit and ratified it two years later (Law 360/94). In response to UNCBD requirements, the MoA initiated a comprehensive national assessment of its biodiversity, completing a 9-volume study in 1996. The MoE, by then officially designated as the focal point to the UNCBD, produced a National Biodiversity Strategy and Action Plan (NBSAP, funded by GEF) in 1998 to provide a national framework for the (i) conservation of biodiversity, (ii) its sustainable use and (iii) the fair and equitable sharing of benefits derived from it. In 2005, the MoE completed a review of the NBSAP (in line with a UNCBD CoP decision to revise targets for 2010) and drafted a strategic action plan under the GEF-funded "Top-up Biodiversity Enabling Activity Project." The MoE also oversaw the completion of the country's first National Environmental Action Plan (NEAP)--which defined clear objectives and needed action by the respective stakeholders and institutions for biodiversity conservation--as well as Lebanon's 3rd national report to the UNCBD secretariat as per convention requirements.

As the thematic assessment undertaken as part of this NSCA process has affirmed, Lebanon has indeed taken a number of important steps to comply with the UNCBD, such as: creating about 40 protected sites (including eight natural reserves that cover nearly 2% of Lebanese territory), launching various national and local initiatives to use biodiversity sustainably, mapping land cover, developing a national biosafety framework, creating partnerships among stakeholders, and supporting the development of biodiversity laws and decisions. However, the thematic assessment highlights a number of capacity deficit areas that Lebanon must urgently address (which shall be explored in detail in the next section) if it is to comply with both its own national priorities and the goals of the UNCBD (see Table 4 below). Such priorities include building up a reliable national biodiversity database (and assessment/research capabilities), facilitating the transfer of environmentally sound technology, raising awareness via a national communication strategy and revised school/university curricula, bridging the gap between scientists and the policy-making process, decentralizing natural resource management to empower local communities, enforcing existing laws and standards, developing national systems to monitor biodiversity trends and land use changes, and introducing an effective integrated approach to natural resource management and utilization to ensure sustainability and equitable spread of benefits.

What Lebanon has, arguably, lacked most is the political will--reflected in a national decision-- to effectively implement action plans drawn up to mainstream biodiversity into national development plans and the institutional agendas and policies of the various relevant public authorities/ministries. In other words, Lebanon continues to lack the political decision needed to lift biodiversity issues out the narrow confines of the environmental sector (which is just one piece of a puzzle) and into the much larger, and necessarily cross-cutting development one.

UN Convention on Climate Change (UNFCCCC)

Lebanon's climate is classified as typically Mediterranean, with maximum rainfall during winter and drought during the summer season. Due to its particular location and physiography, however, it actually has six separate bio-climate levels spread over a relatively small surface area (arid, semi-arid, sub-humid, humid, perhumid and oromediterranean). In terms of weather parameters (e.g., temperature, humidity), the country is often divided into three main climatic trends: coastal, mountainous, and inland. Lebanon's average yearly temperature (reduced to sea level) was calculated to be 20.5C (so a "hot" microclimate is one above 21°C, while a "cold" one is below 20°C), with little difference in the quantity of solar radiation reaching the upper atmosphere. Significantly, there is great discrepancy in terms of average annual rainfall (estimated at 840 mm) across Lebanon's regions, with the central mountainous region receiving the most rain (about 1200-1500 mm) and the inland regions the lowest (as little as 200 mm in some areas). Human induced climate change will have a negative impact on soil productivity, which in turn will cause land degradation, desertification, soil erosion and reduced crop production. Projected temperature changes brought on by climate change will also negatively affect the forestry sector and supply of water resources. Thus any shift in Lebanon's weather parameters brought on by climate change could lead to serious environmental, social and economic problems.

Accordingly, in order to support the global effort to stabilize greenhouse gas (GHG) concentrations in the atmosphere, Lebanon signed the UNFCCC at the Rio Earth Summit in 1992. It ratified the convention two years later (December 1994) under Law 359 (thus becoming a Non-Annex I Party), and assigned the MoE as the national focal point for implementation of the convention requirements. A GEF-funded project resulted in the completion of Lebanon's Initial National Communication (INC) report to the CoP in 1999. This report established a national inventory of GHGs, assessed Lebanon's vulnerability to climate change, and proposed a mitigation strategy to reduce GHG emissions in the various sectors along with some adaptation measures. The report used 1994 as a base year to establish clearly that the energy sector (which includes transport, electricity generation, manufacturing industries and construction, energy use in residential and commercial establishments) was the biggest emitter of GHGs at 74% of the total, followed by industrial processes (about 12%, mostly from the cement factories in Chekaa and Sibline), agriculture (7%), and waste management (6%) (source: EL FADEL; INC). It is important to note here that with Lebanon's two refineries out of operation since the civil war, nearly 98% of all energy used in Lebanon is actually derived from imported fossil fuels (mostly fuel oils, gasoline, and gas/diesel oil). Accordingly, the energy

sector was found to contribute up to 85% of total CO_2 and 96% of SO_2 emissions. Of this total, activities related to transport were the largest single contributor of CO_2 emissions (at 33% of the total), followed by the energy (electric power) industries (roughly 31%) and manufacturing industries and construction (24%). The transport sector further accounted for 94% of all CO emissions.

In 2002, further GEF funding resulted in the completion of phase II of the climate change enabling activity, as well as the publication of national reports on technology needs assessment (TNA) and technology transfer (TT). The top-up results (based on 1999 figures) confirmed that the transport sector remained the biggest emitter of CO_2, with an increase of around 16% from 1994. With 1.33 million registered vehicles by 2005 (most of them using low efficiency fuel), a car ownership ratio of 3.5 persons/vehicle, and a poor public transport system that relies on low grade diesel, the transport sector poses a serious threat to Lebanon's air pollution problem and build up of GHGs in the atmosphere. The 2002 banning of leaded gasoline fuel, which had been the dominant fuel used in land transport throughout the 1990s, has however had a positive impact. The 1999 figures also indicate that the electric power sector had also increased its share of CO_2 emissions to 33% of the total, with Lebanon's per capita energy consumption continuing to rise and the cost of imported fuel reaching 93% of total exports or nearly 6% of GDP. The crisis resulting from the very low efficiency energy use and distribution of electric power systems is well known, with total losses amounting to 68% in 1994 (down to 57% in 1997) (Source: EL FADEL). Finally, the top-up study showed that Lebanon's solid waste crisis also contributes significantly to GHG emissions, with the country's 1.44 million tons of solid waste in 2001 (about 0.92kg per person per day) representing 78% of all methane emissions. The largest contributor to this problem is organic waste (which represents more than 50% of municipal solid waste nationally, and 63% in greater Beirut alone).

As part of its compliance with UNFCCC, the MoE is currently in the process of producing Lebanon's Second National Communication (SNC) and second national GHG inventory (which will cover all sources, sinks, and gasses as mandated during the 8th CoP). However, the national thematic assessment for UNFCCC has clearly shown that there are a number of capacity deficit areas and constraints that must be addressed if Lebanon is to better comply with the climate change regime (explored in detail in the next section below). National priority issues thus include mainstreaming climate change issues into national development plans, increasing institutional and personal capacity within the concerned public authorities, establishing a national action plan for GHG abatement, assessing the vulnerability of ecosystems and natural resources (and providing effective adaptation measures for them), setting up a comprehensive national monitoring systems for GHG emissions, securing the transfer of environmentally sound technologies, launching a serious public awareness campaign, and incorporating climate change issues into school and university curricula. Once again the absence of political will— and an effective civil society that generates such will-- is notable in dealing with Lebanon's climate change issues.

UN Convention to Combat Desertification (UNCCD)

Desertification—defined as land degradation that occurs in arid, semi-arid and dry sub-humid regions resulting primarily from climatic variations and human activities —is a serious problem for Lebanon, and particularly its poorer regions. It is brought on by such factors as unsustainable land-use practices and human settlement patterns, lack of technical expertise, deforestation, over-grazing, conflict, and political instability and neglect of communities in peripheral regions. In turn desertification diminishes soil productivity, reduces food production, strips the land of its vegetative cover, and leads to floods, soil salinization, deterioration of water quality, and social instability. Indeed, desertification is closely correlated to socio-economic issues such as poverty, poor health/nutritional status, food insecurity, and a lack of effective empowerment of local communities in land and natural resource management. Accordingly, UNCCD—which only came into effect in December 2006—responded to the problem of desertification by creating a regime that envisions an overall framework for sustainable development of areas in arid, semi-arid and dry sub-humid areas. The convention is also a powerful instrument for sustainable natural resource management in affected regions, and ensures long-term, mandatory external support (from industrialized countries) for these efforts.

Lebanon ratified UNCCD on December 8, 1995 with law 469/1995, assigning the MoA as the national focal point for the convention. The MoA has produced three national reports (2000, 2002 and 2005) on the progress in implementation of UNCCD; and it has established a National Coordination Body (NCA) which, however, has not yet been made effective. Most importantly, the MoA finalized a GTZ-funded National Action Program (NAP) in June 2003 in compliance with a key convention requirement. The NAP serves as "an umbrella, a guiding framework for the long-term implementation of the UNCCD," and was, according to the MoA report, "prepared following a participatory, bottom-up approach involving communities of affected areas and concerned stakeholders" (MoA, NAP, 2003). Initiatives that emerged following the NAP included a $16 million national reforestation program as well as other projects/research focused on land degradation issues (e.g., forest fires, quarrying, soil erosion, water pollution and shortage).

The NAP also included the results of a 2001 "desertification prone areas map" (which used GIS technology) that indicated that as much as 60% of Lebanon's territory was prone to desertification/land degradation. The land's subsequent reduced soil quality and poor productivity in turn would lead to further rural migration and the abandonment of agricultural fields (which are then used for grazing, thus exacerbating both degradation and biodiversity problems). Ineffectively regulated quarrying, poor water/soil management, unsustainable agricultural practices (including excessive usage of fertilizers and pesticides), unchecked deforestation, overgrazing, and urban encroachment (with little to no national planning restrictions) greatly exacerbate desertification tendencies in Lebanon. Crucially, the NAP also

confirmed that the most prone areas are located among the poor communities in the North Beqa'a, Akkar and South Lebanon. NAP makes it clear that only regional/local action plans that adapt to the particular socio-economic needs and environmental contexts of each area can be effective in dealing with this problem, and the MoA has thus launched pilot projects in four peripheral areas to create local action plans to combat desertification.

Despite this progress, however, Lebanon still has much to do in order to comply with UNCCD and effectively combat creeping desertification. The thematic assessment conducted within the NCSA process synthesized the main national priority areas for UNCCD compliance based on the NAP and other relevant documents/data. The first priority is the urgent mainstreaming of land degradation and biodiversity conservation issues into relevant public institutions and educational curricula. This would lead to increased knowledge of sustainable land, natural resource, grazing and agricultural practices; and encourage preventative measures. A second priority is establishing an effective communication strategy and information-sharing/dissemination network to ensure that the relevant stakeholders are aware, up-to-date, and have the necessary tools. A third priority is institutional capacity strengthening—including decentralization to ensure local empowerment—and review/enforcement of legislation and policies related to land tenure. Finally, the fourth national priority is actually a series of technical enhancements such as establishing an independent national forest institution, improving market accessibility for rural and fish products, and working on a national program for poverty alleviation. It should be pointed out that, as with the other Rio conventions, the political will to comply with UNCCD needs to be increased, as by August 2007 even the NAP has not officially been endorsed/validated by the Lebanese government (as is required) despite the fact that the MoA has unofficially adopted a framework.

Cross-cutting Priorities/Issues across the Rio Conventions

The three thematic reports have identified a number of national priorities for each of the Rio Conventions, summarized in table 6 below.

Table 6. Lebanon's National Priority Issues regarding UNCBD, UNFCCC, and UNCCD

	Biodiversity	Climate Change	Desertification/LD
1.	Post-war biodiversity restoration, rehabilitation of natural habitats	**Promulgate a national action plan (NAP)** for GHG emissions abatement	**Integrated** ecosystem **management**
2.	Build up national biodiversity **database**	**Enacting vulnerability and adaptation measures**	**Empowerment** of traditional stakeholders
3.	**Education, awareness, and tech transfer**	**Research and systematic observation**	Develop **incentives** to involve rural community in ecosystem conservation
4.	**National policies, action plans and regulatory**	**Technology transfer**	Regional exchanges of success stories/ lessons

	measures		learned
5.	**Operationalize and implement MEAs**	**Education and public awareness**	Conservation of mountain and rural landscapes biological diversity
6.			**Accessibility of climatic information** to rural communities and training on drought mitigation

Source: Thematic assessments

What is clear is that national strategies and action plans should be adopted and implemented in all three cases, but that Lebanon currently lacks the capacity and will to do so. To be successfully implemented, national strategies require some level of political commitment, stakeholder cooperation and coordination, appropriate funding and resources, training of current (and hiring of new) staff to ensure needed technical, policy and analysis skills, investment in monitoring and observation networks as well as in science/policy research and clean technologies, more effective information and knowledge-sharing mechanisms, aggressive communication and public awareness campaigns, intelligent environmental education programs, and the decentralization of environment and natural resource management to allow for meaningful local community participation.

In contrast to such ambitions, there are many constraints to achieving such objectives, and it is to this that the next section turns to.

D. CROSS CUTTING CAPACITY ISSUES, CONSTRAINTS, & CAPACITY DEVELOPMENT OBJECTIVES

The three thematic assessments have clearly shown that some progress has indeed been made in implementing the Rio conventions in Lebanon. Initial national assessments for biodiversity resources, GHGs and desertification-prone areas were produced; action plans formulated; and specific programs initiated (such as one for national reforestation). However, the assessments also identified—explicitly or implicitly—a laundry list of capacity constraints that have inhibited Lebanon's compliance with the Rio conventions. These include (in no particular order):

- Inadequate local technical capacity
- Insufficient and weak institutional arrangements (including overlaps/unclear mandates)
- Fragmented and incoherent national policies and strategies
- Weak and inconsistent law enforcement
- Lack of effective integration/mainstreaming of Rio issues in national (development) plans
- Poor policy planning tools

- Lack of reliable information/data/studies/research
- Poor or non-existent sharing of knowledge
- Unsustainable use/management of land, water, natural resources
- Gap between decision-makers and beneficiaries; between scientists and policy-makers
- Lack of internal and external funding (and lack of understanding how to access this funding); poor management of existing funding
- Over centralization of decision-making/local participation lacking
- Lack of integrating Rio issues into educational/awareness programs
- Insufficient political will to follow up/implement
- Weak mobilization of human resources/lack of qualified human resources
- Lack of general (and specific) environmental awareness
- Insufficient research and development in key sectors
- Poverty/uneven development/lack of social stability (especially rural areas)
- Slow penetration of clean technologies
- Lack of retention of qualified staff/ poor working conditions in public sector
- Overlaps and lack of clarity in the legislative framework
- Lack of clarity/definition/enforcement of environmental standards/norms
- Low level of awareness of the legislation/issues (especially rural areas); lack of access
- Duplication of efforts/studies; little follow up on previous studies/reports/action plans
- Increased urbanization and internal migration
- Administrative corruption and institutional deterioration
- Inflexible and slow penetration of new management techniques
- Absent/outdated records on specific issues
- Absence of tools to convince decision makers and for lobbying
- Insufficient availability of scientific documents (especially in Arabic)
- Insufficient public pressure on decision makers/weakness of civil society
- Neglect of peripheral areas/rural areas; huge income disparities within and across regions
- Rising population in urban areas; rising demand for water
- Non-availability of space for dumping waste, sorting pollution (with standards)
- Unaccounted for economic losses due to environmental considerations (e.g land degradation; deforestation; air/water pollution)

Further streamlining and analysis has resulted in the identification of the following *eight cross-cutting constraints* to effective compliance:

1. Low prioritization of Rio issues in national policy/lack of political will to implement, enforce;
2. Lack of systematic assessment/monitoring/clean technology;
3. Low level of education/ awareness/information/research/knowledge;
4. Poverty/uneven socio-economic conditions that creates/sustains problem;
5. Inadequate policy/legislative/institutional tools and framework;
6. Ineffective communication/knowledge-sharing/bridges between scientists and policy-makers/decision-makers;

7. Lack of effective participation/empowerment by beneficiaries/local communities/civil society;
8. Poor/unsustainable use/management of land, water, natural resources;

Given this analysis, it is possible to highlight the following *seven areas of capacity deficit* that should be addressed as a matter or priority by the relevant public authorities in order to improve compliance with the Rio conventions:

1. National policies, strategies, regulations
2. Legislative and regulatory framework
3. Institutions, environmental management, and stakeholder participation
4. Monitoring, assessing and observation capacity; data management
5. Public awareness and education; knowledge/information-sharing and dissemination
6. Science/research expertise and technology transfer
7. Funding and incentives

Table 7 contains a matrix that captures these areas of capacity deficit, as well as the suggested capacity development objectives that should be adopted to overcome the key cross-cutting capacity constraints that inhibit effective compliance with the Rio agreements. Analysis of this matrix follows below. [Here we should note that social factors that produce poverty and uneven conditions among Lebanon's regions and people will be discussed in Part E below, as such factors are an inherent component of sustainable development planning].

Table 7. Cross-cutting Capacity Deficit Areas, Objectives, and Constraints Matrix

No.	Common Capacity Deficit Issue/Area	Capacity Development Objectives	Constraints to achieving capacity development objective
1.	National policy & strategy	1.1 Mainstream biodiversity, climate change and LD concerns within strategic national plans/priorities; 1.2 Develop effective national policy planning tools, strategies; 1.3 Enhance link between science and policy-making.	- limited political will to tackle cross-cutting sustainable development issues; - low prioritization of biodiversity, climate change, LD issues in strategic documents and among decision-makers; - limited strategic policy and planning documents to match national needs and priorities in Rio areas; - lack of operationalizing of environmental policies; - lack of reliable studies and data for efficient policy planning; - Limited funds available to train staff and managers in policy techniques; or

			for comprehensive, integrated planning; - Lack of requisite national indicators and analytical processes for project implementation; - limited impact of civil society actors working on relevant policy issues; - Disconnect between research and scientific communities and public policy.
2.	Legislative and regulatory framework	2.1 Ensure debate and ratification of relevant legislation in timely and consistent fashion; and harmonize legal framework; 2.2 Implement and enforce legislation and standards dealing with biodiversity, climate change, desertification; 2.3. Train judiciary on environmental matters to be sufficiently aware of violations and their prosecution.	- lack of timeliness or consistency in passing/ratifying legislation; - little harmonization of relevant environmental legislation; - Weak enforcement of environmental national legislation, including those pertaining to the Rio issues; - Some outdated and contradictory laws; - Low level of operationalization and implementation of MEAs; - lack of up-to-date/modern regulations and standards; - weak judicial awareness and training in environmental issues; - Relatively weak political standing of MoE limits its lobbying influence.
3.	Institutional mandate, environmental management and capacity performance	3.1 Strengthen capacity for—and coordination/cooperation among—the institutions responsible for management of biodiversity, climate change, desertification; 3.2 Decentralize environmental management to allow effective participation by local communities.	- Limited expertise/capacity among key institutions; institutional overlap - over-centralization of environmental management which blocks collaborative environmental management; - Limited integration of effective, wide scale and integrated approach to natural resource management and utilization to ensure sustainability of the resource and enhanced benefit for the user; - over reliance on consultants to conduct studies; - limited national funding and over-reliance on international donors that

			shape agendas
4.	Monitoring, Assessing and observation; data management systems	4.1 Develop/upgrade monitoring and observation systems; 4.2 Develop assessment and data management capacity.	- General lack of reliable data and knowledge; - National surveys out of date, and only sporadically based on field verification; - Weak or no national systems for monitoring status of biodiversity, climate change, or land use trends and changes; - Relevant public authorities and agencies understaffed, lack funding, equipment and technical knowledge; - Low level of communication and cooperation among concerned institutions and stakeholders; - Data not transparent and accessible - Lack of political will.
5.	Public awareness and education; knowledge/ information sharing and dissemination	5.1 Improve public awareness regarding the Rio convention themes; 5.2 Integrate Rio conventions themes into educational curricula in schools (at all levels) and universities; 5.3 Increase exchange and dissemination of information and knowledge.	- Incorporation of biodiversity and conservation concepts into school and university curricula across all levels; - Development of a national communication strategy for a nation wide awareness campaign targeting all societal sectors; - Development of technical national capacity in the fields of taxonomy and integrated ecosystem approach; - Create national information centers; - Build capacities for teachers, local communities, municipalities;
6.	Scientific expertise & technology transfer	6.1 Improve scientific research and expertise; 6.2 Build capacity for technology transfer.	- lack of funding for scientific research and technology transfer; - lack of expertise in particular areas; - lack of information-sharing, communication, and cooperation within scientific community; - Gap between scientist, public sector and politicians in terms of common grounds in needs, priorities, information;
7.	Funding & Incentive	7.1 Improve funding for implementation of Rio	- mainstreaming Rio issues within private sector;

	systems	agreements; 7.2 Develop appropriate incentives to promote Rio agreements.	- identification and assessment of the direct and indirect ecological services of biodiversity on the national level - Assessment of the socio-economic values and benefits of biodiversity; - Assessing potentials for bio-prospecting and marketing of biodiversity related goods and products;

Analysis of cross-cutting constraints for capacity objectives

1. National policy and strategies

National policy is a key cross-cutting capacity issue that is fundamental to not only the three thematic areas covered by the Rio conventions, but also to environmental management as a whole. The priority objectives in this area that were identified in all three thematic assessments are: (a) mainstreaming the Rio concerns (biodiversity, climate change and land degradation respectively) into national plans and strategies; (b) developing requisite policy capacity (on the individual and institutional levels) to allow for effective national planning; and (c) strengthening the link between science/research and policy. There are a number of constraints that prevent this from being realized, but for the purposes of this paper they can be summarized into two groupings: one is a general lack of political will to follow up on the Rio issues, the other a lack of capacity. While it is of course possible to improve capacity in particular areas—for example train MoE officials in policy analysis to improve individual and institutional capacity—it is much more difficult to envision a systematic framework geared towards long-term capacity improvements without the requisite political will that frees up the necessary resources and provides incentives for the stakeholders to be effective and efficient.

a) Low prioritization of the Rio issues due to insufficient political will and awareness

Lebanon has a relatively good—and explicit—record in officially accepting various environmental and sustainable development agreements and goals (including those of the Rio conventions and Agenda 21) since the early 1990s. However, what has been lacking is the requisite political will and vision to follow up on such cross-cutting commitments effectively. The result has been that the Rio issues of biodiversity, climate change and desertification do not receive prioritization in national planning/policy and are not mainstreamed in key sectoral strategies in any meaningful sense. Moreover, the absence of will to confront often politically sensitive issues means that the Lebanese parliament often simply delays discussing or ratifying specific laws that do make their way to the legislature.

There is thus a notable gap between commitment and implementation. On the positive side, Lebanon has endorsed numerous regional and global declarations and statements calling for the sustainable use and management of land, water and natural resources (such as the League of Arab States' (LAS) *Abu Dhabi Declaration* and *Arab Initiative for Sustainable Development*; the MDGs; and the Rio and Johannesburg declarations to the Earth Summit and WSSD respectively). Moreover, successive Lebanese governments from across the political spectrum have highlighted the importance of protecting the environment and natural resources of Lebanon in the development process. Recent ministerial statements (which outline official governmental policy) have emphasized such key issues as: creating an integrated national environmental policy/strategy, working to secure balanced development (thus recognizing the role of peripheral regions and of local communities) in national planning, and even granting citizens' rights to a clean environment. Indeed, the current government's ministerial statement (2005) actually explicitly prioritizes reforestation programs, combating desertification, and protecting underground water resources; calls for the integration of environmental elements into all relevant sectoral policies dealing with development (e.g., transport, industry sectors); and focuses on the effective implementation of laws as well as their proper enforcement. This is very positive and indicates that Lebanon has the desire to be in good standing within the international community and thus respect its international obligations.

Such nominal commitment to the Rio issues and the principle of sustainability, however, has only infrequently been translated into effective policy with binding laws, targets, budget, resources, clear institutional mandates, and enforcement mechanisms. For example, with regard to national compliance with UNFCCC, in the more than seven years since the recommendations of the INC on vulnerability and adaptation were published there has not been any new regulations or decisions taken to follow up on them. The recommendations of the 2002 top-up enabling activity have also been disregarded so far. Similarly, in terms of UNCBD, there has been no follow up to the 2000 LEDO project that identified national biodiversity indicators, nor have the NBSAP and top-up enabling activity been properly operationalized. The 2003 NAP prepared under the UNCCD has also yet to be endorsed by the government despite a consensus among the relevant stakeholders regarding its importance. Most tellingly perhaps is the fate of the 2002 Law for the Protection of the Environment (Law 444, popularly known as the "environment code"), which created the general framework for the protection of the environment and natural resources in Lebanon and contains specific sections covering biodiversity, land degradation and all forms of pollution. It took nearly a decade for it to finally be considered and passed in the Lebanese Parliament, but since then none of the required application decrees (which would make the specific parts of it binding) have been forthcoming due largely to a lack of political consensus.

The MoE did successfully complete a National Environmental Action Plan (NEAP) in 2005, but though this is a first step in integrating environmental concerns in national policy, the NEAP remains somewhat isolated within the larger developmental policy. It should be noted that Lebanon has not yet conducted a national development plan, a national sustainable development strategy (NSDS), nor a poverty reduction strategy (PRS) all of which require cross-

cutting efforts that would necessarily have to include biodiversity, climate change and land degradation concerns. As such, a survey conducted in 2004 by the UN Division for Sustainable Development placed Lebanon in "stage 1" of the global map of NSDS--the lowest stage out of a possible five—indicating that "no information/action" has been taken (UN, 2004).

There are a number of reasons that explain the absence of requisite political will to follow up on such commitments. These include: (a) higher perceived national interests; (b) lack of understanding (and awareness) of the Rio issues and their relevance to development among decision makers and national policy planners; (c) lack of effective political leadership and mechanism for public pressure; (d) competition and lack of coordination among the relevant ministries, as well as overlapping institutional responsibilities/mandates; (e) an apparent lack of funding due to severe budgetary constraints; and (e) persistence of clientalism in the Lebanese political system. Without such political will or decision, it will be difficult to realize the main capacity objective promoted in this cross-cutting paper, namely the mainstreaming of Rio issue concerns into national and sectoral plans.

b) Low level of capacity for effective national planning: lack of strategic documents, reliable studies, information exchange, stakeholder organization, expertise, and funding

Over and above the matter of political will discussed above, Lebanon also lacks capacity on all levels for effective national planning. There are, for example, well known overlaps among and gaps within key policy-making and policy-implementing institutions (such as the Council for Development and Reconstruction (CDR), MoE, MoA, Ministry of Water and Energy (MoWE) and Ministry of the Interior and Municipalities). The biodiversity thematic study, for instance, found that there is weak cooperation and coordination between the MoE and the Directorate General of Urban Planning (DGUP) with regard to natural sites studies; and between the MoE, MoWE and DGUP for water bodies management. On the positive side, the study notes that the presence of the MoE Director General (DG) on the inter-ministerial Higher Council for Urban Planning genuinely facilitates coordination between the MoE and DGUP on issues such as EIA requests required to obtain permits for infrastructure or development projects. Such inter-ministerial committees—if given the proper political backing and resources—serve as a useful model for the purposes of this paper.

There are also few relevant national strategic or policy documents that govern general environmental policy (with the exception of the unimplemented NEAP and, indirectly, the SDATL). Nevertheless, this is slowly changing as there are now important strategic documents in place that are indirectly or directly related to the thematic areas covered by the Rio conventions (though they mostly remain as drafts or unimplemented). There is a NBSAP and a draft strategic action plan to guide biodiversity policy; a draft mitigation strategy to reduce GHGs; and a NAP to deal with desertification. Moreover, there is hope that Law 444 might one day be considered more seriously within the Parliament and the relevant decrees issued. Other key national policy documents pending ratification include those for environment impact assessment (EIA), strategic environment assessment (SEA), and integrated coastal area

management. These documents should be debated, ratified, and operationalized as a matter of some urgency in order to support policy in the Rio thematic areas.

Effective policy planning also requires <u>reliable research/data</u> and <u>requisite funding</u>, which are seriously lacking in Lebanon. National research programs devote little attention to biodiversity, climate change and desertification issues; while academic research does not tend to make its way to support national research in a systematic manner. Moreover, the available data regarding the Rio issues is neither entirely reliable nor centralized efficiently, the result often being either regular duplication of studies, or inaccurate and misleading information that is channeled to policy makers and project managers. Clearly, an effective mechanism should be adopted to prioritize the research needed (while ensuring proper coordination between government, academia and research centers) and then pool the resulting information so as to make it accessible. It is particularly imperative that a framework to systematically link the scientific community with policy-makers must be created. In terms of funding, the heaviest burden for mainstreaming environmental policies lies with the MoE which is severely under-funded. The proposed Environment Code (Law 444) calls for a national environmental fund, but this does not yet have an application decree. Accordingly, most reports (such as the NCSA process itself) is donor or internationally driven and end up on the fringes of national policy. The budget for research in the key thematic areas of biodiversity, climate change and desertification are also minimal.

There are of course numerous other problems that limit effective national policy planning in Lebanon in terms of both individual and institutional capacity, including: limited expertise on Rio issues in both public and private sectors; a lack of requisite policy and analysis tools/skills among various ministry staff and consultants; and insufficient exchange of information and knowledge among the relevant stakeholders. All of these issues need to be addressed.

c) Gap between policy and science/research

National policy dealing with environmental issues requires clear (and independent) scientific assessments that drive the policy process, as well as the requisite policy tools/skills (such as analysis, data assessment, monitoring noted above). All three thematic assessments clearly indicate that in Lebanon, there is a disconnect between the scientific/research community and public policy in the areas of biodiversity, climate change and desertification. While an important reason of this disconnect is political in nature (and as such should be addressed within the on-going political reform process), it is also true that poor institutional governance, personal and professional rivalries, and a lack of capacity and budget contribute significantly. Public authorities should clearly articulate both short-term and long-term research priorities needed to enhance its policy options, make available the necessary funding to complete such research, and provide a mechanism that links the scientific and research communities more effectively with policy and decision-makers. The CNRS, created in 1962, plays an important role towards this end, but its mandate and budget should be greatly strengthened.

2. Legislative and regulatory framework

Lebanon has passed as many as 750 texts related to environmental issues, including, in order of increasing importance: circulars, ministerial decisions, decrees, laws and international treaties. However, the key constraints in this area remain (a) the time lag and poor consistency in debating, ratifying and harmonizing the necessary modern laws, decrees, and standards to protect natural resources and the environment; and (b) the lack of effective enforcement of such laws and implementation of MEAs. There is thus a specific need to ensure the rationalization of laws/decrees and their proper harmonization. The main capacity objectives are thus (a) timely debate and ratification of relevant laws and regulations; and (b) implementation and enforcement of relevant legislation in order to better comply with obligations stemming from the Rio agreements.

As noted above, it is imperative that the Environment Code (Law 444) finally move forward with application decrees needed to operationalize its many components. The Code, for instance, devotes an entire chapter for dealing with the management of natural resources and biodiversity conservation. Specifically, articles 47-48 call for the protection of species and their habitats, the establishment of nature reserves, active public participation in biodiversity conservation, and the regulation of genetic resources to ensure their sustainable, and equitable, use. For its part, article 38 calls for natural resource protection needed to stop desertification, land and underground pollution, and loss of agricultural tracts; and urges the publication of lists of (i) activities that result in land and underground pollution (directly or indirectly) and (ii) pesticides and fertilizers that may be used safely. All of these, to be sure, require application decrees that have not yet been forthcoming by the parliament.

Moreover, there are numerous laws or decrees that are pending finalization or ratification, some of which cut across two or more of the Rio thematic areas (see table 8 below). Key pending legislation include the draft laws ratifying the Biosafety Protocol to the UNCBD and the Beijing Protocol to UNFCCCC; and draft laws or decrees dealing with access and benefit sharing, protected areas, integrated coastal area management, strategic environmental assessments

Table 8. Selected laws/decrees awaiting ratification in biodiversity and climate change sectors

Biodiversity	Climate Change
Draft law ratifying biosafety protocol, draft decree on biosafety	Draft law ratifying Beijing Protocol (protecting ozone layer)
Draft law on access and benefit sharing	Draft decree banning import of ozone-depleting substances
Draft framework law on protected areas	Draft law on integrated coastal area management
Draft decrees on environmental impact assessment (EIA) and strategic environmental assessment (SEA)	Draft ministerial decisions related to environmental guidelines for solid waste management and wastewater treatment

In terms of implementation and enforcement, the situation is even more problematic. In all three thematic areas, the general lack of capacity for enforcement of laws and standards stands out. For instance, a forest code passed in order to protect forest resources is generally ignored by those seeking to chop down the trees unsustainably. Similarly, lack of proper law enforcement was cited as one of the root causes for land degradation because regulations related to grazing, agricultural practices, water resources and pollution were regularly ignored. While part of this problem is certainly political in nature, budget and administrative factors are also important. The MoA, for example, has a very limited budget to train and retain rangers to patrol key forest areas; while the MoE generally relies on the Ministry of Interior (MoI) for enforcement of environmental regulations. Finally, there is an urgent need to build capacity within the Lebanese judiciary branch which generally lacks any sort of awareness of environmental issues and the potential for prosecution of legal violations. Despite these capacity problems, there are some notable exceptions in terms of implementation, with for example Lebanon's ratification of Kyoto Protocol in May 2006 and the appointment of a DNA (Designated National Authority) in the MoE for all matters related to the CDM (clean development mechanism). The CDM is now considering strategies to comply with its Kyoto Protocol commitments, including the possibility of creating a "Carbon Tax" that has been adopted successfully in other countries.

It is important to note that Law 444, if activated, contains a potential solution to this problem as it provides the overall legal framework for the *implementation* of national environmental policy and sustainable development principles which are integral to all three Rio conventions. Such principles include the polluter pays, precautionary, and preventative principles; as well as those relating to need for public participation and EIA for policy planning. To support this, Law 444 envisions the creation of (i) a dynamic National Council for the Environment (NCE)—representing 14 key governmental and non-governmental institutions—to recommend environmental policies/laws and follow-up on their implementation; and (ii) a National Fund for the Environment to pool together financial resources needed to effectively implement such national policies.

3. Institutions, management capacity, and empowerment of local communities

Institutions responsible for implementing environmental conventions represent a core capacity area. Here there are two main capacity objectives, the first is to strengthen capacity for—and coordination among—the institutions responsible for management of biodiversity, climate change, and land degradation. The second objective is to decentralize environmental management to allow for effective participation and empowerment of local communities. However, there are numerous capacity constraints that prevent these goals from being realized.

One major constraint is the lack of finances to support sustainable management of the environment and natural resources. Quite simply, there is not enough money to attract and retain high-quality professional staff and managers with the needed technical, policy or

analytical skills. The result is that a number of projects related to the Rio convention implementation in the MoE are managed by international donors and organizations such as the UNDP, and when the project ends the project managers often leave taking much of the accumulated experience with them. Furthermore, the politicization of hiring within the public administration sometimes means that personal rather than merit considerations are decisive in filling a particular vacancy. Those that are hired in such core institutions as the MoE or MoA are often over-worked and cannot keep up with the numerous tasks given to them, while training and developing skills of such staff is limited.

Another important constraint is the unclear mandates given to concerned institutions charged with following up on biodiversity, climate change or land degradation respectively. Synergies amongst these mandates are rare and often discouraged, while public authorities tend not to benefit effectively from research conducted in academic or scientific institutions because formal and consistent links do not exist. There is, for instance, weak cooperation and coordination among national institutions to harmonize the various components of biodiversity research with national policies and needs. Another example is that individual ministries periodically modify fuel specifications—or other standards--without prior consultation with other stakeholders.

The institutional lay-out for three core areas examined in this paper are presented in Annexes 2A, 2B, and 2C respectively. They help illustrate the overlaps in mandates that lead to inefficiencies and uncertainties with regard to the proper authority. For climate change, the MoE serves as the focal point of the UNFCCCC and law 690/2005 (which reorganized the structure of the MoE) specifically calls for the inclusion of climate change issues in its revised mandate, specifically under the Service for Environmental Technology. However, as with the other thematic areas, various other stakeholders have partial mandates such as the MoA, the Ministry of Finance, Ministry of Energy and Water (MEW), Ministry of Transport, Ministry of Education, Ministry of Public Health; as well as the CDR, relevant parliamentary committees, and the municipalities. Of course various private sector firms, research and academic institutions and civil society groups also play important roles. There is no strategic, policy or institutional thread that ensures that the respective mandates of all these players do not overlap.

What is clear is that the respective structures and mandates of the key stakeholders do not encourage synergies and cooperation. If one looks at the forest sector (where 77% of remaining forests are public property belonging to either the state or municipality)--which is of concern to all three conventions--we observe that they are managed by four different institutions: the "mohafaza" (district) and municipalities are responsible for communal lands and their resources; the MoA is responsible for forest management; the MoE mandate extends to natural reserves, biodiversity conservation, and natural heritage issues; while the DG of Antiquities deals with cultural heritage concerns. Clearly, these mandates overlap and this may cause some confusion.

Enhancing the prospects for genuine inter-ministerial coordination also has numerous constraints. The reality is that political rivalries among various ministries as well as the lack of

strong political leadership from the Council of Ministers itself makes cooperation difficult. Environmental committees that do exist thus tend to be ineffective and more noted for the commitment of their members to their respective, narrow agendas rather than to genuine national goals. Bureaucratic and administrative inefficiencies, as well as a lack of time, budget, and incentive add further costs to any such institutional cooperation potential and render the rewards from them minimal. Still, as noted above, there are some notable examples of inter-ministerial coordination such as the higher council for urban planning which have been relatively successful in linking the MoE and the DGUP at a high level. In this context, it is worth noting that law 444 calls for the creation of a "Higher Environmental Council," envisioned as a 14-member body consisting of public and private sector representatives that would be responsible for setting environmental policy priorities, assessing the results of environmental activities, coordinating efforts between government institutions and making recommendations for new laws and amendments. Of course, as with all the other sections of the environment code, no decree has been passed to operationlize such a council. The enactment of such legislation to form independent and authoritative committees in biodiversity, climate change and desertification would provide genuine support for more effective implementation of the Rio agreements since they, by the very nature of the subjects they cover, require a number of stakeholders to cooperate towards a common national objective.

The other major capacity objective in this deficit area is the decentralization of environmental management to allow for effective local community involvement. There is increasing consensus, both in the general environmental literature and via experience by various stakeholders on the ground, that empowerment of locals is imperative to successfully implementing key components of conventions such as the Rio agreements. Given the often very difficult socio-economic conditions (such as poverty, unemployment, low wages, lack of job security) faced by many Lebanese communities, particularly outside of the main city centers, it is no surprise that people are driven to exploit the natural resources around them without thinking about such matters as sustainability. The weak sense of citizenship and knowledge that legal violations rarely lead to punishment exacerbate this tendency. As such, local community capacity (individual and collective) must be enhanced and municipality structures given effective authority to manage local resources in such a manner as to promote sustainability, the win-win situation whereby locals can benefit from resources while preserving the environment.

Decentralization of course is part of broader political reforms that have long been promised in Lebanon as per the Lebanese constitution stipulations. However, despite many national and sectoral commitments to decentralize, environmental management systems (like all others) remains over-centralized. The lack of genuine accountability combined with weak cohesion and impact by civil society actor on policy-making in Lebanon has aided in this status quo. This is being challenged today. A good example is the current reconsideration of nature reserve policy—which relies heavily on top-down management techniques--to include more local stakeholder participation in the decisions that affect their livelihoods.

4. Monitoring, assessing, observing capacity and data management

Lebanon's capacity for monitoring, assessing and managing/processing data related to biodiversity, climate change and desertification/land degradation is recognized as being seriously deficient and thus in great need of development. Such deficiency is in turn a key constraint in elaborating rational and informed policies. Accordingly, two main goals in this deficit area are the (a) establishment or upgrade of national monitoring and observation systems, and (b) development of assessment and data management capacity.

There are numerous capacity constraints that currently block the achievement of these objectives. Most importantly, perhaps, there is chronic lack of national funding for monitoring and observation systems and networks, a problem that stems from insufficient political will and awareness of the importance of such systems by key governmental and parliamentary decision-makers. However, it is also true that institutions that do carry out some form of monitoring, assessment and data processing tend not to share such knowledge with each other—centralized data systems are very rare. They are also often inefficient, with their respective staff often lacking the specialization skills needed.

The climate change sector illustrates this problem well. Lebanon still lacks any comprehensive national monitoring system for GHG emissions, which of course undermines the accuracy of national efforts to determine contributions (and thus solutions) to GHGs. There is also great need for modern monitoring equipment (or upgrades), as for instance the only permanent air quality monitoring station is located in Beirut's airport. Long-term homogenous data series are almost completely lacking in all observing systems. Indeed, one of the issues that is reiterated in nearly every section of Lebanon's INC to the UNFCCCC is the lack of systematic observation networks (SON) to support climate change monitoring activities. Table 9 (below) details the gap between key global climate monitoring principles and the status of local networks in addressing these principles:

Table 9. Selected Global Climate Monitoring Principles: Lebanon's Networks

Monitoring Principle	Status of Lebanon Networks
The impact of new systems of changes to existing systems should be assessed prior to implementation	Such studies are seldom conducted in Lebanon and should be incorporated in the future
A suitable period of overlap of new and old observing systems should be required	Such period of overlap has not been secured in Lebanon in the past
The results of calibration, validation and data homogeneity assessments and assessments of algorithm changes should be treated with the same care as data	The importance of this principle has not been fully understand in Lebanon, but some institutions have started to adopt it
A capability to routinely assess the quality and homogeneity of data on extreme events (e.g. high-resolution data) should be ensured	Such capability is limited in Lebanon and should be addressed in capacity building programs
Uninterrupted station operations and	Most existing stations have experienced

| observing systems should be maintained | interruption in operation; means to ensure data continuity need to be secured |
| Data management systems that facilitate access, use and interpretation should be included as essential elements of climate monitoring systems | Data management systems are lacking and should be established to facilitate data dissemination and use |

Source: Chaaban, UNFCCCC Thematic Assessment

While the data gathered in the area of biodiversity is relatively better that in other areas, the national survey needs updating (via field work) on a regular basis, a national monitoring system for biodiversity and land use trends and changes should be institutionalized, and the ecological services of Lebanon's biodiversity should be assessed.

5. Awareness, education, and information/knowledge-sharing and dissemination.

The thematic assessments were clear in that public awareness/education and information sharing and dissemination with regard to the Rio issues remained surprisingly poor despite a number of initiatives by the MoE to raise general environmental awareness. Indeed, there is little awareness even of the economic (and social) benefits as well as win-win potential of sustainable natural resource management (e.g., climate change abatement). In terms of capacity building objectives, there is thus an urgent need to (a) improve public awareness regarding the Rio convention themes; and (b) integrating such themes into educational curricula at all levels; and (c) increase exchange and dissemination of information and knowledge.

The MoE is primarily responsible for raising awareness on all environmental issues in Lebanon. Accordingly, its administrative structure includes a service for guidance and awareness that oversees awareness campaigns and organizes training in environmental issues for various stakeholders and the public. Given the low prioritization of the environment in national policy, however, a lack of funding hampers the MoE's ability to reach the public in a meaningful way via national awareness campaigns. The MoE has taken some steps to improve this situation, and it has used its website effectively to make available information, reports and studies to the research and NGO communities. For instance, it has created the site http://biodiversity.moe.gov.lb as part of its obligation under UNCBD to set up a clearing house for biodiversity. This is a good first step.

Environmental issues in general, and climate change and desertification specifically, are generally neglected in schools and universities despite commitments given during the 1990s. Few courses on specialized topics are given anywhere in Lebanon. While the picture is not quite as bleak with regard to biodiversity, there is an urgent need to incorporate all environmental concerns (including those addressed by the Rio conventions) into school and university curricula on all levels. Of course awareness alone does not necessarily translate into action. Long-term activities in this area should revolve around increasing the sense of citizenship and civic responsibility among Lebanese. The Lebanese cabinet actually approved the concept of a

"Citizen's Charter" as envisioned by the Office of the Minister of State for Administrative Reform (OMSAR) in November 2001, and published a report entitled "Citizen's Charter for the Environment: Values, Rights and Obligations" drafted in cooperation with the MoE (OMSAR, 2007). Key recommendations included introducing the concept of "shared responsibility" with meaningful citizen participation and empowerment, and the creation of a national strategy for environmental education.

Information and knowledge-sharing and dissemination is also a crucial objective in this capacity area. Important reports and studies on biodiversity, climate change or land degradation issues should also be translated into Arabic when necessary as part of a larger package to disseminate such information to local communities and ensure that knowledge is being transferred effectively to key stakeholders. There is also a need to disseminate and explain relevant legislation and quality control standards to the public, particularly rural communities and women. Moreover, there is no centralized database available to the research community and public in climate change or land degradation issues, though as noted above the MoE has recently created such a mechanism for biodiversity. Mechanisms and incentives to encourage researchers and public institutions to share knowledge is largely absent, while institutional bureaucracy and rivalry serves to discourage such practices. Even private universities and research centers rarely collaborate or exchange knowledge, and it is generally difficult for researchers to identify colleagues working on similar projects in other institutions.

6. Scientific/research expertise and technology transfer

Scientific expertise and environment-friendly technology transfer are two further important cross-cutting capacity areas for all three thematic areas covered by the Rio agreements. Accordingly, the main objectives in this regard are (a) upgrading scientific research and expertise, and (b) building capacity for technology transfer. Key constraints to achieving these goals are the perennial lack of funds/incentives (exacerbated by political and budget deficit crises) and a lack of prioritization and synergy between scientific research and policy needs addressed in previous sections above. To be sure, Lebanon does lack expertise particularly in new fields of research, and more effort should be made to attract successful Lebanese who have emigrated to return to fill such a void. However, the main problem lies not so much with the availability of qualified scientists (in general) as much as failure to make effective use of such human resources that Lebanon actually has a comparative advantage in. The CNRS is the primary public scientific body in Lebanon that prepares national science policy and funds/supports public research projects. As such it plays an important role, along with its specialized agencies. Yet its role is relatively limited due to funding problems and the aforementioned disconnect between policy/decision-makers and the scientific community.

In terms of technology transfer, it is clear from the thematic assessments that the current status of technologies used in the various sectors related to biodiversity, climate change, and desertification are far from adequate. There are no national training and technology transfer centers in Lebanon, little cooperation between existing training and scientific bodies; and a

notable engagement of experts from scientific and educational institutions in Lebanon and abroad. Like nearly all capacity deficit areas, there is an acute lack of funding and political clout to pressure developed countries or donor institutions to transfer technologies, while little incentive and support exist to inspire local companies to produce the needed technologies in a cost-effective manner. There is some hope in international mechanisms such as the CDM which, if planned properly, can be used to transfer environmentally-friendly technologies to mitigate the impact of climate change in Lebanon.

7. Funding and Incentive Systems

Finally, the question of financing—as noted in nearly all the sections above—is a major obstacle to increasing capacity in all three thematic areas. Accordingly, there are two main capacity development objectives in this area: (a) improving the funding system for the implementation of the Rio agreements; and (b) developing the appropriate incentives to promote them. Simply put, there is not enough financing available to support the protection of natural resources and promote their sustainable by local stakeholders. The tense political situation, coupled with spiraling budget deficit has made the situation worse. However, in line with its ratification of all three Rio conventions, Lebanon has an obligation to ensure that there is sufficient financing available to meet the conventions' requirements. A national fund could be established as a mechanism for the implementation of Rio obligations. As for international funding opportunities, while Lebanon does benefit from UNDP, GEF and European Union (EU) funding on specific projects related to biodiversity and climate change, a mechanism should be developed in which such funding can be accessed more systematically. There is also a need to avoid the trap of donor-dependency such only those projects relevant for donor agendas—as opposed to national ones—are funded and thus see the light of day. It should be noted once more that Law 444 calls for the establishment of a national fund for the environment, and this could be used for the implementation of Rio issues.

Incentive systems, including the use of economic instruments, can also be used more effectively to both provide incentives for pollution abatement and sustainable use of resources; as well as to generate funds for investment in environmental projects. The revised MoE mandate and Environment Code (Law 444) include clear references to the use of such incentives, including calling for the Polluter Pays Principle (PPP) to be implemented in order to internalize the environmental costs of industrial, agricultural and other activities. While the use of economic instruments is being considered more seriously within policy circles—primarily as a source of revenue—it remains marginal due to the influence of powerful lobbies and the concurrent weakness of civil society actors. Moreover, it is important to note that there are other incentive systems available to policy makers that do not rely on economic instruments, such as the promotion of the positive consequences of good behavior—through, for instance, a prize for best business practice—and the strengthening of citizenship.

E.   PRIORITY OPPORTUNITIES FOR LINKAGES AND SYNERGIES

The previous section focused on the many common capacity constraints in implementing the three Rio conventions (UNCDB, UNFCCC, and UNCCD). This section briefly presents common opportunities for linkages and synergies among the conventions to overcoming these constraints, thus enhancing compliance with them.

Political stability

Under current conditions of political instability and socio-economic despair in many areas of Lebanon, the current prospects of improving compliance with international environmental agreements are low. For obvious reasons, such compliance is not at present a priority issue for the government nor even for the MoE itself as it continues to deal with the catastrophic environmental results of Israel's 2006 war on Lebanon (mainly, the oil spill). Clearly, efforts aimed at reaching a lasting and just political settlement in Lebanon present an opportunity to move away from a de facto "emergency" state to a normal one in which ordinary public policy issues can be addressed in a meaningful way.

European Neighborhood Policy (ENP)

In 2004, the European Union (EU) adopted the European Neighborhood Policy (ENP) to "support its partners' political, economic and social reform processes and to deepen bilateral relations with them" (EU, 2007). The idea at the heart of the ENP is to "create a ring of neighbors of the South (Mediterranean countries) and the East (Ukraine and Moldova) that will share the EU fundamental values and objectives and will achieve security, stability and well-being" (EU, no date). The ENP working method consists of defining, with each partner country, a set of priorities—incorporated into jointly adopted Action Plans--to bring such partners closer to EU policies. Indeed, such Action Plans serve as the reference points for all future programming assistance to the partners. Among the ways that the EU has recently proposed to support such partners (in addition to bilateral aid) is to create (i) a "Neighborhood Investment Facility" (totally 700 million Euros) to leverage funding by the International Financial Institutions, and (ii) a Governance Facility (with an additional 300 million Euros) to give a "top-up" to those partners who have made the most progress in implementing their Action Plans (EU, 2007).

For Lebanon, agreeing to the ENP has become a strategic priority that has clear influence on implementing the Rio agreements. Lebanon and the EU agreed on an ENP Action Plan in the Fall of 2006, with Lebanon adopting this plan in January 2007. Two of Lebanon's Action Plan priorities are directly relevant for the purposes of this report: (1) strengthening the environmental dimension of public policy and (2) promotion of sustainable development policies and actions (EU, 2006). Indeed, many of the issues analyzed in this report—including the need to implement international environmental agreements, prepare and rationalize relevant legislation and sectoral action plans, establish monitoring networks, and put in place

effective education and awareness programs—are specifically mentioned in this Action Plan. Accordingly, moving forward with the ENP presents a clear opportunity to both synergize efforts to comply with the Rio agreements and tap into the funding mechanisms enabled by this process. The MoE and other relevant bodies charged with implementing the Rio agreements should create a strategy to take advantage of the ENP.

Decentralization and Administrative Reform Processes

Lebanon has long had a commitment to *administrative* decentralization as a strategic priority within a strong centralized state. The 1989 Ta'if agreement that ended the civil war (1975-1990) reaffirms this principle and calls for reforms that includes a "comprehensive and unified development plan capable of developing the provinces economically and socially" with the requisite financial resources given to the municipalities (Ta'if, 1989).

The political reality on the ground and the nature of the confessional system, however, have limited any serious attempts to realize such reform and shift some powers from the central government to the local municipalities. Indeed, according to the UN, currently "most municipal governments are not functional because they cannot collect revenues or provide services; most municipality projects have been assumed by the central government or private industry" (UNDP, no date). As such, any process of political reform that includes some measure of decentralization would serve as an opportunity to encourage and empower local communities to take issues pertaining to the sustainable use of land, water and other resources in their own hands. The Rio agreements all contain measures that must be dealt with on a local level to be effective, and decentralization—in conjunction with the requisite training, awareness and resources--would help synergize such efforts.

Opportunities also exist within the general framework of administrative reform process initiated by Lebanon during the 1990s. Indeed, the Lebanese Council of Ministers created an Office for the Minister of State for Administrative Reform (OMSAR) in 1994 to help create an efficient public administration that could deliver needed services to citizens and improve their standard of living (OMSAR, no date). While this is not directly relevant to the implementation of the Rio Agreements, clearly a more efficient public administration system would improve the general capacity needed to tackle difficult compliance issues.

National Development Plans & Sectoral Strategies

As noted earlier, Lebanon has not developed a national sustainable development strategy or action plan. The Athens-based UNEP-MAP (Mediterranean Action Plan) secretariat has recently approved a modest grant to Lebanon to begin this process, but work has not yet begun on it in large part due to the current political crisis. Moreover, Lebanon does not yet have a Poverty Reduction Strategy (PRS) paper, while national MDG policy and the NEAP remain on the margins. It is therefore vital that Lebanon produce strategic plans and documents—both on the national and sectoral levels—that would effectively integrate the needs for capacity building

with regard to the implementation of the Rio agreements. Of course, any existing planning documents (for instance those produced by CDR) should be amended to include such capacity building needs as well.

Clearly, the environmental sector remains the central one where opportunities for capacity building in the Rio thematic areas can be found. Integrating the recommendations of the NEAP into strategic documents could provide an ideal starting place for such a process. Creating the appropriate legal and regulatory mechanisms for the enabling of the environment code (Law 444) would also create opportunities for common capacity building areas. Strengthening key institutions such as the MoE, MoA and the CNRS is also important. On the sectoral side, the implementation of the NBSAP (to protect biodiversity) and the NAP (to combat desertification), as well as the promulgation of an a NAP for GHG abatement, is crucial. Other sectoral policies that indirectly influence implementation of Rio agreements include those dealing with solid waste management, deforestation and water resources. The forthcoming national reports for UNFCC, UNCBD, and UNCCD provide good opportunities to address these common concerns.

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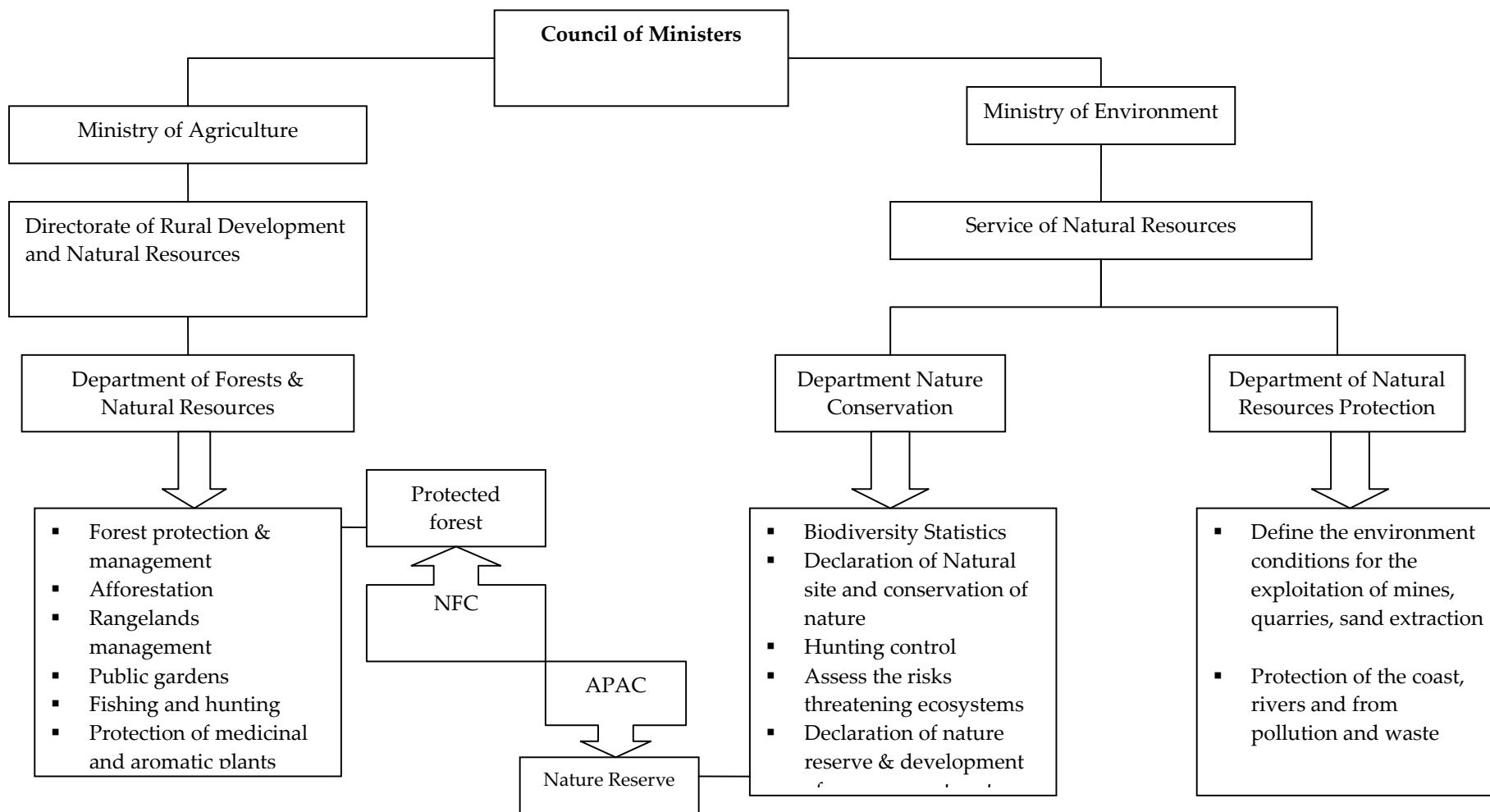**Annex 1. Summary List of Convention Requirements**

UNCBD/Biodiversity	UNFCCC/Climate Change	UNCCD/Land Degradation
Undertaking national biodiversity conservation planning	Preparing national communications	Effective early warning and advance planning for periods of adverse climatic variation
Identifying and monitoring biodiversity and its conservation	Developing national climate change programs	Systems for research and development
In-situ conservation, including protected area system management	Preparing and managing greenhouse gas inventories, including emission database management	Technical and scientific co-operation
Ex-situ conservation of biodiversity	Research and systematic observation of climate and other functions	Joint research programs for the development of appropriate technologies
Utilizing environmental impact assessment for biodiversity conservation	Assessing vulnerability and adaptation	Systems to collect, analyze and exchange information
Managing information, notably through clearinghouse mechanisms	Developing and implementing adaptation plans and measures	Training for collection and analysis of data for disseminating and using early warning information systems, covering drought and food production
Providing scientific and technical education and training	Assessing mitigation options	Transfer, acquisition, adaptation and development of economically, socially and environmentally appropriate technology
Preserving indigenous and local knowledge, innovations and practices	Developing and transferring technology	Training and technology regarding alternative, renewable energy sources
Implementing the Cartagena Protocol on Biosafety	Institutional capacity-building, notably through Secretariats or focal points	Promotion of alternative livelihoods, including training in new skills
Regulating access to and transfer of genetic resources	Improved decision-making (e.g. assistance for participation in international negotiations)	Education and public awareness
Regulating the handling of living modified organisms	Working with the Clean Development Mechanism	
Regulating commercialization	Meeting needs arising from	

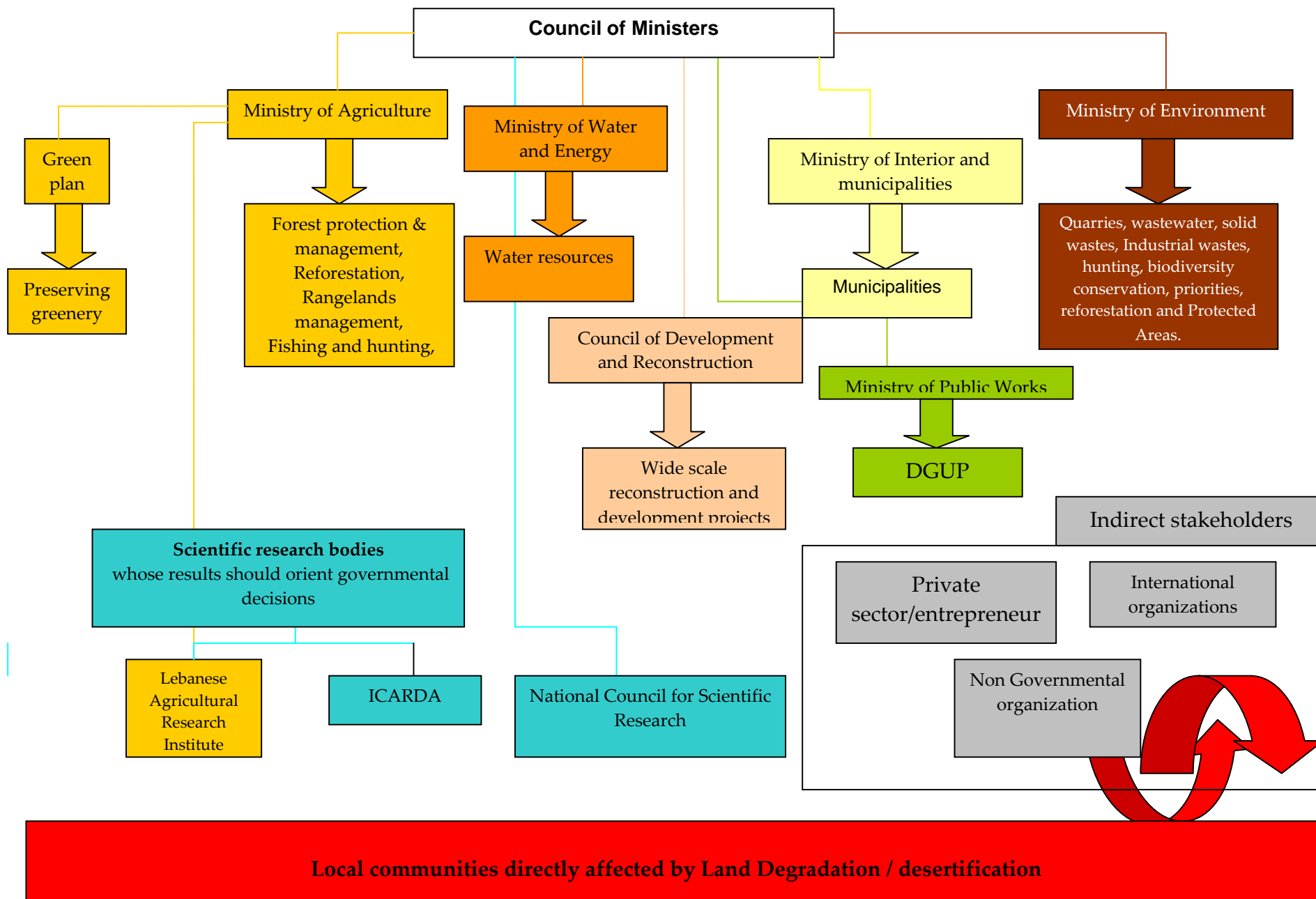|		
and ensuring benefit-sharing from genetic resources	implementation of Convention Articles 4.8 and 4.9	
Accessing financial resources	Information and networking, including databases	
Raising understanding and awareness	Education, training and public awareness raising	
Developing and introducing economic and social incentives	Enhancing the enabling environment	

Source: NCSA, "Resource Kit."

ANNEX 2A. Institutional governance structure of biodiversity conservation in Lebanon


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                          │ Council of Ministers │
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Council of Ministers

Ministry of Agriculture

Directorate of Rural Development and Natural Resources

Department of Forests & Natural Resources

- Forest protection & management
- Afforestation
- Rangelands management
- Public gardens
- Fishing and hunting
- Protection of medicinal and aromatic plants

Protected forest

NFC

APAC

Nature Reserve

Ministry of Environment

Service of Natural Resources

Department Nature Conservation

- Biodiversity Statistics
- Declaration of Natural site and conservation of nature
- Hunting control
- Assess the risks threatening ecosystems
- Declaration of nature reserve & development

Department of Natural Resources Protection

- Define the environment conditions for the exploitation of mines, quarries, sand extraction
- Protection of the coast, rivers and from pollution and waste

ANNEX 2B. Institutional governance structure of Land Degradation in Lebanon

Council of Ministers

Ministry of Agriculture

Green plan

Forest protection & management, Reforestation, Rangelands management, Fishing and hunting,

Preserving greenery

Ministry of Water and Energy

Water resources

Ministry of Interior and municipalities

Municipalities

Council of Development and Reconstruction

Wide scale reconstruction and development projects

Ministry of Public Works

DGUP

Ministry of Environment

Quarries, wastewater, solid wastes, Industrial wastes, hunting, biodiversity conservation, priorities, reforestation and Protected Areas.

Scientific research bodies
whose results should orient governmental decisions

Lebanese Agricultural Research Institute

ICARDA

National Council for Scientific Research

Indirect stakeholders

Private sector/entrepreneur

International organizations

Non Governmental organization

Local communities directly affected by Land Degradation / desertification

ANNEX 2C. Institutional governance structure of Climate Change in Lebanon

Treaty	Selected Obligations	Obligations Carried out by Lebanon	Comment
CBD	1-Report on measures taken for the implementation of the provisions of the Convention and their effectiveness in meeting objectives 2-Develop National Strategies, plans or programs for the conservation and sustainable use of biological diversity 3-Develop guidelines for the establishment &management of protected areas 4-Promote public education & awareness on the importance of biodiversity conservation	1-Three *National Reports on Biodiversity* submitted (1998, 2002, 2005) to the CoP. Also, four Thematic National Reports, a Taxonomy Report and Technology Transfer Report submitted. 2-Lebanon prepared the *National Biodiversity Strategy &Action Plan* (1998), reviewed in 2005 along with draft strategic action plan. A draft law on nature conservation currently under preparation 3- The Protected Areas Project aimed at developing guidelines for a better management of Protected Areas in Lebanon; the MedWet Coast Project aims at conservation of nature &biodiversity conservation in Tyre Coast Beach, Amiq Wetland 4- Various awareness campaigns undertaken	Reporting procedures in place; national strategies drafted; aided by donors; greater public awareness, research and reliable data needed; mainstreaming biodiversity issues in national/sectoral plans urgently needed
UNCCD	1-Prepare and implement national action plans to combat desertification 2-Capacity-building on the national level in efforts to combat desertification 3-Strengthen the management of resources allocated to combat desertification	1-Only one *National Action Plan* (2003) submitted 2-The action plan contributed to capacity building. However, it is not yet implemented (pending approval by the Council of Ministers) 3-The National Coordinating Body (composed of representatives of all stakeholders) created to discuss implementation of the convention.	Reporting procedures inconsistent; policy obligations require greater political support and public awareness;

	4-Report on national measures taken for the implementation of the Convention	However, there is lack of capacity, coordination, cooperation, and awareness among stakeholders 4-Three *National Reports* on the implementation of UNCCD in Lebanon submitted (2000, 2002, 2006).	mainstreaming of land degradation issues into national/sectoral plans needed
UNFCCC	1-Formulate, implement, publish, update national and regional programs 2-Develop national inventories of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, using comparable methodologies 3- Integrate climate change considerations into the relevant social, economic and environmental policies and actions 4-Publish and regularly update national and regional programs 5-Publish periodically updated national inventories of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol 6-Formulate, implement, and update national and regional programs	1-First national communication report finalized end of 2001; the second national communication report was initiated only early 2005 (in progress). 2-National GHG inventory completed using 1990 as a base year; updating in progress. 3-N/A 4-Prepared national inventory of GHGs and sinks 5-Published first national communication report in 2001, second report still in progress 6-N/A	Reporting procedures in place; greater public awareness needed; mainstreaming of climate change issues in other sectors weak

Sources: Makdisi (2006), updated using NSCA Thematic Reports (2007

ANNEX 4. Selected Priority Areas for National Implementation of and Compliance with MEAs

Treaty	Priority Action
UNCBD	• Adopt the National Biodiversity Strategy and Action Plan (NBSAP) • Establish a national inventory of biodiversity and develop appropriate monitoring systems • Ratify the Cartegena Biosafety Protocol, and adopt the access and benefit-sharing draft law • Introduce legislation for monitoring and managing the import, transport, and use of GMOs and GM products in Lebanon • Implement where appropriate Environment Impact Assessment (EIA) for development projects that have impact on biodiversity • Improve coordination and information-sharing among all concerned institutions in Lebanon dealing with biodiversity and biosafety issues • Increase public awareness about importance of biodiversity
UNCCD	• Review and update the national legislation with regard to the implementation of the UNCCD • Update National Action Programme issued in June 2003, and ensure its adoption by the Council of Ministers as national policy • Increase capacity within and coordination between concerned governmental authorities (e.g. MoE and Ministry of Agriculture) • Activate the National Coordination Body (NCB) including all stakeholders from the public sector, NGOs and private sector • Improve information flow and sharing between all stakeholders, and increase coordination with the other competent authorities dealing with related MEAs (e.g. UNCBD, Climate Change) • Use proper monitoring instruments to monitor implementation of the National Action Program (NAP) • Establish Combating Desertification Information System(CODIS) in which all available data (including research and studies) in Lebanon would be compiled • Increase awareness on desertification as a problem in Lebanon, and ways to combat it
UNFCCC + Kyoto Protocol	• Introduce legislation for the management and control of GHGs, and strengthen legislation to ensure the protection of GHG sinks • **Operationalize the Kyoto Protocol**

	• Update national inventory on GHG sources and sinks • Create and/or strengthen institutional capacities in adoption of technologies, equipment, techniques or practices that aim at reduction of emissions and consequently removal of GHG emissions • Establish uniform and reliable baseline information relevant to industry, energy and transport GHG emissions (reliable measurements methodology and proper archiving of national data) • Establish local network of governmental bodies, private sector, and NGOs to ensure information sharing and adoption of action plans to mitigate GHG emissions and protect GHG sinks • Increase public awareness through information dissemination

Source: MoE, Makdisi (2006)