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The World Bank

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Report No: PAD629

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED LOAN

IN THE AMOUNT OF US$15.0 MILLION

TO THE

LEBANESE REPUBLIC

FOR A

LEBANON ENVIRONMENTAL POLLUTION ABATEMENT PROJECT

July 8, 2014

Sustainable Development Department
Middle East and North Africa Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective May 31, 2014)

Currency Unit	=	Lebanese Pound
LP 1	=	US$0.0007
US$1	=	LP 1,507.5

FISCAL YEAR
January 1 – December 31

ABBREVIATIONS AND ACRONYMS

ABL	Association of Banks in Lebanon
ALI	Association of Lebanese Industrialists
BDL	Banque du Liban
BOD_5	Bio-Oxygen Demand over 5 days
CAP	Compliance Action Plan
CCIA	Chamber of Commerce, Industry and Agriculture
CDM	Clean Development Mechanism
CDR	Council for Development and Reconstruction
CEA	Country Environmental Analysis
COD	Chemical Oxygen Demand
COED	Cost of Environmental Degradation
CPS	Country Partnership Strategy
DA	Designated Accounts
EA	Environmental Audit
ECC	Environmental Compliance Certificate
EDGAR	Emission Database for Global Atmospheric Research
EFL	Environmental Fund for Lebanon
EPAP	Egypt Environmental Pollution and Abatement Project
ESA	Environment and Social Assessment
EIA	Environmental Impact Assessment
ESIA	Environment and Social Impact Assessment
ESIAR	Environment and Social Impact Assessment Report
ESMF	Environmental and Social Management Framework
EU	European Union
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Green House Gases
GIZ	Gesellschaft für Internationale Zusammenarbeit
GOL	Government of Lebanon
ICB	International Competitive Bidding
IDF	Institutional Development Fund
IPMS	Industrial Pollution Management System
IRR	Internal Rate of Return

LEPAP	Lebanon Environmental Pollution Abatement Project
LESIAR	Limited Environment and Social Impact Assessment Report
M&E	Monitoring and Evaluation
MAP	Mediterranean Action Program
MCE	Monitoring, Compliance and Enforcement
METAP	Mediterranean Environmental Technical Assistance Program
MOE	Ministry of Environment
MOEW	Ministry of Energy and Water
MOF	Ministry of Finance
MOI	Ministry of Industry
MOIM	Ministry of Interior and Municipalities
MOU	Memorandum of Understanding
MTR	Mid-Term Review
NCB	National Competitive Bidding
NECP	National Environmental Compliance Program
NGO	Non-Governmental Organization
NPV	Net Present Value
PFS	Project Financial Statement
PMU	Project Management Unit
POM	Project Operational Manual
PPP	Purchasing Power Parity
ReGoKo	Regional Governance and Knowledge Generation Project
SMEs	Small and Medium Enterprises
StREG	EU Support to Reform Environmental Governance
TA	Technical Assistance
TBs	Treasury Bills
TSS	Total Suspended Solids
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
WAs	Withdrawal Applications

Regional Vice President:	Inger Andersen
Country Director:	Ferid Belhaj
Sector Director:	Junaid Kamal Ahmad
Sector Manager:	Charles J. Cormier
Task Team Leader:	Alaa Ahmad Sarhan

LEBANON
Lebanon Environmental Pollution Abatement Project

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PAD DATA SHEET

Lebanon

LB-Environmental Pollution Abatement Project (P143594)

PROJECT APPRAISAL DOCUMENT

MIDDLE EAST AND NORTH AFRICA

MNSEE

Report No.: PAD629

Basic Information			
Project ID P143594	EA Category F - Financial Intermediary Assessment		Team Leader Alaa Ahmed Sarhan
Lending Instrument Financial Intermediary Loan	Fragile and/or Capacity Constraints [ ] Financial Intermediaries [ ] Series of Projects [ ]		
Project Implementation Start Date 1-Aug-2014	Project Implementation End Date 30-Sep-2020		
Expected Effectiveness Date 01-Feb-2015	Expected Closing Date 31-Mar-2021		
Joint IFC No			
Sector Manager Charles Joseph Cormier	Sector Director Junaid Kamal Ahmad	Country Director Ferid Belhaj	Regional Vice President Inger Andersen

Borrower: Ministry of Finance			
Responsible Agency: Ministry of Environment			
Contact:	Manal Moussallem	Title:	Adviser to the Minister of Environment
Telephone No.:	(961-1) 981-854	Email:	manal.moussallem@undp-lebprojects.org
Responsible Agency: Central Bank			
Contact:	Wael Hamdan	Title:	Senior Director - Head of Financing Unit
Telephone No.:	(961) 1743-469	Email:	waelhamdan@bdl.gov.lb

Project Financing Data(in USD Million)		
[X] Loan	[ ] IDA Grant	[ ] Guarantee

[ ] Credit	[ ] Grant	[ ] Other

Total Project Cost:	18.00	Total Bank Financing:	15.00
Financing Gap:	0.00		

Financing Source	**Amount**
Italian Cooperation	3.00
International Bank for Reconstruction and Development	15.00
Total	18.00

Expected Disbursements (in USD Million)

Fiscal Year	2015	2016	2017	2018	2019	2020	2021
Annual	0.50	2.50	4.00	4.00	4.00	0.00	0.00
Cumulative	0.50	3.00	7.00	11.00	15.00	15.00	15.00

Proposed Development Objective(s)

The development objectives of the project are to assist the Borrower in: (a) reducing industrial pollution in targeted Industrial Enterprises; and (b) strengthening the monitoring and enforcement capabilities of the MOE.

Components

Component Name	**Cost (USD Millions)**
A. Technical Assistance (parallel financing)	3.00
B. Investment Sub-projects (IBRD)	15.00

Institutional Data

Sector Board

Environment

Sectors / Climate Change

Sector (Maximum 5 and total % must equal 100)

Major Sector	Sector	%	Adaptation Co-benefits %	Mitigation Co-benefits %
Industry and trade	General industry and trade sector	100		
Total		100		

☑ I certify that there is no Adaptation and Mitigation Climate Change Co-benefits information applicable to this project.

Themes

Theme (Maximum 5 and total % must equal 100)

Major theme	Theme	%
Environment and natural resources management	Pollution management and environmental health	100
Total		100

Compliance

Policy

Does the project depart from the CAS in content or in other significant respects?	Yes [ ] No [X]
Does the project require any waivers of Bank policies?	Yes [ ] No [X]
Have these been approved by Bank management?	Yes [ ] No [X]
Is approval for any policy waiver sought from the Board?	Yes [ ] No [X]
Does the project meet the Regional criteria for readiness for implementation?	Yes [X] No [ ]

Safeguard Policies Triggered by the Project	**Yes**	**No**
Environmental Assessment OP/BP 4.01	**X**	
Natural Habitats OP/BP 4.04		**X**
Forests OP/BP 4.36		**X**
Pest Management OP 4.09		**X**
Physical Cultural Resources OP/BP 4.11		**X**
Indigenous Peoples OP/BP 4.10		**X**
Involuntary Resettlement OP/BP 4.12		**X**
Safety of Dams OP/BP 4.37		**X**
Projects on International Waterways OP/BP 7.50		**X**
Projects in Disputed Areas OP/BP 7.60		**X**

Legal Covenants

Name	**Recurrent**	**Due Date**	**Frequency**
Schedule 2, Section I.D	**X**		CONTINUOUS

Description of Covenant

The Borrower shall through the PMU carry out Part B of the Project in accordance with the provisions of the Environmental and Social Management Framework (ESMF)

Name	**Recurrent**	**Due Date**	**Frequency**
Schedule 2 Section I.E.1	**X**		CONTINUOUS

Description of Covenant

The Borrower shall through MOE in coordination with BDL carry out the Project in accordance with the Project Operational Manual (POM)

Name	Recurrent	Due Date	Frequency
Schedule 2. Section I.A.1	X		CONTINUOUS

Description of Covenant

The MOE shall maintain the PMU throughout the Project implementation

Name	Recurrent	Due Date	Frequency
Schedule 2. Section I.A.2	X		CONTINUOUS

Description of Covenant

The Borrower shall through MOE maintain the Project Advisory Committee throughout the Project implementation

Name	Recurrent	Due Date	Frequency
Schedule 2. Section II.A.2(a) and 2(b)		30-Mar-2017	

Description of Covenant

Carrying out a mid-term review and preparing of mid-term review report

Conditions

Source Of Fund	Name	Type
IBRD	Article V. 5.01	Effectiveness

Description of Condition

The Subsidiary Agreement has been executed on behalf the Borrower and BDL.

Team Composition

Bank Staff

Name	Title	Specialization	Unit
Helena Naber	Environmental Specialist	Environmental Specialist	MNSEE
Hocine Chalal	Lead Environmental Specialist	Peer Reviewer	AFTN1
Fadi M. Doumani	Consultant	Consultant	AFTN2
Lina Fares	Senior Procurement Specialist	Senior Procurement Specialist	MNAPC
Hassine Hedda	Senior Finance Officer	Senior Finance Officer	CTRLA
Marie A. F. How Yew Kin	Language Program Assistant	Language Program Assistant	MNSEE
Denise Kassab	Operations Officer	Operations Officer	MNADE
Rima Abdul-Amir Koteiche	Sr Financial Management Specialist	Sr Financial Management Specialist	MNAFM
Dahlia Lotayef	Lead Environmental Specialist	Peer Reviewer	AFTN2
Mark M. Njore	Program Assistant	Program Assistant	MNSEE
Andrianirina Michel Eric	Finance Officer	Finance Officer	CTRLA

Ranjeva			
Ernesto Sanchez-Triana	Lead Environmental Specialist	Peer Reviewer	LCSEN
Alaa Ahmed Sarhan	Senior Environmental Economist	Team Lead	MNSEE
Maria Sarraf	Lead Environment Specialist	Lead Environment Specialist	MNSEE
Katelijn Van den Berg	Senior Environmental Economist	Peer Reviewer	ECSEN
Mei Wang	Senior Counsel	Senior Counsel	LEGAM

Non Bank Staff

Name	Title	City
Sherif Arif	Environmental and Social Safeguards Consultant	Bethesda
Omar Bagnied	Consultant	Washington DC

Locations

Country	First Administrative Division	Location	Planned	Actual	Comments
Lebanon	Mohafaza (Governorate)	PMU located in Beirut and housed at MOE	8 Moha-fazat	6 Moha-fazat as 2 are still not opera-tional	Any enterprise seeking to borrow > US$100,000 to reduce pollution could benefit from the LEPAP scheme

I. STRATEGIC CONTEXT

A. Country Context

1. Lebanon is an upper-middle income country with a population of 4.4 million[1] in 2012. The country is increasingly urbanized, with the highest density in the Middle East (433 people per km^2) and a large concentration of the population and economic activity along the coastal corridor, where the infrastructure is over-stretched, zoning laws are poorly enforced, especially for industrial activities, and the natural environment is subject to growing pressures on air, water bodies, land and biodiversity.

2. As a result of growing uncertainty in the region, the Gross Domestic Product (GDP) growth slowed down markedly below an average of 8% between 2007-2010, although core inflation remained moderate. Nevertheless, a large public debt is a major economic challenge in Lebanon, while public deficits, the current account deficit and the delays in passing a budget Law by the successive Governments, represent major macroeconomic risks to the economy due to the unfavorable debt dynamics.

3. Despite its political instability, Lebanon has long been known for its banking expertise, education, engineering and trade as well as for its open economy and liberal press. The country's service-based economy is driven by a dynamic private sector and is highly dependent on the Gulf economies with significant linkages to neighboring Mashreq economies in terms of trade, labor, finance, and real estate.

4. The industrial sector in Lebanon is an important pillar of the economy contributing to roughly 7.6% of the country's GDP in 2011. While the Lebanese industrial sector grew at a rate of 13% in 2007, political uncertainty in the region has slowed industrial growth to 7.4% in 2011 compared to 2010.[2] Significant sub-sectors include cement production, fertilizer production, manufacturing industries, agro-industries and food processing.

B. Sectoral and Institutional Context

Sectoral Context

5. The adverse impacts associated with industrial pollution in Lebanon are moderate. Relative to other countries in the region with a high level of industrialization (e.g., Egypt and Syria), the adverse impacts are lower but affect mainly the population living in urban and industrial areas (e.g., around the cement plants in Chekka and Sibline, fertilizers in Selaata, and power generation in Deir Ammar, Hraycheh, Zouk, Jiyeh and Zahrani along the coast, and all powered by heavy fuel). Nevertheless, industrial activities in Lebanon are putting greater environmental pressures and becoming increasingly prominent and visible while the Ministry of Environment (MOE) does not yet have the capacity to properly enforce standards.

[1] WDI (2013).
[2] Central Administration of Statistics, 2013. Lebanese National Accounts: 2004-2011. Beirut

6. With the exception of the power sector and cement and fertilizer industries, industrial activities in Lebanon are characterized by small and medium enterprises (SMEs). Food and beverage producers and tanneries as well as metal products manufacturing and textile finishing companies inadequately treat or dispose of waste and effluent into municipal networks. Such discharges pose a particular challenge to the Council for Development and Reconstruction (CDR) - commissioned wastewater treatment facilities as the functionality and operational efficiency of such facilities can be affected once fully operational in the near future. The improper use of chemicals, uncontrolled emissions, and production techniques that intensively use nonrenewable resources further add to potential environmental impacts. Lack of technical knowledge and financial means are often cited as reasons for why SMEs are unable to properly manage or reduce effluents from their operations.

7. The World Bank Country Environmental Analysis (CEA) for Lebanon (2011) estimated the cost of environmental degradation (COED) in Lebanon at US$800 million (equivalent to 3.7 percent of GDP in 2005). The largest proportion is attributed to water pollution (1.1% of GDP), followed by air pollution (0.7% of GDP). Lebanon produced roughly 310 million m³ of wastewater in 2012 of which 250 million m³ are from municipal and domestic establishments, and 60 million m³ are from industrial enterprises.[3] Moreover, overall air pollution loads in 2005 reached: 36,000 tons/year of PM_{10}, 185,000 tons/year of SO_2 and 69,000 tons/year of NO_x. Industrial waste generates about 185,000 tons/year as most of the waste is mixed with municipal solid waste[4] (see Annex 6, Table A6.4).

8. Such loads can be managed through: (i) establishment of compliance and enforcement system; and (ii) provision of financial incentives to facilitate the transition of industries towards compliance. Given the limited scale of industrial activity in Lebanon, there is high potential for many significant polluters to be compliant within a 5-10 year period.

Policy and Institutional Context

9. The Government of Lebanon (GOL) has demonstrated a strong commitment to tackle industrial pollution and encourage green investments through a combination of regulations and incentives that were recently introduced by the MOE. Improvements to the environmental legal framework include the following: (a) the enactment of the Framework Law for the Protection of Environment (444-2002); (b) the Health Care Waste Management Decree (8006-2002); and (c) four key environmental Decrees passed in 2012. These Decrees are: (i) the environmental impact assessment (EIA) developed with the assistance of the World Bank/Mediterranean Environmental Technical Assistance Program (METAP); (ii) the Strategic Environmental Assessment (SEA) Decree; (iii) the establishment of the National Council for the Environment; and (iv) the establishment of the environmental compliance certification system (Decree 8471-2012). Moreover, several environmental guidelines (such as the MOE Decision 8/1-2001) were developed by the MOE during the 2000-2002 periods under the *Strengthening the Permitting & Auditing System for Industries* (SPASI) program financed by the European Union (EU).

[3] Ministry of Energy and Water, 2012. National Strategy for the Wastewater Sector. Beirut.
[4] Sweep-Net, 2012. The Solid Waste Situation in Lebanon, Country Report. Tunis.

10. The Ministerial Declaration of July 2011 includes "Managing Environmental Risks" as one of its priorities and was followed by the MOE's three building blocks developed in its 2011-2013 Work Plan of September 2011: (i) political environment underpinned by good governance; (ii) natural wealth conservation; and (iii) management of environmental risks through prevention and remediation. The last building block is based on the main recommendations of the Lebanon CEA (2011). The ongoing MOE Work Plan has provided clear signals of GOL's commitment to address industrial pollution and to encourage green investments, most notably with the enactment of Decree no. 8471-2012 (July 2012) on environmental compliance. Under this Decree, all enterprises are required to apply for an environmental compliance certificate every three years as part of a construction or operations permit.

11. In 2011, the MOE prepared with the assistance of United Nations Development Programme (UNDP), the *Business Plan for Combating Pollution of the Qaraoun Lake*. Regarding industrial wastewater, the Ministry of Energy and Water (MOEW) formally launched the *National Wastewater Strategy* in December 2012, which requires all industries to pre-treat wastewater prior to discharge into the municipal wastewater network by 2020.

12. Lebanon's track record of enforcement and compliance, however, has been poor. Actions have generally been taken against small and medium private enterprises that have less significant adverse environmental impact than the larger industrial enterprises for which enforcement has been sporadic and often neglected. The fact that MOE is not the only enforcement agency further complicates the implementation of environmental Laws (other agencies with relevant responsibilities include the MOEW, Ministry of Industry (MOI), Ministry of Interior and Municipalities (MOIM), Ministry of Justice as well as municipalities) as reflected in SELDAS.[5] The costliness and technical complexity of recently enacted Laws (e.g., Framework for the Protection of Environment no. 444-2002 and Decree no. 8471-2012) also pose some challenges for MOE. MOE therefore seeks to pursue a sequenced approach, by first targeting priority areas/sectors and assisting individual industries towards achieving compliance.

13. The MOE believes that solutions aimed at remedying the challenges related to industrial pollution should be implemented gradually and should focus first on issues that affect public health and degradation of natural resources. Addressing these issues should not be limited to policy statements and to investments that are disconnected from Lebanon's environmental priorities. They should be driven by the performance record of GOL to engage in policy reforms, improve governance and accountability in specific and well defined pollution management systems that are considered to be the cornerstone of Lebanon's transition to environmental sustainability. The first comprehensive policy that GOL would like to address is the establishment of an industrial pollution management system (IPMS) which is formulated as a policy note prepared by MOE in 2013, in partnership with GIZ Environmental Fund for Lebanon (EFL).

14. The proposed IPMS will consist of a set of processes and practices that would enable the polluting enterprises to control and reduce their pollution to an acceptable level, improve their environmental performance and promote their use of clean and efficient technologies. GOL is

[5] Ministry of Environment et al. 2004. Strengthening the Environmental Legislation Development and Application System in Lebanon (SELDAS). Beirut.

therefore prepared to put in place during the pilot phase, the following processes and tools for the implementation of the IPMS namely:

a) Reinforcing the Compliance and Enforcement Systems within the MOE, through establishment of a Compliance Committee and associated tool such as the Compliance Action Plan, and at a broader national level through the six Inter-Ministerial Permitting Committees (IPCs) which are headed by the MOI; and
b) Fostering partnership with the Association of Lebanese Industrialists (ALI), with the Chambers of Commerce, Industry and Agriculture (CCIA) and selected NGOs to be the advocates in encouraging industries to comply on a voluntary basis with the Lebanese environmental regulations provided that an incentive system is put in place.

C. Higher Level Objectives to which the Project Contributes

15. The project will complement the Government strategy to reduce air, water and soil pollution, and is consistent with the 2011 World Bank Corporate Environment Strategy for the Middle East and North Africa on *Diving Deeper into Country Priorities and Enhancing Attention to Cross-Cutting Issues.*[6] The Bank's strategy, which identified environment as one of the key intervention sectors, supports reforms in the policy, regulatory and incentives framework and market-based interventions to promote responsible environmental behavior among the business sector. Under the proposed Lebanon Environmental Pollution Abatement Project (LEPAP), the Bank would play a major role in helping GOL introduce an innovative and replicable process to address industrial pollution, and to mobilize, to leverage and to enhance the effectiveness of other resources earmarked for environmental protection. Moreover, the project is consistent with the World Bank Group's Country Partnership Strategy (CPS) for FY11 - FY14 for Lebanon (Report #54690-LB) discussed by the Board of Executive Directors in July 2010 that identifies key intervention areas: (i) stimulating growth and fiscal sustainability; (ii) creating a competitive business environment; (iii) improving the economic infrastructure (i.e., electricity, water, transport, environment, etc.); and (iv) providing equitable social protection for the entire population. The proposed project has strong linkages with broader business environment reforms and economic infrastructure improvement.

16. Furthermore, the Lebanon CEA (2011) concludes that Lebanon's transition to environmental sustainability be assessed on the performance record of the GOL to engage in policy reform and to improve governance and accountability. In this regard, the CEA recommended three major pillars, namely:

i. Strengthening environmental governance;
ii. Managing environmental risks; and
iii. Improving programming, cost-effectiveness and maximizing the environmental benefits in the wastewater and solid waste sectors with emphasis on poor areas.

17. The Work Program of the MOE also calls upon the World Bank to assist in the design and implementation of an environmental compliance mechanism through the proposed LEPAP.

[6] Toward a Green, Clean, and Resilient World for All: A World Bank Group Environment Strategy 2012 – 2022. Washington, DC.

Senior GOL officials have reaffirmed GOL's commitment to establish such a mechanism. Polluting industries, especially the ones discharging their untreated effluents in the sewer network are sought to be brought into compliance over the medium term in line with the 2020 target set by the MOEW to have most municipal wastewater treatment plants in service as planned in the 2012 Wastewater Strategy.[7]

18. Initially, the compliance mechanism will be designed on a voluntary basis but it will gradually increase its credibility over the medium to long term by mainstreaming the needed control mechanism (fiscal instruments and penalties) within MOE and developing a new banking product line (mainstreaming environmental project evaluation through training) to generate the expected positive externalities.

19. Ultimately, LEPAP's activities will promote cost-effective pollution prevention and abatement, and provide concessional funds through local banks to finance a limited number of pollution abatement sub-projects. The LEPAP funding mechanism is an integrated part of the Environmental Compliance and Enforcement Systems as MOE has prepared an Environmental Compliance Application Ministerial Decision that will set the timetable and grace periods for the industrial sector to comply with the Environmental Compliance Decree no. 8471-2012. Fiscal instruments and penalties will be introduced at a later stage but prior to 2020 when most wastewater treatment plants will be in service. Moreover, MOE's environmental regulatory and enforcement capacity will be developed in coordination with the EU Support to Reform Environmental Governance (StREG) that was launched in March 2014.

20. The proposed LEPAP will not attempt to resolve all industrial pollution issues in the country, especially those of informal industries; rather it will jump start the process of strengthening the Government's institutional capacity in monitoring and enforcement, build in the capacity of the banking sector to evaluate and provide environmental projects as a new product line, and simultaneously develop collaboration between the enterprises, the financial sector and the regulatory and enforcement institutions through a limited number of environmental investments. Moreover, LEPAP will be quasi budget neutral as there will be no fiscal impact regarding the intermediate mechanism to the GOL and the public debt, as enterprises will borrow and reimburse the funds. The participating banks will be able to offset the cost of funds through the BDL 2014 incentive scheme (see below).

21. At present, local financial institutions do not provide medium to long term loans for purely environmental investments due to a lack of technical capacity and familiarity with environmental lending. A financial mechanism coupled with financial incentives is therefore required to encourage enterprises to invest in pollution control in parallel to the issuance of the Environmental Compliance Application Ministerial Decision. The Project therefore aims to activate the said mechanism and make it operational.

[7] Ministry of Energy and Water. 2012. National Strategy for the Wastewater Sector. Beirut.

Development Partners

22. Two development partners have and are investing in the Lebanese environment sector with emphasis on pollution management: (a) GIZ has supported the preparation of the proposed LEPAP; and (b) the EU €8.0 million StREG program aims to strengthen the capacity for environmental inspection and enforcement.

23. GIZ, in cooperation with MOE and the CDR, has provided a grant in the amount of €8.5 million for the establishment and operation of the GIZ/EFL. Lately, GIZ/EFL has notably supported innovative interventions for private and public sector enterprises to improve their economic and environmental performance. More specifically, GIZ/EFL has supported 6 enterprises to meet MOE's standards for effluent discharge (MOE Decision no. 8/1-2001). GIZ/EFL currently also supports the proposed World Bank activity to quantify the demand for pollution abatement activities, while providing technical assistance (TA) to prepare a potential project pipeline that will be available for funding during the first year of the proposed LEPAP. GIZ/EFL has gauged the demand for enterprises interested in borrowing through the proposed LEPAP scheme. Out of 27 applicants, 13 enterprises, of which 5 have expressed interest to borrow, were found eligible to be considered through the proposed LEPAP to reduce their pollution in line with MOE's Environmental Compliance Decree no. 8471-2012.

24. The EU €8.0 million StREG program's overall objective is to improve the environmental performance of the Lebanese public sector through environmental governance reforms. The program's specific objective is to build effective capacity within MOE to plan and execute environmental policy, including mainstreaming enforcement within key line-ministries. LEPAP will coordinate with and build on the StREG program as the latter will notably: (a) provide air and water quality monitoring stations; and (b) strengthen the environmental capacity of regional units and other sector ministries. The Bank's role under LEPAP is complementary to StREG's objective as it will help MOE implement its compliance action program in the industrial sector through an initial voluntary system that will become compulsory to provide incentives for industries to depollute and to obtain an Environmental Compliance Certificate as required by the Environmental Compliance Decree no. 8471-2012.

II. PROJECT DEVELOPMENT OBJECTIVE

A. PDO

25. The development objectives of the project are to assist the Borrower in: (a) reducing industrial pollution in targeted industrial enterprises; and (b) strengthening the monitoring and enforcement capabilities of the MOE;

B. Project Beneficiaries

26. There are four levels of beneficiaries under the proposed project.

- MOE will benefit from TA to improve capacity building and staff skills.
- Participating banks will benefit from lending to enterprises through the financing mechanism and the TA will build their capacity to evaluate Environmental and Social Impact Assessment (ESIA), environmental audits (EA) and Compliance

Action Plan (CAP) as environmental projects will become a new product line (see below).

- Beneficiary enterprises that will subscribe to implementing the CAP and borrow through the proposed project to reduce their pollution load.
- The population that lives in the areas of the participating enterprises where emissions are released, effluents are discharged and waste is dumped. Additional global benefits include possible reduction in greenhouse gas emissions. However, it is difficult to determine the exact geographical area and the number of people who will benefit from the reduction of these externalities at the onset. The population living upwind/downwind or downstream of the enterprise reducing its pollution through the proposed LEPAP scheme will be better identified in terms of gender (beneficiaries are assumed to be equally composed of men and women) and income (poverty pockets) during project implementation.

C. PDO Level Results Indicators

27. Achievement of the project's development objective will be assessed through the following 3 key indicators:

a. Enterprises financed through the project that conform to the Environmental Compliance Decree no. 8471-2012.
b. Enterprises that would reduce their BOD discharges (tons) by more than 50%
c. Enterprises that would reduce their air pollutants (PM_{10}) from the stack emission and/or their industrial waste volume (tons) by more than 50%.
d. Regularly published monitoring reports covering environmental compliance of participating enterprises by MOE.

III. PROJECT DESCRIPTION

A. Project Components

28. The project has an envelope of US$18.0 million and consists of the following two components.

Component A. Technical assistance (US$3.0 million - parallel financing by the Italian Cooperation):

29. The objective of this component is to strengthen through technical support and training the capacity of MOE, the banking sector and the industrial associations and provide project management support. This component consists of establishing a PMU at MOE which will be set up under the Office of the Minister of Environment and will be responsible for technical aspects of the project including sub-project processing, training, awareness-raising, assisting in fiduciary matters in coordination with BDL and reporting matters. Parallel financing to fund overall PMU operations and TA shall be provided by the Italian Cooperation. More specifically, the component includes:

i) Providing TA for the detailed design, EAs, ESIA, and CAPs to eligible enterprises so that their EAs/ESIAs/CAPs are prepared in accordance with the Environment Compliance Decree no. 8471-2012.
ii) Strengthening the MOE capacity in ESIAs/EAs for the industrial sector by establishing guidelines for sector ESIA, and its enforcement and by providing formal and on-the-job training at the national and local levels in close coordination with the EU StREG Program.
iii) Providing technical support and training to the banking sector and other relevant stakeholders for the development of guidelines on banking and the environment and provide training on selecting and evaluating environmental related projects from the technical, financial, environmental and social point of views.
iv) Conducting environmental awareness with the help of ALI, CCIA, MOI to market the project to their constituencies, and communication campaigns with the help of NGOs for industrial pollution control.
v) Financing, Monitoring and Evaluation (M&E) activities of project progress, impacts and outcomes in close collaboration with MOE and BDL.

Component B. Investment Sub-projects with a total cost of US$15 million (IBRD).

30. The objective of Component B is to provide concessional loans through the banking sector for pollution control to an estimated 20 to 25 public and private enterprises in order to bring their air emissions, effluent discharges and industrial waste generation towards compliance with national environmental standards in a cost-effective manner. The sub-projects could include pollution prevention, resource recovery, clean technology adoption, fuel substitution, waste minimization, or end-of-pipe environmental control where no other alternatives are available. To this end, the Borrower shall make available the proceeds of the Loan to BDL under a Subsidiary Agreement (management mandate) as this component will provide sub-loans through participating banks on a first-come, first-serve basis and as long as the enterprise fulfills the eligibility criteria (Annex 3). Participating banks likely to subscribe to LEPAP are those having industrial clients interested in reducing their pollution. Enterprises seeking funds will have to provide at least 10% in kind or in cash of the amount borrowed to cover civil works and equipment import duties as IBRD will only cover equipment costs.

31. This component will consist of a credit facility to provide sub-loans of at least US$100,000 per enterprise to implement pollution control projects and thereby reduce their pollution load. The IBRD loan will be disbursed over 5 years to the Borrower who will make available to BDL the proceeds of the loan as provided in the Loan Agreement.

Sub-Loan Conditions, Eligibility Criteria and Processes

32. The proposed lending conditions for the industrial enterprises by the participating banks, are as follows:

- Tenor 5-7 years
- Grace period: 1-2 years (included in the tenor)
- Effective Interest rate after the BDL stimulus package: near to 0%
- Commercial Risk: To be borne by the participating banks

- Foreign Exchange risk: To be borne by the enterprise
- Collateral: To be agreed upon between the participating bank and the enterprise
- Minimum ceiling for borrowing per sub-project is US$100,000
- PMU could approve a sub-project loan up to US$2.0 million: World Bank prior approval is required if the sub-project loan exceeds US$2.0 million

33. If the industrial enterprise does not eventually borrow funds once the project has financed free of charge the feasibility study, the EA, ESIA and CAP, then the enterprise will have to reimburse all the costs of preparation of these documents before re-applying to the MOE for an Environmental Compliance Certificate (ECC) outside the LEPAP scheme.

Project Pipeline

34. Thirteen enterprises identified by GIZ/EFL have already expressed a strong interest in requesting further feasibility studies including the preparation of EAs and CAPs. Out of these thirteen, five enterprises (three from the food sector, one from the paper sector and one from the furniture sector) have expressed strong interest in borrowing from LEPAP subject to the completion of the environment and social requirements and prefeasibility studies, and reaching an agreement with participating banks on the lending terms and conditions. The proposed investments for the five enterprises were estimated at about US$4.0 million (net of the civil works that will be borne by enterprises) and could constitute the first project pipeline that could benefit from LEPAP financing. The remaining eight enterprises have already expressed interest in requesting further feasibility studies/EAs/CAPs before deciding to borrow.

B. Project Financing

Lending Instrument

35. The IBRD loan repayment and the cost of funds of the participating banks will be offset by BDL under its own financing through the stimulus package under Circular no. 365-2014. Hence, BDL will provide two parallel loans to the participating banks: a loan in US Dollar mirrored by an equal loan denominated in Lebanese Pound. The loan in Lebanese Pound (LP 22.6 billion) as a parallel financing at 1% interest rate will allow the participating bank to invest/reinvest the amount in Lebanese treasury bills (TBs --5.35%/year) and repay the loan capital and interest hence covering the IBRD loan repayment and retaining its cost of funds, any administrative fees, and profit margin.

Project Cost and Financing

36. Total project financing requirements are estimated at US$18.0 million, inclusive of the front-end fee and parallel financing. The IBRD loan will be disbursed over 5 years to the Borrower that will make available to BDL the proceeds of the loan as provided in the Loan Agreement. The detailed project costs are illustrated in Table 1.

Table 1. Project Financing

Project Component	Project cost	IBRD Financing	
	US$million	US$million	%
A. Technical Assistance parallel financing:	3.0	0.0	0%
-Italian Cooperation (PMU and TA)	*3.0*		
B. Investment Sub-projects	15.0	15.0	
-IBRD (net of equipment import duties)	*15.0*		
Total Baseline Costs including price contingencies	18.0		
Total Project Costs	18.0	15.0	84%
Total Financing Required	18.0	15.0	84%

Retroactive Financing

37. This project will be subject to retroactive financing in accordance with relevant Bank procedures to speed up lending. The amount should cover US$3.0 million of the preliminary borrowing needs of the lined up enterprises as their EAs and ESIA are underway under GEF Regional Governance and Knowledge Generation Project (ReGoKo) (P118145) through a complementary activity, i.e., effective since January 2013 and managed by the MOE. The CAPs of 5 enterprises have been submitted and are currently under review by the MOE (July 2014). To speed up the lending process, US$3 million in retroactive financing, is available.

C. Lessons Learned and Reflected in the Project Design

38. Good practice indicates that a combination of policy instruments, including command and control, market-based approaches, and moral suasion are needed to ensure reduction in pollution. Command and control instruments are often the cornerstone of pollution management, and are the first step for most countries towards addressing industrial pollution. Whereas market-based instruments need a mature financial market to be implemented, moral suasion allows different stakeholder groups (e.g., government, financial institutions, private sector, civil society, and the judiciary) to become involved in pollution management,[8] resulting in the overall strengthening of the pollution management system within a country through the provision of information (e.g., labeling, certification, public disclosure and voluntary agreements). Public disclosure schemes (e.g., Indonesia's Program for Pollution Control, Evaluation and Rating (PROPER), Philippines EcoWatch program, Vietnam's Environmental Information and Disclosure System (EIDS), etc.) were effective at improving environmental performance due to public pressure and consumers' behavior change.[9,10,11]

39. Bank operations address industrial pollution through a combination of both technical assistance for institution-strengthening and financial support in the form of credit lines for

[8] World Bank. 2012. Getting to Green – A Sourcebook of Pollution Management Policy Tools for Growth and Competitiveness. Washington DC.
[9] Blackman A. 2010. Alternative Pollution Control policies in Developing Countries. *Review of Environmental Economic and Policy 4(2): 234-253.*
[10] Powers N, Blackman A, Lyon T, and Narain U. 2011. Does Disclosure Reduce Pollution? Evidence from India's Green Rating Project. Environ Resource Econ. 50: 131-155.
[11] World Bank. 2008. Strategic Environmental Assessment for Policies – An Instrument for Good Governance. Washington DC.

investments in enterprises. Lessons learned within the country, region and in other regions highlight the importance of the following features to be included in project design:

- Lessons learned from IFC's experience in Lebanon are well-reflected in LEPAP's project design, specifically in terms of providing a TA to accompany the investments made for energy efficient loans, and the introduction of new green instruments in Lebanon as they were not inclusive. LEPAP included all stakeholders during project preparation: public institutions, the private sector (SMEs and the banking sector), professional associations, etc.
- Lessons learned from the Egypt Pollution Abatement Project (EPAP) I and II (P054958, P090073) in providing the banking sector with increased capacity and financial resources, and increasing the environmental management capacity of the environmental agency indicate that it is possible to develop the market for pollution abatement investments both from the supply and demand side. Lessons learned from EPAP I and II highlight the need to strengthen institutional and regulatory capacity so that environmental regulatory agencies develop institutional capacity through a "learning by doing" approach. The MCE system constitutes one of the major features to be developed in order to increase environmental management capabilities.
- A review of earlier Bank experiences showed the following key lessons: the importance of effective targeting of credit lines to ensure that the benefits are not dispersed (this project relies on results of the GIZ/EFL supported projects which carried out audits and facilitated the identification and gauging demand from potential industries); importance of enforcement pressure and promotion of the credit lines as key factors to motivate enterprises to use the funds; and importance of development partner coordination.

40. As such, the project combines the reliance on command-and-control instruments with provision of concessional loans and TA to the industries to reduce their pollution and TA to the banking sector to be able to evaluate environmental projects; builds the technical capacity of the MOE for MCE; promotes information disclosure through the publication of monitoring reports on the MOE website; and supports the MOE in operationalizing the newly introduced Environmental Compliance Decree.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

41. Addressing issues such as the compliance system's institutional clarity and financial mechanism notably in terms of transparent lending criteria as well as structuring and strengthening capacities of the main actors, stakeholder outreach and community awareness are critical for the success of the project.

Institutional Context

42. The main governmental executing institutions involved in the LEPAP implementation are BDL, who will manage the use of the proceeds of the loan, and MOE (responsible for TA, overall project management as well as technical, training, marketing, awareness, assisting in fiduciary matters in coordination with BDL and reporting matters under the PMU) who is the

recipient of the Italian Cooperation parallel financing as well as MOF and MOI (marketing role). These 4 entities have ongoing successful joint projects, e.g., BDL and MOE's incentive scheme for green investments as well as MOF and MOI's industrial loan interest subsidy. Efficient flow of information and communication structures between them facilitates coordination, i.e., a proven track record of horizontal (cross-sectoral) and vertical (government tiers) coordination will help implement LEPAP effectively. Other relevant stakeholders to be coordinated include professional associations (ALI, ABL and CCIA) and other stakeholders who will be represented at the Project Advisory Committee (see below).

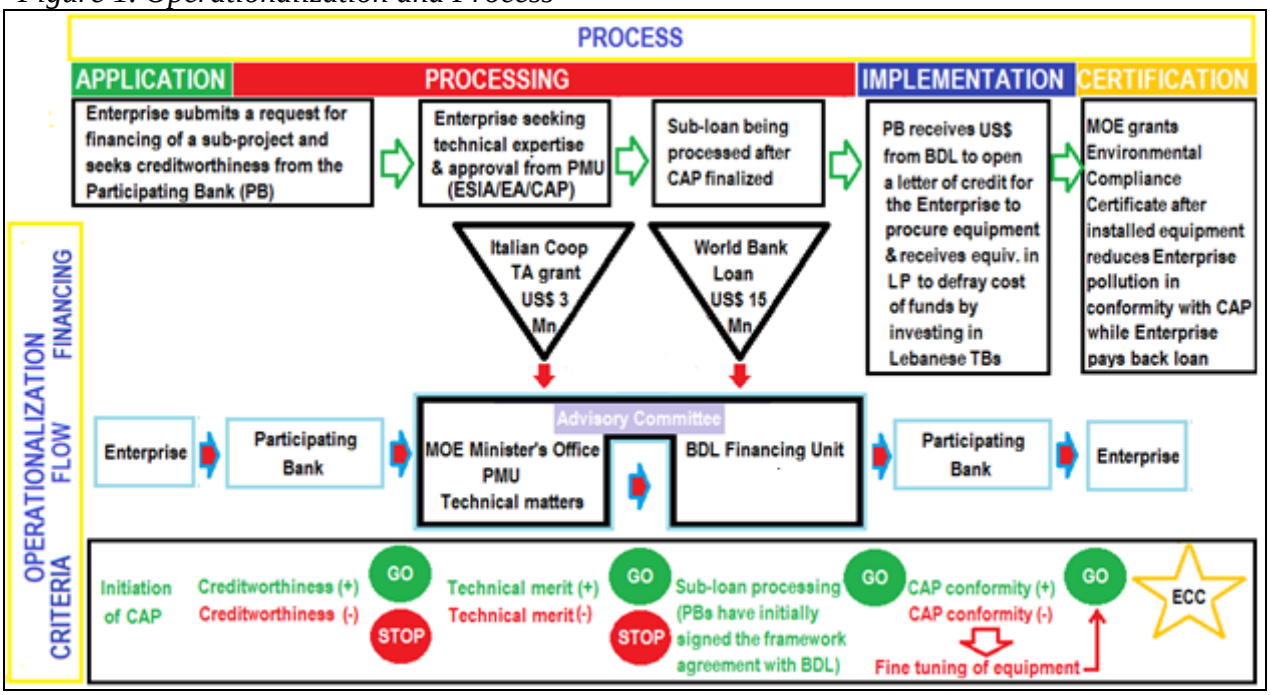
Project Organization and Management

43. The organization and management is summarized below (Figure 1) and explained further in Annex 3. Figures A3.1 and A3.2 provide a graphic presentation of the project organization and processing. Overall coordination of the project would be entrusted to a Project Advisory Committee (PAC) chaired by the MOE and composed of senior officials of BDL, MOF, MOE, MOI, CDR, ALI, ABL and CCIA. The PAC will provide overall policy guidance and act as an advisory body by resolving any inter-ministerial/entity implementation issues. It will also review the status of sub-project selection and implementation on a semi-annual basis. The PAC has been established by the MOE.

44. BDL will manage the use of the proceeds of the loan of the proposed project in coordination with a PMU which is housed at the MOE. The PMU was set up under the Office of the Minister of Environment and will be responsible for TA, overall management including sub-project processing as well as technical, training, awareness, assisting in fiduciary matters in coordination with BDL and reporting matters. The PMU, which was established with qualified staff by MOE, will manage the project and will be the main interface with participating banks and enterprises. The PMU is headed by a Project Manager and will be responsible for the day-to-day and overall project management, liaison duties, monitoring and evaluation, and reporting. The PMU has a Core Management Team of five staff comprised of: Project Manager, Procurement Specialist, Senior Environmental Specialist, Financial and Administrative Management Specialist, and Environmental Management Systems and Monitoring and Evaluation Specialist (EMS/M&E) housed at the PMU. The PMU's responsibilities would include: (a) assist enterprises in developing sub-projects in accordance with the agreed eligibility criteria; (b) approve and recommend to the participating banks any sub-project below US$2.0 million – any sub-project above US$2.0 million would be submitted to the World Bank for prior approval; (c) ensure that all procurement and safeguards management is in compliance with Bank guidelines; (d) prepare progress and implementation completion reports; and assist in the preparation of withdrawal applications and un-audited financial reports based on the documentation provided by BDL.

45. Prior to loan effectiveness, the Borrower would sign a Subsidiary Agreement with BDL in which it would appoint BDL to manage the use of the proceeds of the loan and it would also provide for the flow of funds and details related to the repayment of the loan and its interest.

Figure 1. Operationalization and Process



46. The participating bank would pre-screen environmental sub-projects proposed for funding by the proposed project, determine the financial viability of the enterprises, negotiate the sub-loan agreement with the enterprises, take the commercial risk for loans to the enterprises, promote the program among its clients, and report on a regular basis to the PMU on its project-related activities. A Project Operations Manual was prepared for the PMU and describes the identification, evaluation, and approval process of the environmental investments.

47. The participating enterprises would sign a sub-loan agreement with the participating banks. This sub-loan agreement will include a technical agreement prepared by the PMU and countersigned by the MOE and would detail the enterprise's commitment to: (a) the sub-project objectives; (b) the preparation of a CAP which is a condition for accessing LEPAP funds for one sub-project but it is not a requirement for implementing all the sub-projects included in the CAP; (c) the procurement, installation and operation of the equipment; (d) self-monitoring; (e) the measures to be taken to protect workers' health and safety; and (f) notification to MOE of the results of pollution reduction activity.

48. Prior to the mid-term review, the Bank will reassess the MCE capacity within MOE in conjunction with the EU StREG team to see if it can start transferring some of the PMU technical roles and responsibilities to MOE staff, and revisit the PMU technical staffing. The MOE, which detailed the roles and responsibility of each of the PMU members, established the PMU in January 2014.

B. Results Monitoring and Evaluation

49. Monitoring and Evaluation of outcomes and results during implementation will follow the Bank’s standards and is outlined in the results framework (Annex 1). Monitoring of project

activities will be the responsibility of the PMU. An M&E staff at the PMU will be tasked with collecting and presenting data in a standardized reporting format from the identified data sources in progress reports for bi-annual review by the PAC in conjunction with the Bank. Once approved, the progress reports will be partly or fully published on MOE's LEPAP dedicated webpage.

50. A specific monitoring and evaluation section of the POM including baseline data and methodology for indicator measurement and evaluation has been developed in consultation with actors. Estimating the impact of the proposed project during implementation would be based on the compilation by the PMU of data on pollution discharge data (air emission and water discharge) from the industrial enterprises, which would be the responsibility of the enterprises. Ambient data on air/water quality in the vicinity of the industrial facilities and baseline conditions will also be measured to inform load-based standards in the future. The ambient data would be the MOE's responsibility. The details of the audit for each sub-project and the CAP for the entire facility would be performed in such a way that the baseline and resulting environmental impacts from different mitigation options, to the extent possible, could be evaluated and compared with or incorporated in the proposed project's environmental indicators. Annex 1 provides a sample of the environmental indicators which would be developed based on the environmental audits prepared for the sub-projects.

51. Project monitoring would be conducted by the Bank on the basis of the performance indicators in Annex 1 and the implementations schedule in Annex 3. Key areas of supervision would include: (a) compliance by the participating banks with the eligibility criteria as discussed above; (b) review of data emissions; (c) installation and operation of environmental control equipment resulting from the project; (d) progress in developing effective awareness and communication; (e) progress in preparation of the CAPs and ESIA/EAs and feasibility studies.

52. A mid-term review would be conducted by the Bank and would include inter alia: (a) performance of the project in achieving its objectives; (b) progress toward fulfilling key performance indicators; (c) sub-projects completed under implementation; (d) effectiveness of training and TA provided to the proposed project beneficiaries; (e) economic justification of the on-lending program; and (f) progress made by BDL and MOE in establishing an incentive framework for environment protection and industrial pollution control.

53. Communication of project's results and activities as well as project documents (e.g., project documents, safeguard documents, study reports, workshop reports, etc.) will be done through an upgrade of the existing MOE webpage where links to this webpage will be established by, MOI, ALI, ABL and CCIA. This, together with the outreach and awareness activities, is expected to improve coordination among the different actors and related initiatives and strengthen engagement and ownership.

C. Sustainability

54. The project would strengthen the monitoring and enforcement capabilities of the MOE and establish the technical and financial mechanisms for pollution abatement investments. Monitoring and enforcement capabilities include enforcement instruments, increased knowledge

regarding the efficacy of pollution abatement investments, and the mainstreaming of the PMU technical functions within the organization structure of the MOE. The enforcement instruments are enhanced through the TA component and the EU StREG and the Government's commitment to enforce the law and to request that enterprises prepare their own CAPs. Since the Lebanese enterprises are not familiar with pollution abatement investments, enterprises making the first investments of this type will incur significant information costs. The BDL stimulus package and technical assistance features of this project will in the beginning incentivize enterprises to incur these transaction costs and undertake this new type of investment activity. At completion of the project, it is expected that the financial mechanisms will be in place, the banking sector will have the capacity to ensure continuity and there will be an increased awareness of accrued benefits from compliance with environmental standards.

55. After the core investments are made, Lebanese enterprises will be more familiar with the process. Furthermore, the funding mechanism, if successfully demonstrated, would stimulate lending by the banking sector given that the proposed project would provide training to bank officers on how to evaluate potential environmental investments and to recognize and market such opportunities to their customers.

V. KEY RISKS AND MITIGATION MEASURES

A. Risk Ratings Summary Table

Risk Category	**Rating**
Stakeholder Risk	High
Implementing Agency Risk	
-Capacity	High
-Governance	Moderate
Project Risk	
-Design	Substantial
-Social and Environmental	Moderate
-Program and Donor	Moderate
-Delivery Monitoring and Sustainability	Substantial
Overall Implementation Risk	High

B. Overall Risk Rating Explanation

56. The overall risk rating at implementation is High due to limited experience in implementing Bank-financed projects. The GOL has clearly stated that managing risk, notably the reduction of industrial pollution is a priority. Moreover, BDL and MOE are firmly committed to the proposed project and roles and responsibilities have been well defined. A PAC was created to oversee, provide guidance, facilitate LEPAP implementation and monitor progress. Some development partners are already on-board and others are possibly planning to join the process in the future. Three core risks have been identified during preparation and adequate mitigation measures have been built into the project design (Table 2).

57. *Lack of institutional capacity to set up the MCE system and perform CAPs:* the proposed project implementation is entrusted to the PMU that will ensure proper coordination with various

actors and will act as the conduit to building the capacity of MOE's MCE system as well as MOE and the PMU's ESIAs/CAPs. This will help facilitate project implementation and sustainability of results.

58. *Lack of capacity to manage the proposed project according to World Bank guidelines and adhere to the reporting requirements:* the PMU team will include a skill mix that will cover financial management, procurement, safeguards and M&E. The POM was prepared and includes institutional arrangements with roles and responsibilities as well as fiduciary, safeguards and M&E guidelines. Bank supervision missions and a mid-term review will ensure the adequate implementation of the project and may call for additional training to strengthen PMU capacity.

59. *Lack of participating bank involvement in the lending scheme:* While the project is designed to have positive impacts on beneficiaries living upwind, downwind and downstream from the sub-projects, the risk of the participating banks not taking part in the lending process due to non-competitive interest rates is mitigated by the introduction by BDL's incentive scheme allowing commercial banks to use BDL's 2014 stimulus package.

60. Most risks are mitigated to ensure the adequate implementation of the project. However, the regional and national political outlook remains bound by a number of uncertainties such as the uncertainty regarding the Lebanese political situation which is beyond the scope of the proposed project. Moreover, the national economic outlook, which is affected by the events in the region, reveals a contraction of the economy, a slowdown of tourism activity and a disruption of the export routes to the Gulf countries.

VI. APPRAISAL SUMMARY

A. Cost-Effectiveness and Economic Analyses

61. Cost-effectiveness analysis was performed for five enterprises that could constitute LEPAP's first pipeline of investments worth about US$4.0 million in terms of equipment with a total investment cost of about US$6.8 million including civil works that will be borne by the borrowers. The capital expenditure wastewater treatment cost-effectiveness for three food enterprises ranges between US$1.8 and US$8.1 per m^3 of treated wastewater with a reduction of 98% equivalent to 132,000 m^3 of treated water per year free of Chemical Oxygen Demand (COD) and Bio-Oxygen Demand over 5 days (BOD_5) that could be reused. The manure transformation cost-effectiveness reaches US$4.3 per ton equivalent of 4,445 tons per year that will be transformed into compost with a reduction of 100% Total Suspended Solids (TSS). The mattress residue cost-effectiveness is negative, hence highly profitable.

62. An economic analysis was performed to derive the social benefits accruing to society and the global environment and is based on a number of hypotheses. It is not known at the onset what type of pollution will be reduced over the project life. Moreover, unit damage cost (used as a social benefit in the economic analysis) from main criteria (PM_{10}, SOx and NOx,) air pollution are available which is not the case for biological and chemical industrial discharge in water bodies or industrial waste discharge in nature. Hence, only three air pollution abatement conservative scenarios were considered: a 3.0%, 3.5% and 4.0% reduction of the industrial

emission load baseline and derive the trade-off point in terms of optimum pollution abatement in order to have a viable project. The project cost of US$15 million is considered in the economic analysis (Table 3) irrespective of how the funds will be allocated over air abatement or discharge reduction. Under scenarios 2 and 3 that reduce air pollution loads by 3.5% and 4.0% respectively, the project is viable as it yields a net present value (NPV) discounted at 10% of US$1.6 million and US$3.3 million respectively over 7 years (although the benefits will accrue over a longer period of time) with benefit/cost ratios greater than zero associated with a positive economic internal rate of return (IRR) of 25% and 39% respectively. The benefits could be further attributed to: avoided premature death (70% of NPV); avoided morbidity (20%); crop productivity increase (6%); and avoided infrastructure decay (4%). The sensitivity analysis was only calculated to derive the switch off point of 3.1% which is the industrial pollution abatement baseline that will maintain the viability of the project from a societal point of view.

Table 3. Project economic and sensitivity analysis results

Indicators	**Economic Analysis Discount rate: 10%**			**Sensitivity Analysis**
	Scenario 1	Scenario 2	Scenario 3	Switch off Point
Air pollution abatement from baseline	3.0%	3.5%	4.0%	3.1%
Cost/Benefit Analysis				
NPV/7 years (US$million)	-0.3	1.6	3.3	0.001
IRR/7 years	7%	25%	39%	10%
Present value Benefit/Cost Ratio/7 years	1.2	1.4	1.6	1.2
Project viability	No	Yes	Yes	Yes
Ventilation of the Benefits				
NPV associated with avoided premature death (US$million)		1.15	2.29	
NPV associated with avoided morbidity (US$million)		0.33	0.65	
NPV associated with crop productivity increase (US$million)		0.10	0.20	
NPV associated with avoided infrastructure decaying (US$million)		0.07	0.13	

B. Technical

63. The elements of the TA component (that is, Component A) were based on the institutional assessment made by the World Bank in the Lebanon CEA (2011), which identified three pillars namely: strengthening environmental governance; managing environmental risks; and improving the programming, cost efficiency and maximizing the environmental benefits in the wastewater and solid waste sectors with emphasis on poor areas. The CEA called for strengthening the Environmental Assessment System in Lebanon at the policy and project levels, reinforcing the monitoring, enforcement and compliance system by ensuring that polluting enterprises would comply with the auto-control, self-monitoring, improving the level of public awareness on environmental issues and wastewater-related issues. All these elements were included in the first component of the project and were determined to be feasible for project implementation.

64. The second component of the project was also based on the CEA which called for the design and implementation of an incentive system with national banks and financial institutions to award polluters that would: (i) mitigate negative impacts of point sources of pollution; (ii) enhance positive impacts by using clean technologies; and (iii) build an environment

management system at the plant level, reducing environment and social risks. Furthermore, the development of the project pipeline was financed by GIZ/EFL and included a Survey and Screening Analysis, enterprise Screening and Analysis in the form of separate project data sheets that indicate the level of pollution and the proposed mitigating measures required. This has led to the development of 13 enterprises for which five enterprises expressed interest in borrowing form LEPAP. The preparation of the project data sheets is being followed by the preparation of CAPs and ESIA/EAs that are currently financed by the GEF financed ReGoKo Project.

65. Given the limited number of heavy polluting industries in Lebanon, the scope of eligible enterprises was broadened. Therefore, funding under LEPAP would be available to all industries, private as well as public who volunteer to move towards compliance with the environmental legislative framework. Hence, the proposed project scope is on a demand basis. Eligible activities will include new and existing projects with investments of no less than US$100,000 which will abate pollution and improve environmental performance in general.

C. Financial Management

66. An assessment of the Financial Management (FM) systems within BDL was performed to determine the adequacy of FM arrangements proposed for the Project. The FM arrangements are considered acceptable to the Bank as the Project's budgeting, accounting, internal controls, funds flow, financial reporting, and auditing arrangements through BDL: (a) are capable of correctly and completely recording all transactions and balances relating to the project; (b) facilitate the preparation of regular, timely, and reliable financial statements; (c) safeguard the project's assets; and (d) are subject to auditing arrangements acceptable to the Bank. Acceptable arrangements must be in place no later than the date of the proposed project effectiveness. The assessment concluded that with the implementation of agreed-upon actions, the proposed financial management arrangements will satisfy the World Bank requirements. After considering the proposed risk mitigation measures, the Loan overall financial management risk is assessed as "Substantial" and reduced to "Moderate" after risk mitigation measures are put in place.

67. Fraud and corruption may affect the Project resources, thus negatively impacting the Project outcomes. The World Bank developed with the team an integrated understanding of possible vulnerabilities and agreed on actions to mitigate the risks. Having a Financial and Administrative Management Specialist (as part of the PMU) to manage the Project's FM procedures will increase the FM capacity of the proposed project and enhance control procedures over payments. In addition, BDL has strong internal control based on what has been described previously. The internal audit and inspection department is responsible for the internal audit and inspection procedures at BDL, including records, operations, assets, and accounts. It suggests measures for the improvement of administration.

D. Procurement

68. The procurement capacity assessment of MOE was carried out. With respect to component A, providing TA and PMU support to guide enterprises in building up their projects, the procurement capacity assessment proposes a number of measures to mitigate the identified risks (see Annex III). With respect to component B, providing private sector sub-loans, as part of their request for credit, the beneficiary enterprises will be filling a procurement capacity self-

assessment check-list, to identify their risks related to procurement and propose mitigation measures. After reaching an agreement on the measures, the PMU will be in charge of monitoring implementation, in particular with appointment of a procurement focal point, record keeping measures, internal audit, and proper contract management.

69. For activities financed exclusively or partially by IBRD or GEF, procurement will be carried out in accordance with the following World Bank Guidelines (see Annex 3 for details):

- "Procurement of Goods, Works and Non-consulting Services under IBRD Loans and IDA Credits and Grants by World Bank Borrowers" dated January 2011.
- "Selection and Employment of Consultants under IBRD Loans and IDA Credits and Grants by World Bank Borrowers" dated January 2011. The legal agreement with the GOL shall be in particular referring to **paragraph 3.13**, i.e., the eligibility of using Well-Established Private Sector Procurement Methods or "Commercial practices acceptable to the Bank" (Procurement in Loans to Financial Intermediary Institutions and Entities).
- "Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants" dated October 2006 and updated in January 2011.

E. Social (including Safeguards)

70. It is not expected that the pollution abatement sub-projects will have any negative social impact. On the contrary, most of the impact will actually be positive as the work environment of the workers will improve (better occupational health) and the population downstream or upwind/downwind of the project will benefit from better environmental conditions and less exposure to health risks. Moreover, the establishment of a comprehensive MCE system will enable information to be publicly disclosed according to an approach based on benchmarking of environmental performance. This important feature will enhance the effectiveness of the approach as public pressure will apply both to industries (for decreasing emissions) and the MOE (for increased enforcement). Pollution control activities will take place within private sector enterprises. Physical or economical displacements and lack of access to designated areas are not envisaged. In addition, LEPAP will not finance relocation of facilities and Involuntary Resettlement Policy (OP 4.12) is not triggered.

F. Environment (including Safeguards)

71. LEPAP was classified under the Category Financial Intermediary (FI) in accordance with the World Bank's Operational Policy OP4.01 because the World Bank-financed loan will be channeled through BDL acting as an Apex Bank for providing loans to selected national participating banks that will then provide sub-loans to enterprises. The ESIA was conducted at two levels:

a) An ESA of the LEPAP including an Arabic translation of the Executive Summary of the project was disclosed on the MOE website on July 17, 2013 and on the Bank's website on July 19, 2013. This includes a full assessment of the institutional capacity of the BDL and the MOE as well as the assessment of the legal framework to ensure that the program follows World Bank's environmental and social safeguards as well as relevant national environmental legislation (see Annex 3); and
b) An ESIA at the sub-project level, according to the environmental screening and management procedures to be established on the basis of the ESA of LEPAP. This will be

in the form of an ESIA or environment and social management plan (ESMP) at the sub-project level, according to the classification (Category I and II in the Lebanese System, and Category A and B in OP4.01), one per each sub-project which will be used as a manual by MOE for ESIA of LEPAP sub-projects (Annex 3). The total costs of preparing ESIA and LESIA reports, training and environment awareness and communication were estimated at US$350,300 during project preparation, not inclusive mitigation and monitoring measures for each sub-project.

72. The sub-projects are small to medium scale and no impact is considered irreversible. Since the sub-projects could not be specified prior to appraisal, an Environmental and Social Management Framework (ESMF) as opposed to an Environmental Management Plan (EMP), was prepared and was disclosed. The ESMF outlines the institutional and legal framework, the positive and negative impacts of the project components, the safeguard screening procedures to review sub-projects, generic mitigating and monitoring measures for sub-projects that require a site specific EMP, a description of appropriate public consultation/participation techniques to identify potential environmental and social impacts, and the establishment of a grievance mechanism. The ESMF is included in the POM. All sub-project activities will be screened by the MOE for any potentially negative environmental impacts following the environmental guidelines.

73. The project is expected to generate positive local and global environmental impacts and outweigh any negative potential impacts. The expected positive environmental impacts are improvement of public, occupational health and safety, reduction of pollution loads and removal of trace metals and heavy metals from industrial enterprises; improvement of surface water and groundwater quality and the provision of a reliable source of water supply to farmers and to communities. Minimizing industrial solid waste through process treatment or recycling will also have positive impacts on the physical environment by reducing air pollution; saving energy, preventing burning of plastics and rubbers, and reducing landfill uses. The positive impacts of the project will include the treatment of industrial pollution which usually pose: a risk to human health, degradation of soil resources with heavy metals, salinity and water logging, pollution of groundwater through percolation; creating of imbalances in water bodies and in the plans and reduction of biodiversity and causing damages in the operation of municipal wastewater treatment plant. The adverse impacts of not reusing water by enterprises would lead to an increase in the consumption of water and energy, an increase of salinity levels leading to effluent toxicity and discharging pollutants into the ecosystem. Furthermore, poor and/or lack of treatment of industrial solid waste have negative impacts on soil pollution, groundwater pollution due to the percolation of leachate and air pollution to burning of hazardous and non-hazardous waste.

G. Safeguard Policies Triggered by the Project

74. One safeguard policy is triggered: Environmental Assessment (OP/BP4.01). A public consultation meeting was organized at the MOE on March 27, 2013 to present the findings of the ESIA for the LEPAP whereby 38 participants attended the meetings. They included representatives of the Ministries of the Environment and Industry, and CDR, the BDL and selected commercial banks, industrial enterprises from the private sector which are considered potential borrowers from LEPAP, NGOs and international organizations.

Annex 1: Results Framework and Monitoring

Lebanon: Environmental Pollution Abatement Project (P143594)

Results Framework

Project Development Objectives

PDO Statement

The development objectives of the project are to assist the Borrower in: (a) reducing industrial pollution in targeted Industrial enterprises; and (b) strengthening the monitoring and enforcement capabilities of the MOE.

These results are at	Project Level

Project Development Objective Indicators

Indicator Name	Core	Unit of Measure	Baseline	Cumulative Target Values					Frequency	Data Source/ Metho-dology	Responsibility for Data Collection
				YR1	YR2	YR3	YR4	End Target			
Enterprises financed through the project that conform to the environmental compliance Decree no. 8471-2012	☐	Number	0.00	0.00	0.00	5.00	5.00	15.00	Semi-annual progress report	CAP implement-ted	PMU
Enterprises that	☐	Number	0.00	2.00	5.00	7.00	9.00	10.00	Semi-	PMU	PMU

would reduce their BOD discharges (t) by more than 50%									annual progress report	monitoring	
Enterprises that would reduce their air pollutants (PM_{10}) by more than 50%	☐	Number	0.00					5.00	Semi-annual progress report	PMU monitoring	PMU
Regularly published monitoring reports covering environmental compliance of participating enterprises by MOE	☐	Number	0.00	1.00	2.00	3.00	4.00	5.00	Annual Progress Report	PMU monitoring	PMU through MOE

Intermediate Results Indicators

Indicator Name	Core	Unit of Measure	Baseline	Cumulative Target Values					Frequency	Data Source/ Metho-dology	Responsibility for Data Collection
				YR1	YR2	YR3	YR4	End Target			
Participating banks	☐	Number	0.00	1.00	2.00	3.00	3.00	3.00	Semi-annual progress report	Disbur-sement Report	PMU through BDL reporting

Enterprises borrowing	☐	Number	0.00	1.00	3.00	5.00	7.00	15.00	Semi-annual progress report	Disbur-sement Report	PMU through BDL reporting
Sub-loans	☐	Number	0.00	1.00	3.00	7.00	15.00	20.00	Semi-annual progress report	Disbur-sement Report	PMU through BDL reporting
Sub-loans	☐	Amount (USD)	0.00	0.50	2.50	7.00	11.00	14.96	Semi-annual progress report	Disbur-sement Report	PMU through BDL reporting
Establishment of Guidelines for Sector EIA	☐	Number	0.00	1.00	3.00	5.00	7.00	9.00	Semi-annual progress report	Disbur-sement Report	PMU through BDL reporting
People trained	☐	Number	0.00	0.00	20.00	30.00	50.00	60.00	Semi-annual progress report	Disbur-sement Report	PMU through MOE reporting
Direct project beneficiaries	☒	Number	0.00	0.00	1,000	2,000	3,000	5,000	Annual	Estimation based on location of enterprises	PMU
Female beneficiaries	☒	Percentage Sub-Type Supplemental	0.00	0.00	51.00	51.00	51.00	51.00	Annual	Estimation	PMU
Particulate matter reduction	☒	±% of PM_{10}	TBD	TBD	TBD	TBD	TBD	TBD	Annual	PMU monitoring	PMU

achieved under the project											
Number of people with exposure to PM_{10} in the area of the project	☒	Number Sub-Type Supplemental	TBD	TBD	TBD	TBD	TBD	TBD	Annual	PMU monitoring	PMU
Volume (mass) of COD pollution load reduction achieved under the project	☒	±% of tons	TBD	TBD	TBD	TBD	TBD	TBD	Annual	PMU monitoring	PMU
Industrial or municipal solid waste reduced or recycled under the project[12]	☒	±% of tons	TBD	TBD	TBD	TBD	TBD	TBD	Annual	PMU monitoring	PMU

[12] Baselines and targets "TBD" will be determined during project implementation once the sub-projects have been identified,

Project Development Objective Indicators

Indicator Name	Description (indicator definition etc.)
Enterprises financed through the project that conform to the environmental compliance Decree no. 8471-2012	Any industrial enterprise that would borrow funds through the LEPAP mechanism to develop and implement a CAP that is in conformity with MOE's Environmental Compliance Decree no. 8471-2012. The CAP is therefore a condition for accessing LEPAP funds for one sub-project but it is not a requirement for implementing all the sub-projects included in the CAP.
Enterprises that would reduce their BOD discharges (t) by more than 50%	- Any enterprise that would borrow funds through the LEPAP mechanism and where the treatment of its Bio-oxygen Demand discharge will be reduced by at least 50% when the equipment is installed and running
Enterprises that would reduce their air pollutants (PM_{10}) by more than 50%	- Any enterprise that would borrow funds through the LEPAP mechanism and where the treatment of its PM10 emissions will be reduced by at least 50% when the equipment is installed and running.
Regularly published monitoring reports covering environmental compliance of participating enterprises by MOE	MOE will upload the monitoring of pollution reduction information of the participating enterprises on its website when the equipment is up and running. Website to be updated as soon as a new enterprise is in conformity with the Environmental Compliance Decree.

Intermediate Results Indicators

Indicator Name	Description (indicator definition etc.)
Participating banks	Any commercial bank that is willing to sign the framework agreement with BDL to participate in the LEPAP mechanism by offering the soft loan (opening the letter of credit) to its client enterprise.
Enterprises borrowing	Any enterprise that is willing to be in conformity with the Environmental Compliance Decree by borrowing funds to develop and implement a CAP.

Sub-loans	Sub-loans are the number of loans provided by BDL to participating banks after their clients (enterprises) volunteer to initiate and implement a CAP.
Sub-loans	Sub-loans are the volume of loans provided by BDL to participating banks after their clients (enterprises) volunteer to initiate and implement a CAP.
Establishment of Guidelines for Sector EIA	The Guidelines for sector ESIA will be derived from the POM and mainstreamed within the banking sector as commercial bank staff will be trained through the TA component to evaluate an ESIA.
People trained	People trained from the public and private (especially commercial banks) to develop their skills in terms of EA and the CAP processing order for MOE staff to oversee and monitor the EA, ESIA and CAP process and for the commercial bank staff to be able to mainstream the ESIA and CAP process as funding pollution abatement would be a new credit business line.
Direct project beneficiaries	Direct beneficiaries are people or groups who directly derive benefits from an intervention (i.e., children who benefit from an immunization program; families that have a new piped water connection). Please note that this indicator requires supplemental information. Supplemental Value: Female beneficiaries (percentage). Based on the assessment and definition of direct project beneficiaries, specify what proportion of the direct project beneficiaries are female. This indicator is calculated as a percentage.
Female beneficiaries	Based on the assessment and definition of direct project beneficiaries, specify what percentage of the beneficiaries are female.
Particulate matter reduction achieved under the project	This indicator measures the reduction in concentration of particulate matter (PM_{10}) achieved under the project. Reductions in PM_{10} concentration may originate in energy use efficiency; process modifications; selection of fuels or other materials, the processing of which may result in less polluting emissions; and / or application of emissions control techniques. The baseline is the actual ambient particulate matter concentration at the start of the project.
Number of people with exposure to PM_{10} in the area of the project	No description provided.

Volume (mass) of COD pollution load reduction achieved under the project	This indicator measures the volume (mass) of Chemical Oxygen Demand (COD) pollution load reduction achieved through process modification to reduce the load of pollutants requiring treatment, and / or through application of wastewater treatment techniques to reduce the load of contaminants prior to discharge. The baseline for this indicator is the actual COD load at the start of project.
Industrial or municipal solid waste reduced or recycled under the project	This measures the volume of municipal or industrial solid waste that is not generated and/or that is recycled as a result of the project. The indicator is the addition of the following: a) The differential of the projected waste generation and the waste generated by entities and households addressed under the project (tons/year); b) Waste newly recycled under the project (tons/year). The baseline for this indicator is zero.

Annex 2: Detailed Project Description

Lebanon: Environmental Pollution Abatement Project (P143594)

1. The project has an envelope of US$18.0 million and consists of: (i) managing the project as well as providing TA for both the MOE in terms of MCE and the banking sector in terms of evaluation of environmental projects; and (ii) carrying out pollution control sub-projects through the provision of sub-loans to selected industrial enterprises..

Component A. Technical assistance, (total cost: US$3.0 million parallel financing by the Italian Cooperation for TA, Environmental and Social Impact Assessments, Environmental Audits and Compliance Action Plans implementation and covering PMU's operations)

1. The objective of this component is to strengthen the capacity of MOE and other key actors, such as the banking sector, and to provide project management support through the setting up of a PMU housed under MOE's Minister's Office with roles and responsibilities including TA, overall management, technical, training, awareness-raising, marketing, and reporting matters.

2. This component will consist of:
   a. Establishing the PMU, and make it operational through the recruitment and financing of its staff as well of its operations;
   b. Providing technical assistance for the detailed design, EAs, and CAPs to eligible enterprises so that their EAs/CAPs are prepared in accordance with the Environment Compliance Decree no. 8471-2012;
   c. Strengthening the MOE capacity in ESIAs/EAs for the industrial sector by establishing guidelines for sector ESIA, enforcement and provide formal and on-the-job training at the national and local levels in close coordination with the € 8.0 million EU StREG Program;
   d. Providing technical support and training to the banking sector and other relevant stakeholders for the development of guidelines on banking and the environment and to provide training in selecting and evaluating environmental related projects from the technical, financial, environmental and social point of views;
   e. Conducting environmental awareness with the help of ALI, CCIA, MOI to market the project to their constituencies, and communication campaigns with the help of NGOs for industrial pollution control; and
   f. Financing M&E activities of the project progress, impacts and outcomes in close collaboration with MOE and BDL.

3. Three complementary operations will leverage LEPAP: one funded by GEF in the amount of US$200,000 that is executed by Plan Bleu through the ReGoKo project to provide support to 12 enterprises to conduct ESIAs and EAs (March 2013-December 2014); one funded by the World Bank Institutional Development Facility (IDF) in the amount of US$300,000 to provide TA to conduct ESIAs, EAs and CAPs and to build the capacity of the MOE to operationalize the Compliance Decree no. 8471-2012 (January 2013-December 2016); and one

funded by the EU through the StREG in the amount of €8.0 million to improve the environmental performance of the Lebanese public sector through reforming environmental governance. Specifics of each activity are detailed in Boxes A2.1, A2.2 and A2.3 respectively.

Box A2.1: GEF ReGoKo Project

This activity consists of providing environmental audit support to a total of 12 enterprises. These have been identified under the GIZ/EFL 2012 Phase 1 TA assessment or which recently indicated their interest to prepare environmental audits required to apply for financing under LEPAP. MOE and GIZ/EFL will agree on joint criteria for the selection of 12 industries which will benefit from the TA assessment to perform the environmental audits. To provide the environmental audit TA targeting 12 enterprises, the GEF ReGoKo project will comprise 3 steps:

1. Define the exact technical needs and complementary support requirements for 12 enterprises that have shown interest in borrowing from LEPAP by: finalizing the factsheets and the technical notes; conduct a rapid audit for each of the 12 enterprises to identify the appropriate projects that can be financed from LEPAP and their requirements in terms of further TA, such as type and scope of laboratory analysis and of technical specs; drafting 12 technical reports will be drafted for each of the 12 enterprises that will stipulate the results of tasks 1 and 2 of this step. These reports will be transmitted to Plan Bleu as well as to MOE and GIZ/EFL.
2. Conduct a rapid environmental audit for each of the 12 enterprises by: defining technical specifications for the needed pollution abatement technologies/equipment of the selected project (definition of detailed technical design/specs for the identification of needed pollution abatement technologies/equipment); and adding the results to an overall report on each of the 12 enterprises and send it for review and no objection to Plan Bleu, MOE and GIZ/EFL.
3. Provide TA regarding procurement/tenders as required for each of the 12 enterprises by: preparing tender documents in accordance with the World Bank procurement guidelines; and assisting in reviewing the tender documents.

Box A2.2. The EU StREG

The **global objective of the EU StREG** is to improve the environmental performance of the Lebanese public sector through reforming environmental governance. The **specific objective** is to create effective capacity specifically at the MOE to plan and execute environmental policy, including enforcement and mainstreaming through better coordination with key line-ministries.

The StREG will provide a TA Team that will assist the MOE in the implementation of the StREG, including the provision of:

- **Technical expertise tasks** and the TA Team will also be involved in the development of Terms of References or technical specifications for the procurement of expertise and goods for the project; and
- **Administrative, preparatory and ancillary tasks relating to planning, monitoring, reporting on Program components.**

The StREG includes 4 self-reinforcing components: **legal**, **administrative, financial and technical**:

i. **MOE environmental inspection and enforcement strengthened** through the identification of weaknesses of the current system, the drafting of new inspection and enforcement procedures, the training of key stakeholders (existing and newly recruited staff in particular) as well as assistance in the first phase of implementation of the new procedures.
ii. **MOE administrative capacity improved** through the establishment of MOE regional departments and development of related work mandate, procedures and cooperation modalities with the Governorates as well as the upgrade of the management system at the MOE (workflow, archive and equipment inventory).
iii. **MOE environmental fiscal instruments developed and submitted to the Council of Ministers by the Ministry of environment** through the identification of suitable instruments (including but not limited to Clean Development Mechanisms, Climate Investment Fund, etc.) and development of a priority action plan for the introduction of these instruments in the legislative process.
iv. **MOE environmental policy enhanced** through updating of the National Environmental Action Plan and

initiating the mainstreaming of environmental policies (which will have a direct impact on priority issues of the MOE and the environment sector at large, such as the sustainable management of land, the protection of air quality, solid waste management, etc.), as well as equipping the Inter-Ministerial Climate Change Coordination Unit with a mitigation and adaptation action plan.

Box A2.3: The World Bank IDF Grant

The MOE will implement the IDF Grant and execute the proposed activities, including capacity building activities and the management of the consultants' terms of reference and generation of reports and outputs. MOE will have the overall responsibility for financial management, grant procurement procedures, implementation and preparation and submission of timely and quality reporting of the grant progress. Some of the administrative tasks could be entrusted to the LEPAP PMU reporting team on a part time basis. In addition, this IDF Grant will seek synergies and complementarity with the 4 year € 8.0 million EU StREG. The StREG program's overall objective is to improve the environmental performance of the Lebanese public sector through environmental governance reforms. The program's broad objective is to build effective capacity within MOE to plan and execute environmental policy, including mainstreaming enforcement within key line-ministries and at the regional level. The IDF Grant will complement the administrative and technical aspects being financed by the EU that will not go into depth in industrial pollution issues. Further synergies and coordination with clear roles and responsibilities between LEPAP's IDF Grant and EU StREG will be sought upon effectiveness of the two projects in early 2014 under 2 components of the StREG: MOE Environmental inspection and enforcement strengthening and MOE administrative capacity improvement. The IDF Grant will implement 3 activities:

Establishing a system for the development and implementation of CAPs by December 2014 (US$130,700). This activity aims at Institutionalizing industrial audits/Compliance Action Plans (CAPs) by improving environmental standards, regulations and guidelines relating to industrial pollution management. While ensure ensuring a balanced regional coverage, up to 10 environmental audits (baseline set up to monitoring and evaluation of progress) targeting 10 industries (selection criteria to be based on pollution load and the associated environmental risks), which will be prepared by MOE staff under the supervision of international consultants, constitute the capacity building models to effectively and efficiently designing CAPs to address key pollutants requiring abatement and the most efficient technologies for reducing pollution. Moreover, the same TA learning by doing format will be used to develop 5 CAPs.

Monitoring, Compliance and Evaluation Capacity by December 2015 (US$94,200). This activity aims at enhancing the general MOE administrative and technical capacity to better manage EAs/CAPs and programs supporting cleaner production. Upon completion of the environmental audits, the project will design a CAP which sets functions and responsibilities within MOE as well as realistic pollution abatement goals, while remaining sensitive to and accounting for social, economic and financial implications.

Outreach and Awareness by December 2015 (US$79,100 including translation and financial audit). Building knowledge among SMEs/industrial associations to better comply with environmental regulations. A training manual will be developed to serve as a handbook for MOE staff on how to implement the CAP. Training workshops covering ECM in general and the CAP Manual in particular will bring together MOE and other concerned stakeholders in view of clarifying technical and administrative procedures for the development and implementation of CAPs. Participant selection criteria will be based on pollution loads of enterprises that are a priority in terms of emission reduction. This will also build consensus within MOE and with related agencies on the strategy for addressing gaps in institutional needs and agree on the CAPs.

Component B. Investment Sub-projects (US$15.0 million, IBRD)

4. The objective of component B is to introduce concessional loans through the banking sector for pollution control for an estimated 20 to 25 public and private enterprises to bring their air emissions and/or effluent discharges towards compliance with national environmental standards in a cost-effective manner. The sub-projects could include pollution prevention, resource recovery, clean technology adoption, fuel substitution, waste minimization, or end-of-pipe environmental control where no other alternatives are available. This component will provide sub-loans through local participating banks on a first-come, first-serve basis and as long as the participating enterprise fulfills the eligibility criteria. Participating banks likely to subscribe to LEPAP are those having industrial clients interested in reducing their pollution. Enterprises seeking fund will have to provide at least 10% in kind or in cash of the amount borrowed to cover civil works and equipment import duties as IBRD will only cover equipment cost (letter of credits).

5. This component will consist of a credit facility to provide sub-loans of at least US$100,000 per enterprise to implement pollution control projects and thereby reduce their pollution load. The IBRD loan will be disbursed over five years to the Borrower that will make available to BDL the proceeds of the loan as provided in the Loan Agreement. The lending terms and conditions will be reflected in the sub-loan agreements (based on the Loan Agreement and its attachments and the BDL Circular no. 365-2014). The lending terms could be illustrated as follows:

   i. The IBRD loan repayment and the cost of funds of the participating banks will be offset by BDL under its own financing through the stimulus package under Circular no. 365-2014. Hence, BDL will provide 2 parallel loans to the participating banks: a loan in US dollar mirrored by an equal loan denominated in Lebanese Pound.
   ii. The loan in Lebanese Pound (around LP 22.6 billion) as a parallel financing at 1% interest rate will allow the participating bank to invest/reinvest the amount in Lebanese treasury bills (TBs --5.35%/year) and repay the loan capital and interest hence covering the IBRD loan repayment and retaining its cost of funds, any administrative fees, and profit margin. There is no foreseeable exchange risk when the TB yield will be converted into US Dollar as BDL has maintained a fixed Lebanese Pound to the US Dollar exchange rate of LP 1,507.5 to US$1 since the mid-1990s with enough foreign exchange reserves net of gold (US$47.5 billion by end-December 2013) to stabilize the Lebanese Pound in case of pressure on the local currency. The repayment schedule to BDL of the local currency loan by the participating banks will have to mirror the repayment to BDL of the US Dollar loan or in other words, scheduled repayments to BDL by participating banks are concomitantly made in US Dollar and their equivalent amount in Lebanese Pound to which is added the interest amount to be converted into US Dollar.
   iii. The loan in US Dollar (US$14.96 million) will be provided to the participating banks which will bear the commercial risk and will receive the proceeds of the sub-loans in US$ and repayment will be also in US dollar. The tenor of the sub-loans received by the participating banks from BDL will be in accordance with the Loan Agreement. Each participating bank will negotiate the respective sub-loan

agreements (with fair and transparent conditions and free of coerciveness) with each of the enterprises, within the BDL Circular no. 365/2014.

6. This scheme was made available to commercial banks starting 2013 and is intended as a stimulus package for several sectors to revitalize the Lebanese economy. LEPAP is specifically mentioned in Circular no. 365/2014 where participating banks are eligible to borrow at near 1% to provide soft loans to enterprises willing to reduce their pollution under the proposed World Bank project.

7. GIZ/EFL has so far identified 5 (3 food, 1 cardboard and paper, and 1 furniture) out of 13 enterprises through its TA assessment that have fulfilled the criteria to perform CAPs and could borrow near to US$4.0 million (net of the civil works that will be borne by enterprises) hence constituting the first LEPAP pipeline (see Annex 6 for more details).

Annex 3: Implementation Arrangements

Lebanon: Environmental Pollution Abatement Project (P143594)

Project implementation and institutional arrangements

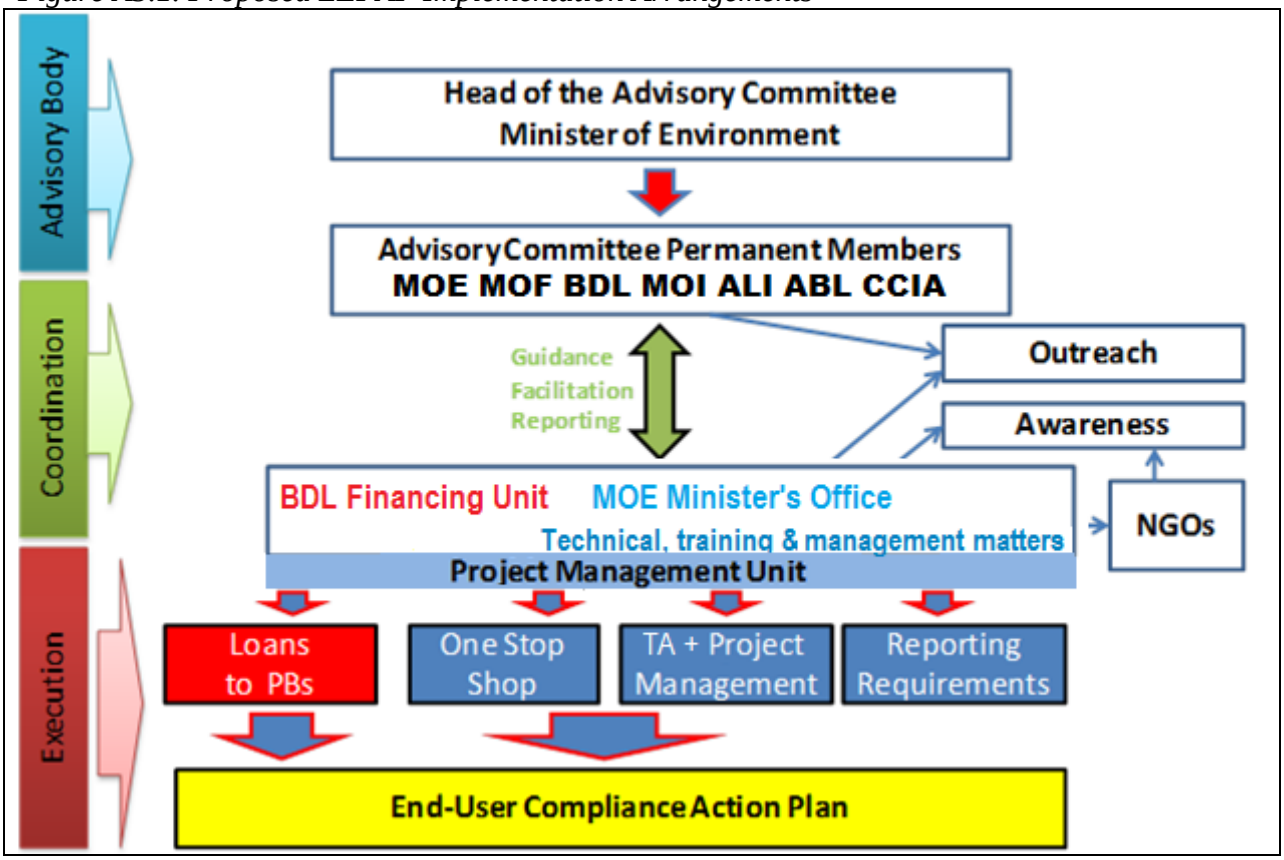
1. Upon effectiveness of the loan, the Borrower will make available to BDL the proceeds of the loan as provided in the Loan Agreement. BDL will manage the use of the proceeds of the loan of the proposed project in coordination with a PMU which will be set up under the Office of the Minister of Environment, and which will be responsible for TA, overall management as well as technical support including sub-project processing, training, marketing, awareness-raising, assisting in fiduciary matters in coordination with BDL and reporting matters. Overall coordination and oversight of the proposed project would be entrusted to a Project Advisory Committee represented by the permanent actors (BDL, MOF, MOE, MOI, CDR, ALI, ABL and CCIA), headed by the Minister of Environment to provide overall policy guidance and reviewing work programs, resolving any inter-ministerial/entity implementation issues, and reviewing the status of sub-project selection and implementation on a semi-annual basis. Development partners participating in LEPAP could eventually become permanent observers of the PAC.

2. Component A. A PMU was established at MOE's Minister's Office. The PAC has been nominated by the MOE. The PMU would manage the first component of the project and is the main interface with participating banks and enterprises. The PMU is headed by a Project Manager who is responsible for the day-to-day activities and overall project management, liaison duties, monitoring and evaluation, and reporting. The PMU will have a Core Management Team of five staff that will comprise of a: Project Manager, Procurement Specialist, Senior Environmental Specialist, Financial and Administrative Management Specialist, and Environmental Management Systems and Monitoring and Evaluation Specialist (EMS/M&E). Prior to the mid-term review the Bank will reassess the MCE capacity within MOE to see whether it can start transferring some of the PMU technical roles and responsibilities to MOE staff, and revisit the PMU staffing.

3. The PMU's responsibilities would include: (a) serving as a one-stop-shop for technical evaluation and monitoring of the implementation of the financed sub-projects by liaising with participating banks and enterprises; (b) approving and recommending to the participating banks any sub-project below US$2 million; (c) preparing marketing outreach and awareness campaigns; (d) providing training to MOE staff on ECM and banking sector staff on environmental project evaluation; (e) arrange and finance through the first component of the project, the ESIA, if required as a result of the screening process, and the EA/CAP that are to be prepared by a prequalified independent consultant (refer to ESMF's Appendix A for the structure of the EA and CAP); (f) maintain safeguards documents for all sub-projects as well as for the selection of consulting enterprises to conduct the ESIA and/or EA/CAP; (g) monitor sub-project compliance with mitigation plans; Verify that pollution control equipment were installed and are performing in accordance with the required specifications and national standards; (h) ensure that all financial management and audits, procurement, social and environmental safeguards as well as M&E are in compliance with World Bank guidelines; (i) perform M&E of sub-projects; (j)

assist in fiduciary matters in coordination with BDL; and (k) preparing progress and implementation completion reports that will be shared with the PAC and sent to the World Bank. The Italian cooperation's financed component provision will be used towards setting up the PMU at the MOE, recruit its staff, and provide support to the participating banks for screening and evaluating the environmental investment proposals. The proposed LEPAP Implementation Arrangements are illustrated in Figure A3.1.

Figure A3.1. Proposed LEPAP Implementation Arrangements



4. The details of the PMU's procedurals for project management will be included in a Project Operation Manual (POM). Also in this manual are the steps for ensuring compliance with World Bank financial management, procurement, safeguard and the M&E requirements as well as loan processing including identification, evaluation, and approval process of the environmental investments. The POM, dated October 23, 2013 has been finalized and will be adopted by effectiveness.

5. Regarding its procedural attributes, the PMU will: (i) facilitate the process for industries wishing to move towards compliance, the unit will fund and assist industries in preparing environmental audits and provide TA to developing full feasibility studies; (ii) approve the technical aspects of the loan application in collaboration with other MOE departments responsible for ESIA, certification and enforcement; and (iii) provide independent verification of the appropriate implementation of procured equipment, which -if positively assessed- will trigger the release of the soft loan that will benefit the enterprise. In order to be considered for LEPAP

funding, enterprises who participate on a voluntary basis should prepare three key documents including an investment proposal, an EA and a CAP and:

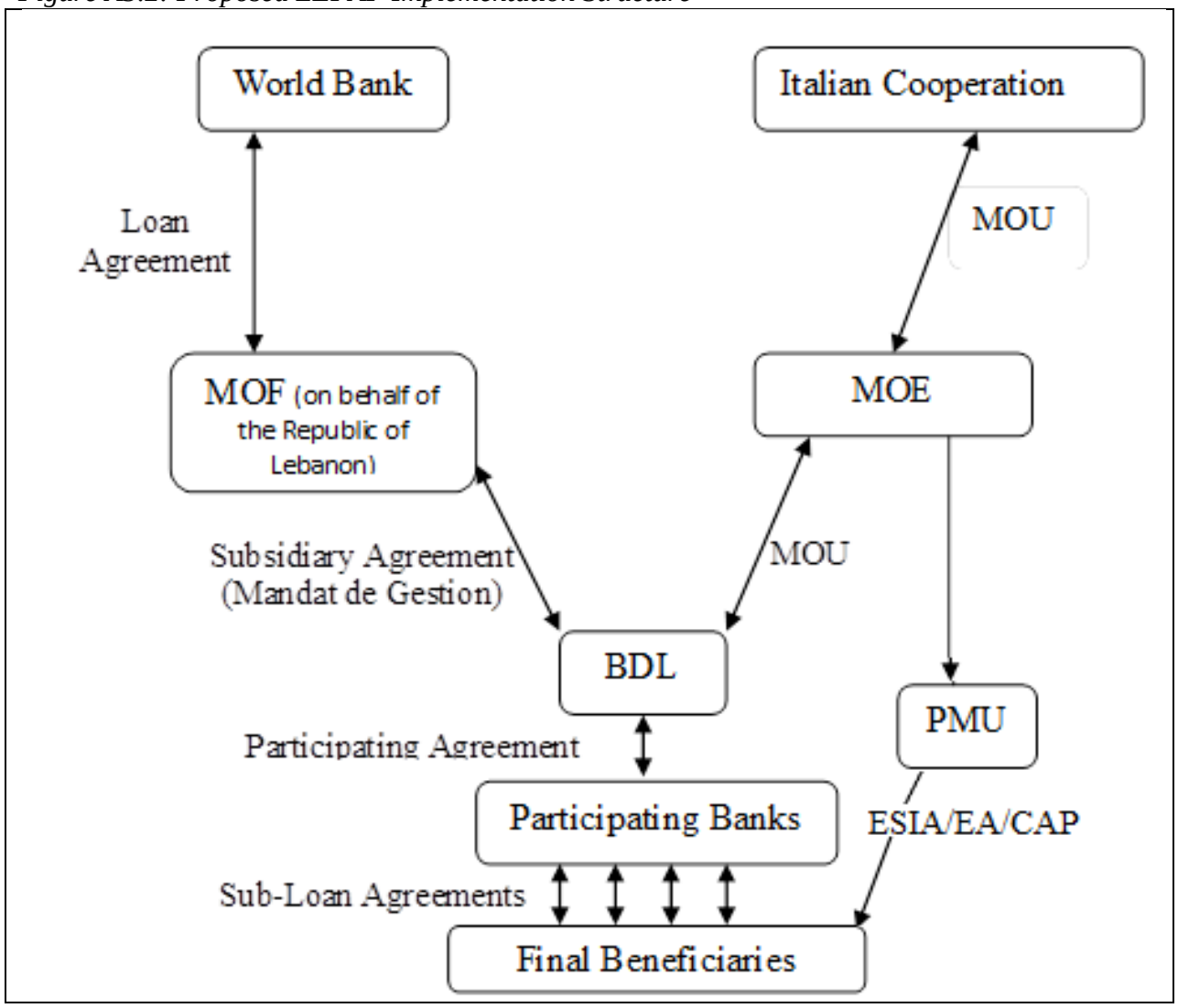
- The investment proposal is the foundation for the commercial bank to assess the credit risk exposure and to decide upon granting the loan.
- The environmental audit is the baseline for monitoring compliance over time and should be prepared by a certified consultant (currently from the CDR list). Preparation of the environmental audit would be paid directly by the PMU based on a pre-signed agreement, which would stipulate that if the loan is not approved or contracted; funds would be returned to the PMU.
- The CAP is a negotiated agreement between the enterprise and the PMU, moving the applicant towards environmental compliance.

6. Procurement of equipment using LEPAP funds must follow Bank guidelines. TA would be available within the PMU would be based on the predominant market practice of soliciting three quotations from recognized suppliers. Consultations with various commercial banks showed that Lebanese banks are familiar with procuring on behalf of industries.

7. **Component B.** Prior to loan effectiveness, the Borrower shall make available the proceeds of the Loan to BDL under a Subsidiary Agreement (management mandate) without charging any interest above the Bank spread to be entered into between the Borrower and BDL, under terms and conditions which shall have been approved by the Bank. The Borrower shall through MOF open a Project specific transit sub-account under the Borrower's Treasury Account, to channel the Loan proceeds to the Designated Account at BDL. BDL shall make the proceeds of the loan available to participating banks after it has entered into participating agreements with the interested participating banks.

8. Participating banks would pre-screen environmental sub-projects proposed for funding by the proposed project, determine the financial creditworthiness of the enterprises, negotiate the sub-loan agreement with the enterprises, take the commercial risk for loans to the enterprises, promote the program among their clients, and report on a regular basis to the PMU on their project related activities. The proposed LEPAP implementation structure is illustrated in Figure A3.2.

Figure A3.2: Proposed LEPAP Implementation Structure



9. A loan processing section, which will describe the identification, evaluation, and approval process of the environmental investments, has been included in the POM. The participating enterprises would sign a sub-loan agreement and a sub-project agreement. The sub-project agreement will be signed with MOE and would detail the enterprise's commitment to: (a) the sub-project objectives; (b) the preparation of a CAP; (c) the procurement, installation and operation of the equipment; (d) self-monitoring; (e) the measures to be taken to protect workers' health and safety; (f) notification to MOE of the results of pollution reduction activity; and (g) reimbursing the CAP cost in case the enterprise reverts from borrowing the funds.

Responsibility of BDL, MOE, participating banks and enterprises

10. The BDL responsibility will be to:

a) Review overall packages before providing sub-loans in accordance with the Code of Money and Credit and their internal regulations; and
b) Manage the use of the proceeds of the loan.

11. The responsibility of the MOE is to:
    a) Ensure that the participating banks assess the creditworthiness of the sub-borrower
    b) Review and clear sub-projects according to national EIA Decree and WB safeguard policies;
    c) Issue approval of the ESIA/EMP and the environment compliance certificate; and
    d) Monitor and enforce the mitigation and monitoring measures in the sub-project specific environmental and social management plan.

12. The responsibility of the participating banks is to:
    a) Sign a participating bank agreement with BDL for managing the funds in accordance with the World Bank policies and regulations;
    b) Review and approve the credit-worthiness of the polluting enterprise;
    c) Liaise and follow up with the PMU so that the sub-borrower meets all the technical and safeguard requirements;
    d) Negotiate and sign with the sub-borrower, the sub-loan and technical agreements, while ensuring that mitigation and monitoring measures listed in ESIA/EMPs, if applicable, are duly integrated in the sub-loan agreement; and
    e) Exercise due diligence with the BDL/PMU at various stages of the process to ensure (i) project viability, (ii) investment costs are based on true pro-format invoices, (iii) goods have been effectively delivered, and (iv) payments are made directly to the supplier.

13. The responsibility of the borrowing enterprises is to:
    a) Submit sub-project concept to the participating banks;
    b) Obtain approval of the ESIA/EMP, through the PMU
    c) Obtain required certificates/licenses;
    d) Negotiate and sign the sub-loan agreement with the participating bank;
    e) Ensure (i) project viability, (ii) investment costs are based on true pro-format invoices, (iii) goods have been effectively delivered, and (iv) payments are made directly to the supplier;
    f) Cover the equipment import duties;
    g) Install equipment and ensure their operation and maintenance;
    h) Implement established environmental and social management plans; and
    i) Maintain files documenting the safeguard process.

Participating bank and enterprise eligibility criteria

Eligibility Criteria for participating banks

14. **The eligibility criteria for participating banks are as follows.** The proposed LEPAP was presented to the banking sector on December 17th, 2012 at a workshop hosted by the ABL to which 50 participants representing various Lebanese commercial banks attended. Three banks, namely Audi Bank, Banque Libano-Française and Banque Libanaise pour le Commerce, showed strong interest in becoming LEPAP participating banks. Other banks, which could see an opportunity of "selling" the LEPAP scheme to their industrial clients, could also become

participating banks. A separate framework agreement between BDL and the participating banks has been prepared and will be ratified by the interested parties.

Eligibility Criteria for enterprises

15. The eligibility criteria for borrowing industrial enterprises are as follows:

i. Enterprises should be creditworthy as determined by the commercial bank;
ii. Enterprises should bear the loan guarantees requested by their bank;
iii. Enterprises should have an industrial license to operate by the Ministry of Industry, while all sub-projects financed under the loan shall be in the industrial sector and preferably in the small and medium sectors;
iv. Enterprises should meet all the technical requirements and criteria required to participate in this project. All facilities will require an EA and a CAP; however, only those interventions that are screened to require an ESIA or LESIA will require an environmental assessment and this will be decided during the screening stage;
v. Enterprises must be willing to commit at least 10% of the total project costs in the form of (in kind or cash contribution, namely all the civil work needed to install the equipment and equipment import duties);
vi. Sub-projects for medical and/or industrial hazardous waste could be considered for financing provided that the borrower will be a private sector entity;
vii. Preference will be given to change-of-process technology and all clean technology, but also could include end-of-pipe treatment particularly for industrial wastewater;
viii. The sub-loan will have a minimum of US$100,000;
ix. The sub-loan will not have a ceiling but a sub-project that exceeds US$2 million per sub-project will have to receive prior authorization from the World Bank, otherwise, all the loans below this threshold will be authorized by the PMU Project Manager;
x. Enterprise with no provision for proper maintenance will not be eligible;
xi. A cost-effectiveness analysis will be performed on all sub-projects. Priority for financing will be provided for sub-projects where environmental health in the area surrounding the industrial enterprise and the health benefit accruing to the surrounding population will bear the highest weight for the technical merits; and
xii. Selections will be made on a first-come, first-serve basis.

Financial Management and Disbursement

Background

16. The Borrower will be signing with the World Bank a Loan Agreement subject of the project. BDL will be managing the Designated Account (DA) opened specifically for the purpose of the project.

17. The loan would be made available to interested participating commercial banks through BDL and based on the PMU assessment as described in earlier sections. The BDL will assess the creditworthiness of the borrower (industrial enterprise) before the request is sent to the PMU housed at MOE for all administrative, technical, environmental and social requirements to assess whether the borrower (industrial enterprises) meets the technical requirements and environmental merits to qualify for financing and if need be, provide technical guidance to the borrower. Once cleared by the commercial banks and the MOE, the BDL will conduct its due diligence of the sub-project. The funds will then be channeled through the participating commercial banks, which will be remunerated through the BDL scheme.

BDL Financing Unit Roles and Responsibilities

18. The BDL will disburse the loans to participating banks based on the following roles and responsibilities:

- "Exemptions from Liabilities" and "deductions from the Required Reserve" of Commercial Banks granted against loans extended in specific economic sectors. Related Tasks include revising and recommending the approval of requests, follow up on the proper application of related circulars and decisions of BDL, examining the Commercial Banks' required reserve reporting, and the preparation of regular reports, studies, and statistics in this regard. Substantial work is done to support housing loans and loans extended to the commercial, educational, and health sectors, under the "2009 Incentives Scheme". BDL's work has recently expanded to tackle educational loans, health sector long term financing, and loans classified as "Environmentally Friendly" granted to all economic sector.
- Financing Programs: negotiating long-term loans with international donors (such as Arab Funds, EIB, EU, IFC, OPIC, and AfD) and qualifying recipients. Any loan has to be analyzed and approved from BDL Financing Unit, among other ends before being processed to granting party. Follow up has to be put in effect regarding timely repayment and account management in coordination with several related departments at BDL.
- Interest Subsidy on Loans Extended to Productive Economic Sectors: Studying loan applications sent from banks, financial institutions, and leasing companies and recommending approval for subsidizing interest loans extended to productive economic sectors and other subsidized loans extended under different financing programs signed with International donors. In addition, quarterly payment on interest subsidy is processed in coordination with several related departments at BDL.

Application Process

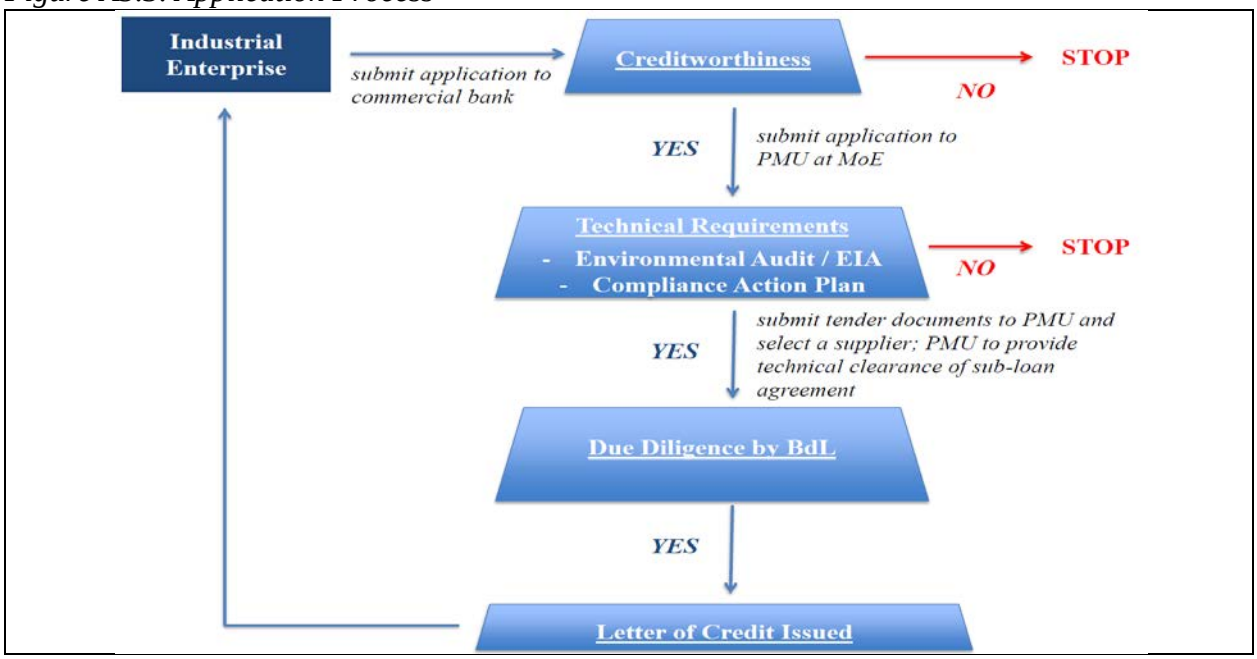
19. Mechanism for Validation of Sub-Loans. LEPAP is proposed to be implemented within the same mechanism of technical operations. The financing mechanism will be different from that of GIZ/EFL. Instead of grants, industries shall receive loans through their own commercial banks at almost no interest rate.

20. The following stages shall be observed for accessing the loans (Figure A3.3):

1. Potential enterprises are identified not only by participating commercial banks and the PMU but also by MOE, MOI, CCIA, ALI, ABL, NGOs, etc. that could also advertise through media;
2. Interested industries shall apply, using a 2-page application (included in the POM) submitted electronically to their participating bank with a copy to PMU;
3. The participating bank will conduct a creditworthiness assessment of the interested industrial enterprise. In the case of a negative outcome, the application will be rejected and no further consideration of the applicant will be undertaken. In the case of a positive outcome, the application will be forwarded to the PMU (in MOE) for technical review.
4. If the enterprise is committed to take the loan, the PMU will contact the interested industrial enterprise and conduct (free of charge) the following:
    i. An EA or ESIA (for the sub-project);
    ii. A CAP at the facility-level (the enterprise)
    iii. A feasibility study is completed with technical specifications and bidding documents developed. Additionally, the enterprises will be asked to fill the procurement capacity self-assessment check-list (Table A3.3)
5. Once the ESIA is approved by the World Bank and the MOE, the PMU will provide the technical clearance for subsequent processing by BDL. BDL will provide its final approval for the sub-loan and will forward such approval to the PMU and to the relevant PBs.
6. The participating bank will sign the sub-loan agreement and transmit a signed copy to BDL with a request to transfer funds in both US$ and LP from BDL to the participating bank account;
7. A letter of credit will be issued by the participating bank to the supplier selected by the industrial enterprise borrower.
8. Procurement is initiated by the industrial enterprise and subsequently a successful bidding supplier is selected.
9. participating banks exercise due diligence at various stages of the process to ensure: (i) in addition to the viability of the project; (ii) the investment costs are in line with related markets and they are based on true pro-format invoices; (iii) that goods have been effectively delivered; and (iv) payments are made directly to the supplier.
10. After commissioning the equipment an environmental inspection is conducted by the PMU/MOE to confirm compliance.

21. The CAP is a condition for accessing LEPAP funds for one sub-project but it is not a requirement for implementing all the sub-projects included in the CAP. If the industrial enterprise does not borrow funds that the project would have financed free of charge for the feasibility study, the CAP and the ESIA, the enterprise will have to reimburse all the costs of the preparation of these documents before re-applying to the MOE for an environmental compliance certificate outside the LEPAP scheme.

Figure A3.3. Application Process



Financial Management

22. The Financial Management (FM) assessment of MOE and BDL was carried out in order to ensure that an adequate financial management system is in place that satisfies the Bank's requirements for the proposed Project. The Borrower and the project implementing entity should maintain a financial management system, including accounting, financial reporting, and auditing systems, adequate to ensure that they can provide accurate and timely information regarding project resources and expenditures.

23. The FM risk was assessed as "Substantial" before mitigation, but this rating is expected to be lowered to "Moderate" when the proposed mitigation measures are effectively implemented. The following are the identified FM risks and the relevant mitigating measures. The FM risk assessed as Substantial, mainly due to: (i) limited experience of MOE staff with this type of activity; (ii) accounting system may not be able to generate the required financial reports; (iii) delays in flow of funds, which is common within this type of operations as several criteria will need to be adhered to before submitting withdrawal applications mainly ensuring proper documentation and efficient coordination between BDL, commercial banks and MOE pertaining to the assessment of the creditworthiness of the borrowing enterprises conducted by BDL and commercial banks and the technical evaluation of the sub-projects by MOE; (iv) auditing arrangements; and (v) GAC risks associated with this new type of activity.

24. The following mitigation measures should be effectively implemented: (i) PMU will include a Financial and Administrative Management Specialist that will be responsible for the implementation of the financial arrangements of the Project. A Financial and Administrative Management specialist, whose salary will be funded by the Project's Component A and who will

be given proper training on all FM procedures and guidelines will be recruited at the PMU hosted at MOE; (ii) the implementing unit will use spreadsheets to generate the required interim un-audited financial reports (IFRs), a sample of the IFRs format will be provided by the Bank; (iii) proper coordination between BDL, commercial banks and MOE concerning the evaluation of sub-projects in addition to providing reconciliations between them, and develop an annual disbursement plan; (iv) elaboration of external auditors TORs to conduct an annual Project audit on the World Bank financed Project and ensure that the auditing process is started early after effectiveness; and (v) the Project Operations Manual (POM) includes a FM chapter that details the Financial Management arrangements to be established for carrying out the project FM implementation and defining the roles, responsibilities and inter-agency relationships.

25. Organization & Staffing arrangements: The Financing Unit of BDL, which comprises of the head and deputy head of the unit along with the head of subsidized loans and financing program unit, will rely on the PMU's Financial and Administrative Management Specialist -(as reflected in both the Subsidiary Agreement and the MOU between BDL and MOE) to provide on a timely, accurate and complete manner financial information related to the management of the project Designated Account (DA). A Financial and Administrative Management Specialist will be hired as part of the PMU and his/her salary will be financed by the Project's Component A. The recruited Financial and Administrative Management specialist will be provided with the necessary guidance and supervision to acquaint him/her with the Bank's reporting requirements and guidelines. The Financial and Administrative Management Specialist's main duties will include, but will not be limited to honoring the Project's requests for issuing payments, and issuing quarterly IFRs to reflect the Project's overall financial position. The Financial and Administrative Management Specialist will work closely with the other members of the PMU as well as with BDL's financing unit to coordinate efforts and ensure financial information is well captured and recorded especially to what is related to the Project DA that is managed by BDL.

26. Accounting and Reporting Arrangements: The required quarterly Interim Un-audited Financial Reports will be prepared by the PMU in accordance with World Bank reporting requirements. As the project's IFRs required are not complex, excel spreadsheet applications will be used to generate them in compliance with the World Bank's reporting requirements and in accordance with international public sector accounting standards (IPSAS) in particular the cash basis of accounting, where resources and uses of funds are recorded when cash is received or when payments are made.

27. The PMU with BDL's assistance will issue quarterly IFRs and annual PFSs. Quarterly IFRs, prepared in accordance with IPSAS, cash basis, will be sent to the Bank by no later than 45 days after the end of each quarter. The format and content of IFRs were agreed upon during negotiations with MOE, and will be included in the POM. Training will be provided to the Financial and Administrative Management Specialist on World Bank reporting requirements. The project's IFRs should comprise: (a) Statement of Cash Receipts and Payments by category for the year ending and cumulatively from inception date up until the end of the fiscal year, including funds received from third parties (i.e., sources from other development partners); (b) Accounting policies and explanatory notes including a footnote disclosure on schedules such as: (i) a Statement of Designated Account reconciling period-opening and end balances; (ii) Statement of project commitments, showing contract amounts committed, paid, and unpaid under

each signed contract under the Project; and (iii) Fixed assets listing report indicating all relevant information (such as description, location, quantity, serial number, etc.) which needs to be updated and including any discrepancies between the regular physical inspection and the accounting records.

28. Project Financial Statements (PFS) prepared in accordance with IPSAS, should contain the same information as the quarterly IFRs but should cover an annual period. The audited PFS would be submitted to the Bank by no later than six months after the end of each fiscal year.

29. Internal Controls. The BDL has written procedures pertaining to accounting, treasury, revenues, etc. which relates to their operations. The Inspection and Audit Department is responsible for internal audit and inspection procedures at BDL, including records, operations, assets, and accounts. It suggests measures for the improvement of administration. This department is composed of the General Control Division, the Auditing Division, and the Financial Control Division.

30. In addition, BDL has two commissions which are responsible for supervising banks and financial institutions throughout the country. These commissions are:

- The Banking Control Commission (BCC); and
- Special Investigation Commission (SIC).

31. The BCC performs its supervisory functions as an independent body. The BCC performs its duties mainly through periodic on-site and off-site examinations of the entities it supervises by its highly qualified (and continuously trained) examiners.

32. The BCC evaluates financial soundness of regulated entities. This is done through on-site and off-site reviews. The reviews include the analysis of financial statements and monitoring the implementation by these institutions of:

- The provisions of the Lebanese Code of Money and Credit.
- Basel Committee requirements, especially the Core Principles for Effective Banking Supervision.
- The Central Bank's regulations.
- The BCC's Circulars and instructions.
- International Accounting Standards.

33. Furthermore, the BCC can impose corrective and remedial measures on individual banking institutions if necessary. The role of the BCC would be critical in performing ongoing supervision and assessing the financial soundness of financial institutions (in the case of commercial banks receiving the funds under this project) this will ensure higher control and oversight and enhance transparency.

34. The SIC was established for fighting money laundering as an independent legal entity with judicial status at BDL. The Commission has the exclusive right to lift banking secrecy for use by competent judicial authorities and the Higher Banking Commission. The SIC, Lebanon's Financial Intelligence Unit (FIU), receives, analyzes, investigates suspicious transaction reports

(STRs) and ensures compliance of banks, financial institutions and other reporting entities with pertinent anti-money laundering regulations.

35. The SIC is comprised of the following members:

- The Governor of BDL, *Chairman*
- The President of the Banking Control Commission, *Member*
- The Judge appointed to the Higher Banking Commission, *Member*
- A professional appointed by the Council of Ministers, *Member*

36. The project involves new activity for MOE and BDL and therefore additional procedures may be needed to describe the processes, set roles and responsibilities, and define the inter-agency relationships; i.e., BDL versus the MOE in addition to the participating banks and sub-projects. A POM includes an FM chapter that describes the detailed FM and disbursements procedures.

37. Financial Reporting. The PMU will be responsible for preparing quarterly interim unaudited financial reports (IFRs) and annual project financial statements using the cash basis of accounting for World Bank reports requirements. The financial reports consist of statement of cash receipt less payments by category, statement of expenditures by components, statement of designated account reconciliation, a list of cumulative contracts' commitments, list of commercial banks and list of sub-projects beneficiaries. The quarterly IFRs will be submitted by the PMU to the Bank within 45 days after the end of the concerned quarter. The first IFRs will be produced within three months after the Project has been declared effective.

38. External Audit:

i. The Project Financial Statements (PFS) will be audited by an independent private external auditor acceptable to the Bank. The audit report and PFSs, along with the management letter, will be submitted to the Bank no later than six months after the end of each fiscal year. In addition, the Project management letter will contain the external auditor assessment of the internal controls, accounting system, and compliance with financial covenants in the Loan Agreement.

ii. The audit will be comprehensive and will cover all aspects of the Project including the project Designated Account in compliance with the Loan Agreement. The audit will be carried out in accordance with International Standards on Auditing (IFAC). The PMU will be responsible for selecting and entering into a contract with an independent and qualified external audit firm acceptable to the Bank within six months of Project effectiveness. The Terms of Reference of the external auditor that will undertake annual audits of the PFSs will be agreed upon with the Bank.

iii. Moreover, the Project's audited annual financial statements will be made available to the public.

39. Budgeting and Flow of Funds. A project budget and periodical disbursement plan, based on the implementation schedule, will be developed by PMU. Advances will be channeled from the World Bank to one Designated Account (DA) to be opened at BDL in US$. The DA will be

managed by BDL that will timely, accurately and in a complete manner transmit financial information related to the project DA to the PMU. The disbursement methods will include advances, replenishments, and reimbursements.

Proposed Disbursement Arrangements

Method of Disbursement: The following disbursement methods may be used under the Loan:

1) Reimbursement
2) Advance
3) Replenishment

40. E–Disbursement. The World Bank has introduced the e-disbursement for all Lebanon supported projects. Under e-disbursement, all transactions will be conducted and associated supporting documents scanned and transmitted on line through the Bank's Client Connection system. E-disbursement will considerably speed up disbursements and facilitate project implementation.

41. Designated Account. To ensure that funds are readily available for Project implementation, a US Dollar Designated Accounts (DA) will be opened at BDL. The Project DA will be managed by BDL.

42. The DA will be used to hold Project funds from which disbursements to commercial banks will be made. Authorized signatories, names and corresponding specimens of their signatures would be submitted to the Bank prior to the receipt of the first Withdrawal Application (WA). Deposits into and payments from the DA will be made in accordance with the disbursement letter and Bank Disbursement Guidelines. Monthly reconciliations for the Designated Accounts will be prepared by the PMU based on timely, accurate and complete information from BDL and copies of reconciliations of March, June, September and December will be sent to the World Bank together with the complied quarterly financial reports.

43. The proceeds of the Loan will be disbursed in accordance with the Bank's disbursements guidelines as outlined in the Disbursement letter and in accordance with the Bank Disbursement Guidelines for projects. Transaction based disbursement will be used under this project. Accordingly, requests for payments from the Loan will be initiated through the use of WAs either for Advances, Reimbursements, and Replenishments to the Designated Account. All WAs will include appropriate supporting documentation including detailed Statement of Expenses for reimbursements and replenishments to the DA.

44. The following table specifies the category of Eligible Expenditures that may be financed out of the proceeds of the Loan and the percentage of expenditures to be financed for Eligible Expenditures. Table A3.1 below summarizes the amount of the loan and the suggested US$3,000,000 amount of the retroactive financing.

Table A3.1. Eligible Expenditures

Category	Amount of Loan Allocated (US$)	% of Expenditures to be financed
Component B: Sub-loans net of import duties	15,000,000	100%
TOTAL	**15,000,000**	
Of which retroactive financing	**3,000,000**	**20%**

Note: equipment import duties will be assumed by enterprises under their 10% in kind and in cash contribution.

45. The POM includes a FM chapter with reporting and auditing and review arrangements which are expected to address risks of fraud and corruption that would potentially have a material impact on the Project outcomes.

46. Supervision Plan. A supervision mission will be conducted at least twice a year based on the risk assessment of the Project. The supervision mission objective is to ensure that strong financial management systems are maintained throughout the life of the Project. The IFRs will be reviewed on a regular basis by the World Bank staff and the results and issues will be followed up during supervision missions. Financial audit reports will be reviewed and issues will be identified and followed up by the Project Financial and Administrative Management Specialist. Additionally, during supervision missions, the Project's financial management and disbursement arrangements (including a review of a sample of SOEs and financial movements of the DA) will be reviewed to ensure compliance with the Bank's minimum requirements (Table A3.2).

Table A3.2. Financial Management Action plan Date due by Responsible

	Action	Date due by	Responsibility
1	Adopt the POM including a FM chapter	Within 3 months of effectiveness	MOE/PMU
4	Seek the Governor's approval to expand the TORs of its current and agree on terms of reference for external auditors in accordance with World Bank requirements	Within 3 months of project's effectiveness	BDL
5	Appoint an external Auditor for the Project	No later than six months after Project effectiveness	BDL/PMU
6	Quarterly IFRs	45 days after the end of the required period	BDL/PMU
7	Audit of Project Financial Statements and Project and Management Letter	Within 6 months after the end of fiscal year	BDL/PMU

Procurement

47. Implementing agency. For Component B of the project, the Borrower shall through BDL manage the use of the proceeds of the loan and through MOE carry out all other aspects of the project implementation. Parallel financing to fund overall PMU operations and TA shall be provided by the Italian Cooperation.

48. Project design. The project is financing a TA component that is to ensure the technical support for implementing the program extending to enterprises sub-loans for abating the

pollution generated by their industries. The PMU will support the enterprises to be procuring the required goods using their own procurement procedures; needs assessment and feasibility shall be validated by the PMU as well as technical specifications, bidding documents and awarded suppliers. The validated process shall be the basis for extending the sub-loans. The PMU, if needed, shall be developing standard bidding documents and contracts to customize the process and as part of procurement capacity building.

49. Past experience of the implementing agency. LEPAP will benefit from the capacity developed under the "Environmental Fund for Lebanon" (EFL) program that is funded by the German Government through GIZ for an amount of €8.5 million. GIZ/EFL is closely involving three partners: MOE, CDR and GIZ. In addition, necessary TA is supporting the implementation and management of the GIZ/EFL for determining the needs, feasibility, technicality and cost. The first phase of this financing program was launched in February 2008, and was extended for a second phase in May 2010. In that respect, MOE and its PMU that was until recently housed at CDR, have acquired a solid experience in processing similar programs and a solid technical support will be ensured for procurement function under LEPAP as a continuation of the currently satisfactory implementation arrangement. The GIZ/EFL PMU was transferred to MOE in June 2013 and LEPAP PMU uses the same facilities and uses the assets that were transferred to MOE by December 31, 2013.

50. Procurement Capacity assessment:

a. The procurement capacity assessment of MOE was carried out.
b. With respect to component A, providing TA and PMU support to guide enterprises in building up their project, the assessment identified project risks related to record keeping, procurement oversight, competition opportunities, evaluation processing, planning and timelines.
c. To mitigate the risk rating from substantial to moderate, the following measures, are recommended: (i) Require that a record is kept of who makes decisions, within what time limit and that justifications are provided when overriding procurement decisions, (ii) Prepare operations manual, (iii) Implement procurement record security as early as possible in the project to avoid loss of documentation, (iv) Agree on a plan to acquire the necessary procurement expertise (e.g. through hiring, outsourcing, etc.), (v) Arrange for appropriate support (staff, training, tools) to prepare the project procurement plan with a clear linkage to project objectives, (vi) For purchase of goods, ensure that the technical specialist confirms that the criteria are pass/fail and also appropriate, (vii) Ensure criteria are clear and quantifiable and monitor compliance with those criteria, (viii) Establish advertising policy and develop sample advertisement in line with the Bank Guidelines requirements, (ix) Set deadlines for submission of complaints and for decision making by the agency, (x) Establish system to monitor and expedite contract management in terms of modifications or change orders. Include contract management in the procurement audits TOR, (xi) Require audit by independent private auditors to cover procurement processing, filing and contract management.
d. With respect to component B, fully financed by IBRD, and providing sub-loans to the private sector, as part of their request for credit, the beneficiary enterprises will be filling a procurement capacity self-assessment check-list (here below Table A3.3 – form

included in the operational manual), to identify risks related to procurement and propose mitigation measures. After reaching an agreement on the measures, the project unit will be in charge of monitoring implementation, in particular with appointment of a procurement focal point, record keeping measures, internal audit, and proper contract management.

51. Applied taxes: The following are the three types of taxes applied:

- Stamp duties of: (a) 3 per thousand of the contract price for contract registration at the Ministry of Finance (MOF); and (b) 3 per thousand on each payment;
- Value added taxes, or VAT of 10 percent applied on consultants and contractors that are registered and eligible to pay VAT; and
- Income taxes that are a flat rate of 7.5 percent deducted by the employer for consultants who are not registered as tax payers in MOF; and variable for registered consultants, depending on their job classification at MOF. Exemption of consultants from income taxes may be observed if they are registered in countries that have entered with Lebanon into agreements prohibiting double taxation. Contracts financed by international donors' proceeds are exempted from VAT (Law no. 379-2001).

52. Proposed Procurement Arrangement. For activities financed exclusively or partially by IBRD or GEF, procurement will be carried out in accordance with the following World Bank Guidelines:

- "Procurement of Goods, Works and Non-consulting Services under IBRD Loans and IDA Credits and Grants by World Bank Borrowers" dated January 2011.
- "Selection and Employment of Consultants under IBRD Loans and IDA Credits and Grants by World Bank Borrowers" dated January 2011. The legal agreement with the GOL shall be in particular referring to **paragraph 3.13**, i.e., the eligibility of using Well-Established Private Sector Procurement Methods or "Commercial practices acceptable to the Bank" (Procurement in Loans to Financial Intermediary Institutions and Entities).
- "Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants" dated October 2006 and updated in January 2011.

53. Procurement plan: A simplified procurement plan dated May 21, 2014 for component A and covering the selection of consultants (PMU technical individuals and the project independent audit) has been developed by the project. For component B, and because of the nature of the project, a procurement plan will not comprise the regular expected stages of procurement processing but rather the process for accessing the credits (preparation and validation of proposals) as well as including the procurement period for the industries to themselves purchase proposed goods. The PMU has developed such "implementation plan" and will be maintaining it to align with each enterprise's proposal (here below Table A3.4 – Initial Procurement Plan).

54. Project Operations Manual: the manual covers the mechanism of approval of credits. It outlines the role and responsibilities of different partners, in particular of the PMU with respect to technical support for validation of needs, review of feasibility, technical specifications drafting, review of recommendation for awarding suppliers. The project operation manual also comprises the procurement self-assessment check list.

55. Project oversight: The Frequency of supervision mission and post procurement review is foreseen respectively twice and once yearly. In post procurement review, a sample of 15% of contracts eligible for post review shall be covered. The review will focus on achieved results.

Table A3.3. Procurement Capacity Self-Assessment Check-list and Remedies

Risk Factor	Self-Assessment	If negative or N/A, enterprise's Proposed Remedies
Risk Factor 1: Accountability for Procurement Decisions		
Question 1: Is there an established accountability system that clearly defines responsibilities and delegation of authority on who has control of procurement decisions?		
Question 2: Does the accountability system describe a process and identifies remedies, administrative and/or penal, applicable to staff with authority for procurement decisions whose decisions exceeded their delegated authority?		
Risk Factor 2: Internal Manuals and Procedures		
Question 1: Does the entity have a set of implementation regulations/procurement manual applicable to procurement that is accessible to staff and with clear instructions for all steps of the procurement process (i.e., planning, advertisement, bidding, evaluation & award, review thresholds, record keeping)?		
Risk Factor 3: Record Keeping and Document Management Systems		
Question 1: Are records protected from loss and unauthorized access?		
Question 2: Does the entity have access to a system (manual or electronic) to easily locate relevant records?		
Question 3: Does the entity have access to a system (manual or electronic) to keep vital statistics related to procurement?		
Risk Factor 4: Staffing		
Question 1: Is procurement staffing adequate, in numbers, experience and capacity?		
Question 2: Is procurement staff offered or given access to quality training for continuous skill development in procurement and contract management?		
Question 3: Is there a published code of ethics known to procurement staff that describes appropriate behavior related to procurement?		
Risk Factor 5: Procurement Planning		
Question 1: Does the procurement system require conducting realistic procurement planning that takes into consideration the		

Risk Factor	Self-Assessment	If negative or N/A, enterprise's Proposed Remedies
objectives of the program, justifiable quantities, realistic market prices, time for delivery, storage, etc., and is this planning linked to available budget, valid enterprise needs, and inherent risks (i.e., related to collusion)?		
Risk Factor 6: Advertisement, Bid/Proposal Opening and Public Information		
Question 1: Do the procurement rules and procedures require public advertising of bidding opportunities?		
Question 2: Are bids/proposals opened in public in presence of bidders/representatives and the general public wishing to attend, and immediately following the deadline for bid submission?		
Question 3: Is there a policy requiring disclosure of award decisions, allowing requests for debriefings and general requests for information from the public?		
Risk Factor 7: Bidding documents, (pre-) qualification/short-listing, bid submission/opening, evaluation and award criteria		
Question 1: Are standardized bidding/RFP documents for the anticipated types of procurement available for use?		
Question 2: If standardized bidding /RFP documents are available, do they include clear instructions on how bidders can requests clarifications, for bids/proposal submission, for bidder's attendance to public bid/proposal opening, and for presenting complaints?		
Question 3: If standardized bidding /RFP documents are available, do they include equitable contract terms and conditions?		
Risk Factor 8: Evaluation and award of contract		
Question 1: Do the procurement rules and procedures require that evaluations be conducted professionally and by members with technical expertise in the items/services being procured, and ensuring a protocol to safekeeping of information during the evaluation process?		
Risk Factor 9: Review of Procurement Decisions and Resolution of Disputes/Complaints		
Question 1: Does the entity have a documented track record of resolving disputes/complaints at different stages of the		

Risk Factor	Self-Assessment	If negative or N/A, enterprise's Proposed Remedies
procurement cycle and providing fair decisions on a timely manner and for keeping data on volume and nature of disputes/complaints?		
Risk Factor 10: Contract Management and Administration		
Question 1: Does the entity have a documented track record of paying invoices within the contractual terms, implementing contracts according to specifications, on time, with adequate justification of variations and without excessive changes in scope or price and without a backlog of unresolved contractual claims (e.g., payments, variations), and applying contractual remedies?		
Risk Factor 11: Procurement Oversight		
Question 1: Does the entity conduct internal and external audits, whose scope includes physical inspections and compliance checks and of audit reports being issued in a timely manner and of generally implementing audit recommendations promptly?		

Table A3.4. a. Procurement Plan of Sub-loans

Proc. System Ref. #	Comp	Location/ Description of Assignment	Estimated credit amount (US$)	Estimated Supplier Cost (US$)	Selection Method	Bank Rev.	Application Start Date	PMU validation	Adv. /suppliers collection end Date	Evaluation Report Date	Contract Supplier negotiation/Award- Draft	Commercial bank validation end date	BDL Validation end date	Credit signature Date	Supplier Contract Start Date	Execution in months	Completion Date (original)
IND01.001	C2	Industry 1- Supplier 1	1,500,000	500,000	CP	NA	22-Jun-14	21-Aug-14	4-Sep-14	11-Sep-14	25-Sep-14	25-Oct-14	24-Nov-14	1-Dec-14	1-Dec-14	12	26-Nov-15
IND01.002	C2	Industry 1- Supplier 2		500,000	CP	NA					NA				31-Dec-14	12	26-Dec-15
IND01.003	C2	Industry 1- Supplier 3		500,000	CP	NA					NA				30-Jan-15	12	25-Jan-16
IND02.001	C2	Industry 2- Supplier 1	1,000,000	500,000	CP	NA	22-Jun-14	21-Aug-14	4-Sep-14	11-Sep-14	25-Sep-14	25-Oct-14	24-Nov-14	1-Dec-14	1-Dec-14	12	26-Nov-15
IND02.002	C2	Industry 2- Supplier 2		500,000	CP	NA					NA				31-Dec-14	12	26-Dec-15
IND03.001	C2	Industry 3- Supplier 1	1,000,000	1,000,000	CP	NA	22-Jun-14	21-Aug-14	4-Sep-14	11-Sep-14	25-Sep-14	25-Oct-14	24-Nov-14	1-Dec-14	1-Dec-14	12	26-Nov-15
IND04.001	C2	Industry 4- Supplier 1	1,000,000	1,000,000	CP	NA	23-Jul-14	21-Sep-14	5-Oct-14	12-Oct-14	26-Oct-14	25-Nov-14	25-Dec-14	1-Jan-15	1-Jan-15	12	27-Dec-15
IND05.001	C2	Industry 5- Supplier 1	500,000	500,000	CP	NA	23-Jul-14	21-Sep-14	5-Oct-14	12-Oct-14	26-Oct-14	25-Nov-14	25-Dec-14	1-Jan-15	1-Jan-15	12	27-Dec-15
IND06.001	C2	Industry 6- Supplier 1	500,000	500,000	CP	NA	23-Jul-15	21-Sep-15	5-Oct-15	12-Oct-15	26-Oct-15	25-Nov-15	25-Dec-15	1-Jan-16	1-Jan-16	12	26-Dec-16
IND07.001	C2	Industry 7- Supplier 1	500,000	500,000	CP	NA	16-Sep-15	15-Nov-15	29-Nov-15	6-Dec-15	20-Dec-15	19-Jan-16	18-Feb-16	25-Feb-16	25-Feb-16	12	19-Feb-17
IND08.001	C2	Industry 8- Supplier 1	500,000	500,000	CP	NA	16-Sep-15	15-Nov-15	29-Nov-15	6-Dec-15	20-Dec-15	19-Jan-16	18-Feb-16	25-Feb-16	25-Feb-16	12	19-Feb-17
IND09.001	C2	Industry 9- Supplier 1	500,000	500,000	CP	NA	16-Sep-15	15-Nov-15	29-Nov-15	6-Dec-15	20-Dec-15	19-Jan-16	18-Feb-16	25-Feb-16	25-Feb-16	12	19-Feb-17
IND10.001	C2	Industry 10- Supplier 1	500,000	500,000	CP	NA	21-Sep-15	20-Nov-15	4-Dec-15	11-Dec-15	25-Dec-15	24-Jan-16	23-Feb-16	1-Mar-16	1-Mar-16	12	24-Feb-17
IND11.001	C2	Industry 11- Supplier 1	500,000	500,000	CP	NA	21-Sep-15	20-Nov-15	4-Dec-15	11-Dec-15	25-Dec-15	24-Jan-16	23-Feb-16	1-Mar-16	1-Mar-16	12	24-Feb-17
IND12.001	C2	Industry 12- Supplier 1	500,000	500,000	CP	NA	21-Sep-15	20-Nov-15	4-Dec-15	11-Dec-15	25-Dec-15	24-Jan-16	23-Feb-16	1-Mar-16	1-Mar-16	12	24-Feb-17
IND13.001	C2	Industry 13- Supplier 1	500,000	500,000	CP	NA	15-Nov-15	14-Jan-16	28-Jan-16	4-Feb-16	18-Feb-16	19-Mar-16	18-Apr-16	25-Apr-16	25-Apr-16	12	20-Apr-17
IND14.001	C2	Industry 14- Supplier 1	500,000	500,000	CP	NA	15-Nov-15	14-Jan-16	28-Jan-16	4-Feb-16	18-Feb-16	19-Mar-16	18-Apr-16	25-Apr-16	25-Apr-16	12	20-Apr-17
IND15.001	C2	Industry 15- Supplier 1	500,000	500,000	CP	NA	14-Nov-16	13-Jan-17	27-Jan-17	3-Feb-17	17-Feb-17	19-Mar-17	18-Apr-17	25-Apr-17	25-Apr-17	12	20-Apr-18
IND16.001	C2	Industry 16- Supplier 1	500,000	500,000	CP	NA	14-Dec-16	12-Feb-17	26-Feb-17	5-Mar-17	19-Mar-17	18-Apr-17	18-May-17	25-May-17	25-May-17	12	20-May-18
IND17.001	C2	Industry 17- Supplier 1	500,000	500,000	CP	NA	14-Dec-16	12-Feb-17	26-Feb-17	5-Mar-17	19-Mar-17	18-Apr-17	18-May-17	25-May-17	25-May-17	12	20-May-18
IND18.001	C2	Industry 18- Supplier 1	500,000	500,000	CP	NA	14-Dec-16	12-Feb-17	26-Feb-17	5-Mar-17	19-Mar-17	18-Apr-17	18-May-17	25-May-17	25-May-17	12	20-May-18
IND19.001	C2	Industry 19- Supplier 1	500,000	500,000	CP	NA	14-Jan-17	15-Mar-17	29-Mar-17	5-Apr-17	19-Apr-17	19-May-17	18-Jun-17	25-Jun-17	25-Jun-17	12	20-Jun-18
IND20.001	C2	Industry 20- Supplier 1	500,000	500,000	CP	NA	14-Jan-17	15-Mar-17	29-Mar-17	5-Apr-17	19-Apr-17	19-May-17	18-Jun-17	25-Jun-17	25-Jun-17	12	20-Jun-18
IND21.001	C2	Industry 21- Supplier 1	500,000	500,000	CP	NA	14-Jan-17	15-Mar-17	29-Mar-17	5-Apr-17	19-Apr-17	19-May-17	18-Jun-17	25-Jun-17	25-Jun-17	12	20-Jun-18
IND22.001	C2	Industry 22- Supplier 1	500,000	500,000	CP	NA	13-Feb-17	14-Apr-17	28-Apr-17	5-May-17	19-May-17	18-Jun-17	18-Jul-17	25-Jul-17	25-Jul-17	12	20-Jul-18
IND23.001	C2	Industry 23- Supplier 1	500,000	500,000	CP	NA	13-Feb-17	14-Apr-17	28-Apr-17	5-May-17	19-May-17	18-Jun-17	18-Jul-17	25-Jul-17	25-Jul-17	12	20-Jul-18
IND24.001	C2	Industry 24- Supplier 1	500,000	500,000	CP	NA	13-Feb-17	14-Apr-17	28-Apr-17	5-May-17	19-May-17	18-Jun-17	18-Jul-17	25-Jul-17	25-Jul-17	12	20-Jul-18
IND25.001	C2	Industry 25- Supplier 1	500,000	500,000	CP	NA	13-Feb-17	14-Apr-17	28-Apr-17	5-May-17	19-May-17	18-Jun-17	18-Jul-17	25-Jul-17	25-Jul-17	12	20-Jul-18

b. Procurement of Consultants

Proc. System Ref. #	Comp	Location/ Description of Assignment	Estimated Cost (US$)	Selection Method	Bank Rev.	TOR Start Date	Short Listing Report Date	RFP Submission Date	Technical Evaluation Report Date	Finan. Public openg Date	Contract signature Date	Interval	Contract Start Date	Execution in months	Completion Date (original)
FC001	C1	Independent Extrernal Audit	20,000	LCS	PR	1-Oct-13	19-Nov-13	28-Jan-14	4-Feb-14	4-Mar-14	1-Apr-14	2	3-Apr-14	38	16-Jun-17

Proc. System Ref. #	Comp	Location/ Description of Assignment	Estimated Cost (US$)	Selection Method	Bank Rev.	TOR Start Date	Short Listing Report Date	Contract signature Date	Contract Start Date
IC001	C1	Project Manager	540,000	IC	PR	2-Oct-13	20-Nov-13	1-Jan-14	3-Jan-14
IC002	C1	Procurement Specialist	210,000	IC	PR	2-Oct-13	20-Nov-13	1-Jan-14	3-Jan-14
IC003	C1	Environmental Engineer	360,000	IC	PR	2-Oct-13	20-Nov-13	1-Jan-14	3-Jan-14
IC004	C1	Financial Management Specialist	132,000	IC	PR	2-Oct-13	20-Nov-13	1-Jan-14	3-Jan-14
IC005	C1	Environmental Management	120,000	IC	PR	2-Oct-13	20-Nov-13	1-Jan-14	3-Jan-14
IC006	C1	Multiple Consultants and TA (TBD)	1,518,000	IC	PR	2-Oct-13	20-Nov-13	1-Jan-14	3-Jan-14

Environmental and Social (including safeguards)

56. The project will finance pollution control in 20-25 industrial facilities which from a call of expression of interest launched by EFL, 13 enterprises responded belonging to the following sectors: food; minerals; paper and pulp and furniture. These industries are interested in reducing their wastewater and/or improve their solid waste management as they see: economic benefits accruing from the intervention such as energy savings, water reuse and/or waste reuse; and/or improvement of their environmental standing after MOE has received complaints from communities affected by their discharge. Five (3 food enterprises, 1 paper enterprise and 1 furniture enterprise) out of the 13 enterprises have fulfilled the criteria to perform CAPs and could borrow near US$5.3 million (net of the civil works that will be borne by enterprises) hence constituting the first LEPAP pipeline.

57. The potential mitigation associated with the pollution control projects are in Table A3.5.

Table A3.5. Mitigation Measures

Sub-projects	Potential Mitigation
Industrial Wastewater Treatment	• Physical, chemical and/or biological treatment
Waste Treatment	• Anaerobic waste treatment with biogas/energy production • Sludge dewatering • Recycling (i.e. foam) • Waste to energy systems or using wastes as alternative source of fuels
Water Treatment	• Flocculation, settling, and sludge dewatering system
Air emissions reduction and control	• Installation of air pollution control treatment systems (bag filters, ESP, etc.)
Cleaner production and energy efficiency measures	• Raw materials recycling, water re-use within battery of plant, other measures within the facility

58. As these facilities are small to medium scale, it is expected that none of the risks of these negative impacts are highly significant or large-scale or unprecedented; and no impact is considered irreversible.

Assessment of the Institutional and Legal Framework

59. As part of the ESIA of LEPAP which is classified in category FI, the capacity of the PMU to implement and manage the Environment Management System (environmental screening, assessment, mitigation, review, monitoring, and reporting) at the project and sub-project level was assessed. The national legal and regulatory framework of Lebanon is assessed and compared with the safeguard policies of the World Bank. Mechanisms for harmonizing World Bank policies and guidelines with those of the host country are formulated. Plans for meeting deficiencies, including specialized training and identification of local or international consultants available for support are proposed and will be financed in the first component of the project as well as by the two parallel programs namely the €8.0 million EU-financed project on Environment Governance (StREG) which started in March 2014 and will last for three years, and the €8.5 million GIZ grant for the Environment Fund of Lebanon which closed in December 31, 2013.

60. The institutional assessment showed that BDL has a strong commitment to environment through the provision in its portfolio of environmental projects for rural development and environment energy efficiency and energy conservation. The MOE is endowed with a competent team consisting of 70 administrative/technical staff in all the major environment themes, complemented by about 30 staff working in the context of internationally funded/managed projects. This staff has the technical capacity to understand Lebanon's environmental issues. The Environmental Technology Service which manages the Environmental Impact Assessment (EIA) system (established with the assistance of the World Bank) consists of seven full-time staff and

is assisted by about 20 staff from other MOE departments who are knowledgeable about the national EIA system and many have received training on World Bank Safeguards policies. Furthermore, the MOE is committed to reinforce the compliance and enforcement system by establishing an Environmental Compliance Permanent Committee in addition to current efforts to improve enforcement through the Service of Regional Departments and Environmental Police, and more particularly the draft Law establishing the Environmental Prosecutor (prepared with World Bank assistance, approved by the Council of Ministers in 2012 and forwarded to Parliament), the draft Decree on the Environmental Police (also prepared with World Bank assistance) and the upcoming EU StREG project.

61. The MOI has established six Inter-Ministerial Permitting Committees (IPCs), of which the MOE is a member, and is headed by the MOI. The IPC are responsible to provide industrial permits for the construction and operation facilities and would require the MOE approval of an environment assessment. MOE commitment to the establishment of an industrial pollution management system will be spelled out in a policy statement in LEPAP.

62. The legal assessment showed that Lebanon has a plethora of environmental Laws and regulations as well as other legislations related to the environment with which the project would comply. The legal basis for the EIA system is established in the Environment Protection Law no. 444-2002 and Law no. 690-2005 on the reorganization of the MOE and the EIA Decree no. 8633-2012 and its annexes. The EIA Decree and its annexes include all the requirements for screening, preparation of the environmental assessment and the supervision of the environmental assessment process including consultation and disclosure; and the Environmental Compliance for Establishments Decree no. 8471-2012 that will regulate all activities from classified establishments (such as industrial ones) that may cause harmful pollution and environmental degradation.

63. The Bank Lebanon CEA (2011)[13] conducted an assessment of the national EIA system and determined the similarities and differences between the national EIA system and the World Bank operational policy OP4.01 on Environmental Assessment. The assessment showed that the features of the Lebanese EIA system are compatible with most of the World Bank EA Policy (OP4.01) with the exception of the major gaps namely: (a) the lack of standard TOR and sector guidelines for specific sectors to be provided to the project proponent for the preparation of the EIA or IEE reports; (b) lack of consultation with stakeholders for projects listed under Annex II (similar to Category B projects in the World Bank OP4.01); and (c) the lack of disclosure of the Initial Environment Examination (IEE) to the public as required by articles 13 and 14 of the Environment Protection Law which has been addressed in the EIA Decree no. 8633-2012. Gap-filling measures were identified and will be implemented in LEPAP.

64. The main impediments to effective and meaningful implementation and enforcement of environmental and environment-related Laws are due to the fragmentation among regulatory institutions, licensing agencies, and police authorities among others, at both the national and local levels of government, to the effect that no single institution can take enforcement actions effectively. This lack of human resources and fragmentation of responsibilities necessitate the

[13] The Country Environment Analysis (CEA) of Lebanon, the World Bank, June 2011.

strengthening of monitoring and enforcement as a first institutional priority. LEPAP is designed to support the MOE in establishing a mechanism that would support the industrial enterprises in their compliance to the stipulations of the Environmental Compliance Decree no. 8471-2012 and create a mechanism to foster pollution abatement investments from technical and financial standpoints. The StREG project will focus primarily on the enforcement and compliance guidelines, training, capacity building and provision of testing equipment of the MOE, and sector ministries.

The World Bank Safeguard Policies

65. The Project triggers only one safeguard policy namely OP4.01 (Environment Assessment). All pollution control activities will be within the industrial enterprises that belong to the private sector. No physical or economic displacements are envisaged. The World Bank safeguard policy OP4.01 will apply and would prevail in case the national environmental policies are not consistent with the World Bank safeguard policies.

Positive and Negative Impacts of the Project on the Environment

66. The Present Situation: Lebanon uses 60 million m^3/per year out of a total of 965 million m^3/year for industrial purposes.[14] This water is discharged after its use either to the municipal waste water network or in the ecosystem. Few industrial facilities recycle water used for cooling or heating processes or can reuse this water after being treated at the plant level. There are no treatment or disposal facilities of hazardous and non-hazardous waste which are usually mixed with municipal waste and disposed either in open dumps or in one of two sanitary landfills established in Greater Beirut and in the municipality of Zahle in the Bekaa region.

67. Positive Impacts: The Project is expected to generate positive local and global environmental impacts and outweigh any negative potential impacts. The expected positive environmental impacts are improvement of public, occupational health and safety, reduction of pollution loads and removal of trace metals and heavy metals from industrial enterprises; improvement of surface water and groundwater quality and the provision of reliable source of water supply to farmers and to communities. Minimizing industrial solid waste through process treatment or recycling will have positive impacts on the physical environment by reducing air pollution; saving energy, preventing burning of plastics and rubbers, and reducing landfill uses.

68. Positive Impacts of the project will accrue due to the treatment of industrial wastewater which poses a risk to human health, degradation of soil resources with heavy metals, salinity and water logging, pollution of groundwater through percolation; creating of imbalances in water bodies and in the plans and reduction of biodiversity and causing damages in the operation of municipal waste water treatment plant. The adverse impacts of not reusing water for enterprises would lead to an increase in the consumption of water and energy, an increase of salinity levels leading to effluent toxicity and discharging pollutants into the ecosystem. Furthermore, poor and/or lack of treatment of industrial solid waste have a negative impact on soil pollution, groundwater pollution due the percolation of leachate and air pollution to burning of hazardous and non- hazardous waste.

[14] Comair, Fadi. 2011. l'efficience d'utilisation de l'eau et approche économique, Plan Bleu.

Implementation of an Environmental and Social Management Framework (ESMF)

69. The methodology adopted is to conduct the environmental assessment in consultation with stakeholders, following the steps below:

Step 1: Screening:

70. The screening category of the sub-projects will be based on the analysis of impacts consistent with OP4.01 taking into consideration the two positive screening lists attached as Annexes I and I in Decree no. 8633-2012. The following three categories will be established.

a. Category I: includes the list of projects corresponding to Annex I of the national EIA Decree no. 8633-2012 for which a detailed ESIA (Environment and Social Impact Assessment Report (ESIAR) which is similar to category A projects in the World Bank OP4.01 environment assessment is mandatory. Sub-projects falling in this category would have by their magnitude and severity, potential significant adverse social or environmental impacts that are diverse, irreversible, or unprecedented. Few LEPAP sub-projects will belong to this category namely: waste to energy projects and industrial waste water containing hazardous chemicals and industrial solid waste containing hazardous materials.

b. Category II: includes a list of sub- projects in Annex II of the national EIA Decree for which a Limited Environment and Social Impact Assessment Report (LESIAR) is required. Sub-Projects in this category will have by their magnitude and severity, potential limited adverse social or environmental impacts that are few in number, site-specific, largely reversible, and readily addressed through mitigation measures. The majority of LEPAP sub-projects will belong to this category namely small and medium size industrial waste water treatment plants containing non-hazardous chemicals, industrial solid waste projects containing non-hazardous materials, and water recycling.

c. Category III consists of sub-projects in which relevant health, safety and working conditions are only required. Projects in this category will have minimal or no adverse social or environmental impacts. An Environment and Social Assessment report is not required.

71. More specifically, the projects listed in Annex I of the Lebanese system are those that can be classified as a Category A according OP4.01, however, the projects listed in Annex II could be either in the Category A or B of OP4.01 because those projects have not specified a specific threshold which could qualify them as Category A or B. The ESMF has stated that for those projects, an analysis of impact has to be undertaken in function of magnitude, severity, reversibility and irreversibility of the impacts.

Step 2: Preparation of ESIAR and LESIAR

72. Given that some inconsistencies may occur between screening of the LEPAP sub-projects on the basis of impacts as required in OP4.01, and the screening using positive lists as used in the Annexes I and II of national EIA Decree no. 8633-2012, the following screening and reports will be applied in LEPAP:

- Sub-projects that are listed in Annex I and in which industrial facilities would generate hazardous pollutants, and/or discharge of heavy metals or trace metals will be classified in category I requiring the preparation of a comprehensive ESIAR report as described in OP4.01 and whose content is similar to the report described in the national EIA Decree.
- Sub-projects that are listed in Annex II and also in Annex I in which industrial facilities would **not** generate hazardous pollutants, and/or discharge of heavy metals or trace metals will be classified in category II requiring the preparation of the LESIAR. The LESIAR will revolve around the preparation of an ESMP with consultation and disclosure at the level of each sub-project and will include the sub-project description, the relevant legal and institutional framework applied to the sub-project; the negative and positive impacts of the sub-project and the following in tabular form: (i) a mitigation plan for negative impacts, ii) the environmental monitoring program, and iii) the institutional strengthening program; and the results of the consultation.
- The World Bank will review all sub-projects classified as category I and requiring a full environmental and social impact assessment (ESIA). The World Bank will also review the first 6 sub-projects classified in category II. In case these category II sub-projects would comply with the ESMF, the World Bank will conduct during its regular supervision missions a post review of a sample of sub-projects in this category.
- Both the ESIAR and LESIAR process/documents will include public consultation with the relevant stakeholders, as a requirement of OP 4.01.

73. The ESIAR and LESIAR will be published in English on the MOE and the LEPAP website and executive summaries will be disclosed in Arabic and English.

Step 3: Monitoring and Follow up

74. It shall be PMU's responsibility to follow-up on the sub-project specific ESMP implementation (in support to MOE's compliance unit). The following levels of reporting are required:

- The Proponent (industrial enterprise shall submit a bi-annual report on ESMP implementation to the PMU and the MOE compliance unit
- The PMU will submit to the World Bank as part of its annual project report, a report on the implementation of respective EMPs, and overall status of compliance with the ESMF

Step 4: Enforcement

75. Enforcement is the responsibility of MOE. The Ministry shall conduct inspections and request further evidence that environmental mitigation and monitoring measures are being followed. In the event of non-compliance, fines may prevail as per the national legislation, and in case of repetition, MOE could proceed with prosecution.

Step 5: Training and Capacity Strengthening

76. The project will finance annual training and capacity strengthening activities in ESA management; implementation, monitoring and enforcement of the EMSF and sub-project specific EMSP for different target groups, namely the ministries of the Environment and Industry, BDL and participating banks as well as technical staff in industrial enterprises and local NGOs involved in industrial pollution. The first component includes support to the Association of Lebanese Industrialists and the Association of Lebanese Banks to market the program through providing TA for the development of guidelines and training in selecting and evaluating environmental projects. The project will also support conducting environmental awareness and communication campaigns on pollution prevention and control in coordination with NGOs.

Step 6: Budget

77. The total costs of preparing ESIAR and LESIA reports as well as training and environment awareness and communication was estimated at US$350,300 during the five year of project implementation. This is exclusive from the mitigation and monitoring measures for each sub-project. The latter will be part of the investment costs during the engineering design of sub-projects.

Public Consultation on the ESMF

78. A public consultation meeting was organized at the MOE on March 27th, 2013 to present the findings of the Environmental and Social Assessment for the LEPAP where 38 participants attended the meetings. They included representatives of the ministries of the Environment and Industry, and CDR, the BDL, selected commercial banks, industrial enterprises from the private sector which are considered potential borrowers from LEPAP, NGOs (3 coalitions of NGOs in Lebanon were notified and they relayed the invitation to their members) and international organizations. The consultation was rich in terms of questions and suggestions made by participants. Representatives of the MOE as well Elard consulting enterprise staff including two experts on environmental aspects of the project have provided further clarification on the ESMF and answered various questions. The consultation documents relating to the environmental and social assessment (ESA) have been reviewed to take into consideration the comments made by participants. The participants expressed their support for the project and their willingness to actively contribute to its success.

Monitoring & Evaluation

79. Monitoring and evaluation of outcomes and results are outlined in the Results Framework (see Annex 1). A specific monitoring and evaluation sub-manual including baseline data and methodology for indicator measurement and evaluation will be developed in consultation with key stakeholders prior to effectiveness. M&E will include monitoring of safeguard documents.

80. Monitoring of project activities will be the responsibility of the PMU, which one part-time staff will be dedicated to this task. This position will be tasked to collect and present data in a standardized reporting format from the identified data sources in progress reports for bi-annual review by the Project Advisory Committee in conjunction with the Bank's supervision missions. Once approved, the progress reports will be partly or fully published on the PMU managed MOE webpage.

81. The project will include external evaluations not only prior the Mid-Term Review and End-of-Project Evaluation processes but provide for annual evaluation of both components and results related to the outreach and awareness raising campaign.

82. Communication of projects results and activities as well as project documents (e.g. project documents, safeguard documents, etc.) will be done through an upgrade of the existing MOE webpage. This, together with outreach efforts and awareness campaign under component A is expected to improve coordination among the different stakeholders and related initiatives and strengthen engagement and ownership.

83. The project was presented to donors and development partners during project preparation and strong coordination will be maintained during project implementation as the project is seeking the cofinancing (in addition to the Italian Government who has decided to finance this project in parallel through its Embassy in Beirut) to participate in the intermediation mechanism.

Annex 4: Operational Risk Assessment Framework (ORAF)

Lebanon: Environmental Pollution Abatement Project (P143594)

Project Stakeholder Risks						
Stakeholder Risk	**Rating**	**High**				
Risk Description: Residents around the industrial sub-project site could be affected by noise, sight and air pollution due to equipment transportation and installation. Moreover, traffic jams could occur during civil work implementation and equipment delivery. Equipment testing could generate more emission and discharge pollution before being fine tuned hence affecting upwind, downwind and downstream stakeholders. Staff trained under TA and Participating Banks are not at risk.	**Risk Management:** Sub-projects monitoring and safeguard implementation to mitigate possible risks affecting stakeholders will be entrusted to PMU. The latter will ensure that the safeguard guidelines (Environmental audits, EIA and Environmental and Social Management Plan) are duly complied with.					
	Resp:	**Status:**	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**
	Client	Not Yet Due	Both	☐	31-Dec-2015	
	Risk Management: Promotion among the development partners to attract their participation.					
	Resp:	**Status:**	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**
	Client	Completed	Preparation	☐	31-Jan-2014	
Implementing Agency (IA) Risks (including Fiduciary Risks)						
Capacity	**Rating**	**High**				
Risk Description: Lack of effective coordination among the two main implementing agencies, i.e., the PMU for CAPs and BDL for transfer of funds to PBs and subsequent/or delays in opening Letter of Credits by PBs could result in delays in project implementation. Financial management, procurement, safeguards and M&E requirements according to World Bank guidelines	**Risk Management:** The PMU will be responsible for project coordination and reporting under the overall supervision of the Project Advisory Committee. Bank supervision missions will assess the status of coordination on an on-going basis and work with top level officials in resolving issues.					
	Resp:	**Status:**	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**
	Both	In Progress	Both	☑		Monthly
	Risk Management:					

<table>
<tr><td rowspan="6">could not be performed according to plan and could result in poor project performance, effectiveness and reporting.

In particular identified procurement risks are the following: (i) No clear flow of procurement documentation; (ii) Difficulty to audit; (iii) No equal access by eligible bidders to procurement opportunities resulting in reduced competition; (iv) Evaluation based sometimes on restrictive processing; (v) Improper implementation of procurement activities under the project (in terms of efficiency, competition, transparency); (vi) Delay in project processing and implementation due to lack of proper planning; (vii) Technical specifications/TORs are sometimes vague or restrictive to a few bidders/firms, (viii) Possible interference in procurement decisions; (ix) Lack of trust in the system that does not always deliver results, (x) No control over project pace incurring delays; (xi) Insufficient oversight of procurement.</td><td>A Project Operational Manual (POM) was prepared and describes project implementation arrangements, roles and responsibilities, financial management, procurement, safeguards and M&E as well as the loan processing describing the identification, evaluation, and approval process of environmental sub-project investments.</td></tr>
<tr><td><table>
<tr><th>Resp:</th><th>Status:</th><th>Stage:</th><th>Recurrent:</th><th>Due Date:</th><th>Frequency:</th></tr>
<tr><td>Client</td><td>Completed</td><td>Preparation</td><td>☐</td><td>31-Dec-2013</td><td></td></tr>
</table></td></tr>
<tr><td>Risk Management:

TA is being provided under the project to strengthen MOE’s Monitoring, Compliance and Enforcement (MCE) system and the production of the CAPs in conjunction with the PMU.</td></tr>
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<tr><th>Resp:</th><th>Status:</th><th>Stage:</th><th>Recurrent:</th><th>Due Date:</th><th>Frequency:</th></tr>
<tr><td>Both</td><td>In Progress</td><td>Both</td><td>☑</td><td></td><td></td></tr>
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<tr><td>Risk Management:

PMU to implement the project in accordance with World Bank requirements and training will be provided to build the PMU team responsible for complying with World Bank guidelines and the delivery of World Bank requirement reports.</td></tr>
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<tr><th>Resp:</th><th>Status:</th><th>Stage:</th><th>Recurrent:</th><th>Due Date:</th><th>Frequency:</th></tr>
<tr><td>Both</td><td>Not Yet Due</td><td>Both</td><td>☐</td><td>01-Jan-2015</td><td></td></tr>
</table></td></tr>
<tr><td>Risk Management:

Mitigation measures have been agreed to on the basis of the financial management, procurement, safeguards and M&E (acceptable to the Bank) are in place. World Bank supervision teams will monitor implementation of these measures/guidelines carefully and promptly address any issues that could arise.</td></tr>
<tr><td><table>
<tr><th>Resp:</th><th>Status:</th><th>Stage:</th><th>Recurrent:</th><th>Due Date:</th><th>Frequency:</th></tr>
<tr><td>Both</td><td>Not Yet Due</td><td>Implementation</td><td>☑</td><td></td><td>Monthly</td></tr>
</table></td></tr>
<tr><td>Governance</td><td>Rating</td><td>Moderate</td></tr>
<tr><td>Risk Description:</td><td>Risk Management:</td></tr>
</table>

Overall senior management capacity should be generally adequate for this project and inter-agency coordination can be developed.	Emphasis on capacity development in PDO, project design and project implementation.					
	Resp:	**Status:**	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**
	Bank	In Progress	Both	☑		
	Risk Management:					
	Inter-agency coordination mechanisms will be part of project design.					
	Resp:	**Status:**	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**
	Bank	Completed	Preparation	☑		
	Risk Management:					
	A strong PMU will be established in MOE, with a Financial Officer and a Procurement Officer with experience in Bank or other international project procurement. Further training will be provided.					
	Resp:	**Status:**	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**
	Client	Completed	Preparation	☑		
	Risk Management:					
	An Operation Manual will define and standardize all FM and procurement procedures. As to procurement, prior review thresholds will initially be set low and raised in line with performance.					
	Resp:	**Status:**	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**
	Client	Completed	Preparation	☑		
	Risk Management:					
	A strong PMU will be established in MOE, with a Financial Officer and a Procurement Officer with experience in Bank or other international project procurement. Further training will be provided.					
	Resp:	**Status:**	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**
	Client	Completed	Preparation	☑		
	Risk Management:					

	An Operational Manual will define and standardize all FM and procurement procedures. As to procurement, prior review thresholds will initially be set low and raised in line with performance.					
	Resp:	**Status:**	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**
	Client	Completed	Preparation	☑		
Project Risks						
Design	**Rating**	**Substantial**				
Risk Description: For Component A: 5 preliminary CAPs are underway and others will be piloted. However, concerns were raised by Enterprises about the rigidity of procurement procedures. For Component B: PBs may be reluctant to absorb additional funding through BDL, especially if the terms are not competitive with market rates.	**Risk Management:** BDL is offering an incentive for PBs to participate in LEPAP: allowing the commercial banks to use BDL's 2013 Stimulus Package.					
	Resp:	**Status:**	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**
	Client	In Progress	Both	☑		
Social and Environmental	**Rating**	**Moderate**				
Risk Description: Some sub-projects to be funded under this loan might have negative environmental and social impacts during civil work implementation and equipment transportation, installation and testing (see Stakeholders above). New equipment could affect the labor occupational health.	**Risk Management:** The Environment and Social Management Framework identifies, minimizes, avoids, screens out, mitigates and monitors potential social and environmental impacts in compliance with World Bank policies and Lebanon's applicable laws and regulations. The ESMF will be applied by the PMU in the supervision of sub-projects to be financed. The ESMF was disclosed prior to appraisal of the loan, and will be adopted by the MOE prior to effectiveness. The ESMF will be an integral part of the Project Operations Manual (POM) for Lebanon.					
	Resp:	**Status:**	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**
	Client	Completed	Preparation	☐	01-Feb-2015	
Program and Donor	**Rating**	**Moderate**				
Risk Description: There are a number of Development Partners including	**Risk Management:** The World Bank has worked closely and liaised with all Development Partners active in					

IFC that have ongoing energy efficiency programs with BDL and Participating Banks. These programs could compete with LEPAP for certain interventions, e.g., energy efficiency could also reduce pollution.	energy efficiency and pollution reduction such as IFC, GIZ, Agence française de Développement, Italian Cooperation and Korean Cooperation from the scoping stage onwards in an effort to harmonize and seek cofinancing for LEPAP. Development Partner cofinancing is still sought by the World Bank and all Development Partners were invited to become Steering Committee observers. LEPAP terms are the most competitive among the various energy efficiency/pollution reduction loan facilities in Lebanon and CAPs will secure a MOE certificate on compliance to the enterprise that will become mandatory in the future, which is not the case for energy efficiency loans.					
	Resp:	**Status:**	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**
	Bank	Completed	Preparation	☐	31-Dec-2013	
Delivery Monitoring and Sustainability	**Rating**	**Substantial**				
Risk Description: There is a risk that the LEPAP will not necessarily sustain improvements of the state of the environment quality given lingering deficiencies in outreach and awareness.	**Risk Management:** Marketing outreach and awareness raising by PMU with the relevant actors will make sure that the CAP system, the lending facility and the necessity to reduce industrial pollution is mainstreamed across the public sector, the private sector as well as communities. Strong emphasis of M&E with robust baseline surveys to be prepared during preparation. Particular attention to be paid to capacity of PMU to perform a good-quality daily management of project implementation and on reporting mechanisms. The PMU will hire a full-time staff for monitoring and evaluation.					
	Resp:	**Status:**	**Stage:**	**Recurrent:**	**Due Date:**	**Frequency:**
	Bank	In progress	Both	☐	31-Dec-2017	
Overall Risk						
Overall Implementation Risk:	**Rating**	**High**				
Risk Description: The current political situation poses significant risk to the implementation of the project. In addition, there are project-specific risks including low implementing agency capacity and that the implementing agencies have virtually no experience with a project similar to LEPAP.						

Annex 5: Implementation Support Plan

Lebanon: Environmental Pollution Abatement Project (P143594)

1. Strategy and approach to implementation support. A number of measures aimed at ensuring implementation proceeds as expected will be put in place as follows:

- First, the Bank team is partly based in Washington, DC, and in Beirut. Senior M&E, Safeguards and Awareness/Outreach Specialists should be identified for implementation support missions.
- Second, the Bank will conduct in the first year 3 supervision missions and subsequently 2 supervision missions each year whereas a thorough implementation review will be carried out at mid-term implementation. The mission team will include Bank staff working on pollution management and other staff/consultants as need be. Moreover, there are inherent synergies existing between the proposed IDF Grant and LEPAP. This will enable supervision of the grant activities to be carried out by the task team of LEPAP. As regards the TORs for the consultants, these will be agreed upon between the implementing agency (i.e., MOE) and the TTL before any procurement activity starts.
- Implementation Support Plan is illustrated in Tables A5.1 and A5.2. Moreover, the LEPAP Advisory Committee will provide guidance to the proposed project (see Annex 3 with Figures A3.1 and A3.2 for Implementation Arrangements).
- The Italian Cooperation parallel funding of the PMU and TA was discussed and agreed upon by LEPAP negotiations.

Table A5.1. Proposed LEPAP Implementation Support Plan

Time	Focus	Skills Needed	Resource Estimate
0-12 months	• Establishment of the Special Account at BDL • Fiduciary, safeguard and M&E reporting • TA to MOE Staff • Awareness campaign and marketing outreach • Execution of CAPs quality of EAs/ESIAs/EMP (under ESMF), technological process selection, bidding documents and procurement of equipment contracts • Flow of funds: BDL loan disbursement to PBs to open letter of credit	• Core team skills • Financial management • Procurement • Environment and social safeguards • M&E • Awareness and Outreach	US$250,000 in BB for all focus points except for: • TA that is covered by Italian Cooperation grant – TA activities are funded by GEF ReGoKo project and the World Bank IDF window • the Execution of CAPs that are covered by GIZ/EFL until December 2013 and partly by the complementary activity, i.e., IDF and GEF ReGoKo project
13- 84 months	• TA to MOE Staff • Awareness campaign and marketing outreach • Execution of CAPs quality of EAs/ESIAs, technological process selection, bidding documents and	• Core team skills • Financial management • Procurement • Environment and social safeguards • M&E • Awareness and	US$150,000 in BB for all focus points except for: • TA that is covered by Italian Cooperation grant. Complementary activities are funded by GEF ReGoKo project until

Time	Focus	Skills Needed	Resource Estimate
	procurement of equipment contracts	Outreach	December 2014 and IDF until July 2016 • the Execution of CAPs are covered by Italian Cooperation grant, throughout the project lifetime and partly covered by complementary activities, i.e., GEF ReGoKo project until December 2014 and IDF until July 2016

Table A5.2. Proposed LEPAP Skills Mix Required

Skills Needed	Number of Staff Week / year	Number of Trips / year	Comments
Task team leader	4	2 international	
Financial Management	4	1 local	Core team based in Beirut
Procurement	4	1 local	Core team based in Beirut
Environmental and Social Safeguards	4	1 international	To be identified
Operational and M&E support	4	1 international	To be identified
Awareness and Outreach	4	1 international	To be identified

Annex 6: Financial and Economic Analysis

Lebanon: Environmental Pollution Abatement Project (P143594)

Background

1. An overall financial analysis was not performed as the intervention cost could only be determined for each enterprise borrowing funds after the completion of the Compliance Action Plan. Hence, the financial analysis will be conducted as part of the detailed feasibility study under the Compliance Action Plan to determine the rate of return of the pollution abatement investment as for instance, benefits accruing from energy efficiencies or water reuse over the lifetime of the investment could offset the funds borrowed through the LEPAP scheme. Hence, information about how to conduct a financial analysis for projects is appended to Annex 6 (Attachment 1).

2. Two analyses are performed in the context of LEPAP:

- A financial cost effectiveness analysis was performed by GIZ/EFL for 13 enterprises that provided preliminary results, and more detailed results were obtained for 5 enterprises with an ongoing CAP. These have been synthesized below.
- An economic analysis was performed and based on an order of magnitude of reduction of pollution loads from air emissions to determine the range of social benefits accruing to society from the implementation of the project. Wastewater discharges were not included in the analysis due to the difficulty in quantifying the positive impact on water bodies.

3. Financial analysis (i.e., commercial profitability analysis) and economic analysis (i.e., national profitability analysis) differ in several ways. The objective of commercial profitability analysis is to assess the net financial results of a project from the investor point of view, while the national profitability analysis aims to identify and measure the net economic benefits of the project from the society point of view. Moreover, commercial profitability analysis is based on prevailing market prices, while national profitability analysis is determined with the help of adjusted prices (i.e., shadow prices) that are deemed to be an approximation of true economic prices (reflecting the social opportunity cost). Similarly, for commercial profitability analysis, the time value of money is tackled by application of the private discount rate based on the prevailing interest rate of the capital market, while in the case of national profitability analysis, the social discount rate is applied, i.e., the rate at which Lebanon can borrow money taking into consideration the country risk.

Preliminary Financial Cost-effectiveness Analysis of the 13 Eligible Enterprises

4. A preliminary financial cost-effectiveness analysis was performed by GIZ/EFL during the detailed technical assessment for 7 out of the 13 reviewed enterprises (Table A6.1). For the 13 enterprises, benefits accrue in terms of wastewater treatment, waste (manure, sludge and solids) reduction, avoided methane emission, electricity generation, fertilizer production and avoided landfill space. However, these preliminary outputs do not take into consideration social benefits that will accrue to society in terms of health, environment, economic and social benefits.

5. Subsequently, a revised cost-effectiveness was performed for 5 enterprises that could constitute LEPAP's first pipeline of investments worth about US$5.3 million in terms of equipment. The total investment cost reaches US$6.8 million including civil works that will be borne by the borrowers. Currently, CAPs are underway for these 5 enterprises (3 food, 1 paper and 1 furniture) and funded under the complementary GEF ReGoKo project activity (Table A6.2).

6. Regarding the 5 enterprises, the wastewater treatment cost-effectiveness for 3 food enterprises range between US$1.8 and US$8.1 per m^3 of treated wastewater with a reduction of 98% equivalent to 132,000 m^3 of treated water per year free of Chemical Oxygen Demand (COD) and Bio-Oxygen Demand over 5 days (BOD_5) that could be reused. The manure transformation cost-effectiveness reaches US$4.3 per ton equivalent of 4,445 tons per year that will be transformed into compost with a 100% reduction in Total Suspended Solids (TSS). The mattress residue cost-effectiveness reaches US$912 per ton equivalent of 250 tons per year that will be reused to generate mattresses. The benefits are in terms of avoided landfilled waste. However, the cost-effectiveness after factoring in the price of mattresses made from recycled material becomes negative which means that the financial investment has a high rate of return. (Table A6.2).

Table A6.1. Preliminary Financial Cost-effectiveness Results from a number of the 13 Eligible enterprises including 5 Ongoing CAPs

Enterprise	Civil Work included	CAPEX	OMEX	Cost-effectiveness	Water Inflow	BOD	COD	COD reduction		TSS	Water Outflow	Electricity generation	Methane/ CO_2 reduction	Waste/ Sludge Manure reduction	Fertilizer output	Landfill avoided
	0=No 1=Yes	US$	US$	$/m^3 **$/ton**	m^3/d	mg/l	mg/l	%	Ton/year	mg/l	m^3/year	Kw/h	Ton	Ton/year		
#1	1	505,000	126,000	2.4	170	1,400	2,700	88%	131					2		
#2	0	1,000,000	158,000	32.0						2,150		Yes	Yes	5,545	Yes	Yes
#3	1	645,000	153,000	2.0				90%	239							
#4	0	1,400,000	110,000	5.4					720				Yes			
#5	0	207,000			80											
#6	0	160,000	15,000	2.4					60							
#7	1	173,000	33,000	**2.1**	50									5,920		Yes
#8	0	270,780														
#9	0	249,600	2,338								35,000					
#10	0	150,000			27m^3/ton											
#11	0	70,000			1.8 million m^3/y											
#12	0	565,500														
#13	1	578,000	382,835	**1,531**										Yes		Yes
Total		**5,973,880**														

Source: GIZ/EFL (2012).

Table A6.2. Pre-feasibility Pollution Abatement Cost-effectiveness for 5 enterprises Seeking Enterprise Borrowing through LEPAP

Enterprise	Treatment Option	Total Equipment Cost	Total Investment Cost	Water Inflow	BOD	COD	COD Reduction	BOD Reduction	TSS	Waste/Sludge Manure Reduction	$NPV_{3\%}$: Cost-Effectiveness CAPEX
		US$	US$	m^3/day	mg/l	mg/l	±%	±%	mg/l	ton/year	US$/Unit
#1	Anaerobic + Aerobic	1,540,500	2,280,000	170	4,000	8,000	98%	99%			$6.1/$m^3$
#2	Rendering	1,300,000	>1,300,000						2,150	5,445	$4.3/ton
#3	Option 1: Aerobic Reactor	361,400	954,000	50	11,100	25,500	80%	85%			
	Option 2: Anaerobic Reactor	1,501,500	1,725,000				97%	99%			$8.1/$m^3$
#4	TBD	224,000	>224,000	TBD	TBD	TBD	TBD	TBD	TBD		
#5	Foam Recycling	578,000	>578,000							20 own+230 others	(+) $912/ton eco. (-) $2,623/ton fin.
TOTAL 1 (including #3 option 1)		**3,234,000**	**4,003,900**								
TOTAL 2 (including #3 option 2)		**4,005,000**	**5,144,000**								

Note: all CAPEX cost-effectiveness analysis is done over 10 years with 2 inclusive years to install the equipment: avoided landfilling cost is set conservatively at US$30 per ton for manure and foam residue; recycled foam residue has a sales value of US$3.750 per ton; and reuse cost of treated water is not valued.

** #5 investment from a pollution abatement point of view is not cost-effective: US$912 per ton against an average US$150 per ton of landfilled waste in Lebanon. However, from a financial point of view, when the residue is reprocessed and sold (US$3,750 per ton), the investment is cost-effective with -US$2,623 per ton, which will provide significant gains to the company.*

Source: Adapted from GIZ/EFL (2012).

Economic Analysis of the LEPAP Scheme

7. By looking at the social profitability of a project, shadow prices" or "opportunity costs are used in an economic analysis instead of market prices (real) that will help determine the social profitability of an investment. Shadow prices are adjusted in the following way:

- Determination of Price Distortions: The conversion of the financial costs into economic costs is essential to reflect the value of the output (treated effluents) for the community. The objective of this calculation is to determine the opportunity costs of both the inputs and outputs. As taxes, duties and subsidies (such as for electricity) constitute internal flows in the national economy, these were not taken into account in the calculation of the economic costs.
- Labor: the wages applied for unqualified skills is the minimum wage without the social contribution. For the skilled job salaries, the conversion factor is taken equal to 1 but the social contributions are also not considered. Moreover, most labor needed for the whole project and other activities are assumed to be locally hired.
- Equipment, Goods and Infrastructure: A conversion factor of 0.8 (VAT of 10% and other import taxes) has been applied to calculate the economic costs of equipment, goods and infrastructure in order to deduct from them the included taxes (construction).

The conversion factors used are summarized in Table A6.3.

Table A6.3. Conversion factors for the economic analysis

Category	Factor
Energy	1.6
Services	1
Transport	0.85
Equipment and Goods	0.8
Labor	1 and social cost is not used
Salaries	1 and social cost is not used

8. **Calculation of Economic Expenditures**. On the basis of these conversion factors, financial expenditures were reviewed in order to determine their economic value. A number of additional key assumptions have been considered for the financial and economic analysis:

- The economic analysis is carried out over the FY2013-2019 periods, which is conservative as the benefits will accrue to society over the longer period of time.
- All designs and construction are performed over 2 to 6 years starting 2013.
- A real discount rate of 10% per annum is used for the economic analysis and 12% for the modified IRR.
- Costs and benefits are netted for inflation in the economic analysis.
- Real operations and maintenance (OMEX) cost is not included in the analysis.
- Three scenarios of industrial pollution were considered: 1% reduction of current emission loads; 2% reduction; and 3% reduction.
- All benefits are annualized and assumed to begin to accrue in 2015 for the economic analysis.

9. The economic analysis is based on a number of hypotheses as it is not known at the onset the type of pollution that will be reduced over the project life. Moreover, unit damage cost (used as a social benefit in the economic analysis) from criteria air pollution are available which is not the case for biological and chemical industrial discharge in water bodies. Hence, the economic analysis only looks into air pollution abatement with conservative scenario assumptions: a reduction of 1%, 2% and 3% of the industrial emission loads and derive the trade-off point in terms of optimum pollution abatement in order to have a viable project. The total project cost is considered in the economic analysis irrespective of how the funds will be allocated over air abatement or discharge reduction.

10. With regard to liquid waste, the Ministry of Energy and Water (MOEW) estimates that Lebanon produces roughly 310 million m³ of wastewater in 2012 of which 250 million m³ are from municipal and domestic establishments and 60 million m³ are from industrial enterprises.[15] Most industrial waste streams are discharged untreated into major water bodies including the Mediterranean Sea and the Litani River. When operational, downstream municipal water treatment facilities lack proper technological capabilities to treat such effluents, thereby representing a serious concern for the water quality of potable water supplies, irrigation and ecosystem services. However, wastewater pressure was not used in the economic analysis due to the unavailability of load/effect degradation figures.

11. As for air pollution, the European Union (EU) Emission Database for Global Atmospheric Research[16] (EDGAR) was used to determine the overall air pollution load in Lebanon in 2005 and provides the following results: 36,000 tons/year of PM_{10}, 185,000 tons/year of SO_2 and 69,000 tons/year of NO_x (Table A6.4). In 1998, the World Bank carried out a pollution load assessment study which estimate that industrial and public utilities emitting a total of approximately 20,000 tons/year of PM_{10}, 90,000 tons/years of SO_x and 25,000 tons/year of NO_x. Yet, these figures are 15 years old and should be considered as lower bound baselines. Nevertheless, they show that the industrial and public utilities loads represent the largest share of the air pollution load in Lebanon. Also, the industrial sector contribution to the total final consumption of energy in Lebanon in 2009 is about 13.3% and is emitting an estimated 2.6 million tons of CO_2.[17]

12. The EU EcoSense model was used to derive order of magnitude gains from 3 possible air pollution abatement scenarios. The analysis considered reduction in NOx, PM_{10}, SO_2 and CO_2 parameters. The industrial emission loads for the first 3 criteria pollutants are from the 1998 World Bank assessment study. These were considered to reflect the emissions in 2012 as the industrial sector has not fully recovered from the heavy damages sustained during the 2006 war with Israel. Moreover, no study was performed since the 1998 World Bank study (except for the Cement companies in Chekka) and information on industrial inputs are difficult to obtain so that it can be used in the World Bank IPPS model which estimates pollution load as a function of the sector and size of industrial activities. The industrial CO_2 emissions are derived from the International Energy Agency.

[15] Ministry of Energy and Water. 2012. National Strategy for the Wastewater Sector. Beirut
[16] EU website: http://edgar.jrc.ec.europe.eu.
[17] International Energy Agency website: www.iea.org.

13. The air quality model produces unit damage cost values in terms of € per ton of pollutant that was converted into € PPP, LP and then US$ equivalent. This takes into account the income differential between Europe and Lebanon adjusted for purchasing power parity (PPP). The estimates in € and US$ per ton of pollutant are illustrated in Table A6.5. These mean estimates introduce further uncertainty into the assessment. However, it is assumed that this uncertainty is reduced by using the lower bound values in the economic analysis (Table A6.6). It is not the current market price of CO_2 but rather the global CO_2 cost society will bear during the century that was adopted in the analysis. The monetary value of CO_2 is based on the European Commission[18] as a lower bound and the French study[19] as an upper bound.

Table A6.4. Lebanon estimated emission loads from criteria pollutant in 2005 and CO_2 in 2009, in Ton

Emission	**NH_3**	**NMVOC**	**NO_X**	**PM_{10}**	**SO_2**	**CO_2**
Total (2005 except CO_2)	14,000	66,000	69,000	36,000	185,000	19,307,552
Industrial			25,000	20,000	90,000	2,576,081
Scenario 1 : 3.00% reduction			750	600	2,700	77,282
Scenario 2 : 3.50% reduction			875	700	3,150	90,163
Scenario 3 : 4.00% reduction			1,000	800	3,600	103,043

Source: based on EDGAR software and data from EC (2008); DECC (2009); Centre d'analyse stratégique (2009); and IEA website: <www.iea.org>.

14. These unit values are multiplied by the number of units (tons of pollutant) to give total monetary benefits of meeting the air quality target. The mean values are indicative only and should not be interpreted as being any more likely than either the lower or higher range values.

Table A6.5. Unit damage cost values for criteria pollutant in 2005 and CO_2 in 2009, in 2012 US$ prices

	Year 2005					**Year 2009**
Input	**NH_3**	**NMVOC**	**NO_X**	**PM_{10}**	**SO_2**	**CO_2**
€PPP/ton (mean) 2008	**8,400**	**30**	**4,700**	**32,400**	**9,500**	**25**
€PPP/ton (low) 2008	*2,210*	*280*	*1,900*	*8,300*	*3,300*	*17*
€PPP/ton (high) 2008	*24,000*	*710*	*11,600*	*78,600*	*14,600*	*32*
US$/ton (low) 2012	**1,996**	**253**	**1,716**	**7,495**	**2,980**	**15**
US$/ton (mean) 2012	*7,585*	*27*	*4,244*	*29,257*	*8,579*	*22*
US$/ton (high) 2012	*21,672*	*641*	*10,475*	*70,976*	*13,184*	*29*

Note: € PPP 1 = LP 1,294.2 = US$0.863 in 2008 equivalent to US$0.903 in 2012 prices.
Source: EcoSence website <http://scenarios.ew.eea.europa.eu/fol079729/online-model-inventory/ecosense>; IEA website : <www.iea.org>; EC (2008); DECC (2009); and Centre d'analyse stratégique (2009).

15. The economic analysis is based a number of hypotheses as it is not known at the onset the type of pollution that will be reduced over the project life. Moreover, unit damage cost (used as a social benefit in the economic analysis) from criteria air pollution are available which is not the

[18] EC (2008); and DECC (2009).
[19] Centre d'analyse stratégique (2009).

case for biological and chemical industrial discharge in water bodies. Hence, the economic analysis only looks into air pollution abatement with conservative scenario assumptions: a reduction of 3.00%, 3.50% and 4.00% of the industrial emission load baseline and derive the trade-off point in terms of optimum pollution abatement in order to have a viable project (Table A6.6). The intermediation mechanism cost of US$15 million is considered in the economic analysis irrespective on how the funds will be allocated over air abatement or discharge reduction.

Table A6.6. Project economic and sensitivity analysis results

Indicators	**Economic Analysis Discount rate: 10%**			**Sensitivity Analysis**
	Scenario 1	Scenario 2	Scenario 3	Switch off Point
Air pollution abatement from baseline	3.00%	3.50%	4.00%	3.10%
Cost/Benefit Analysis				
NPV/7 years (US$million)	-0.3	1.6	3.3	0.001
IRR/7 years	7%	25%	39%	10%
Present value Benefit/Cost Ratio/7 years	1.2	1.4	1.6	1.2
Project viability	No	Yes	Yes	Yes
Ventilation of the Benefits				
NPV associated with avoided premature death (US$million)		1.15	2.29	
NPV associated with avoided morbidity (US$million)		0.33	0.65	
NPV associated with crop productivity increase (US$million)		0.10	0.20	
NPV associated with avoided infrastructure decaying (US$million)		0.07	0.13	

16. The economic analysis was performed to derive the social benefits accruing to society and the global environment. Under scenarios 2 and 3 that reduce air pollution loads by 3.50% and 4.00% respectively, the project is viable as it yields a net present value (NPV) discounted at 10% of US$1.6 million and US$3.3 million respectively over 7 years with benefit/cost ratios greater than 1 associated with a positive economic internal rate of return (IRR) of 25% and 39% respectively. The benefits could be further attributed to: avoided premature death (70% of NPV); avoided morbidity (20%); crop productivity increase (6%); and avoided infrastructure decaying (4%). The sensitivity analysis was only calculated to derive the switch off point which is an abatement of 3.1% of the industrial pollution load baseline that will maintain the viability of the project from a societal point of view (Table A6.6).

17. Lebanon's COED showed that the costs of degradation due to air and water pollution are the highest among the different categories. Air and water quality are public goods, and addressing them requires an integrated approach to addressing major pollution sources. Relying on economic instruments alone, will not be sufficient, while relying on regulatory instruments, may not be the most cost-effective way to addressing pollution. The pollution management system is strongest, when it involves and relies on a multitude of stakeholders working towards the same pollution management objectives: including government, private sector, financial intermediaries, the judiciary and the civil society. The proposed project as devised involved all these stakeholders (except for the judiciary): it provides incentives to the private enterprises to address their pollution through working with the financial intermediaries, it strengthens the MOE (public sector), and it facilitates publication of environmental quality reports on the MOE website – which will help provide information to the general population and civil society. Public sector

financing is key to putting this mechanism into action, and to providing the required incentives to ensure its long term sustainability.

18. The World Bank adds value through: World Bank involvement provides important leverage for additional funding from other donors; the Bank has significant regional and global experience in addressing pollution and developing similar programs. The design of this operation took into consideration and the experience gained and lessons learned in the Egyptian Pollution Abatement Project I and II. The project is directly relevant to the World Bank's mission to fight poverty, since pollution disproportionately affects poor people.

Attachment 1

Financial Analysis Basic Concepts

22. The international methodology of financial analysis of the project on a cash flow basis suggests conducting the financial analysis and the calculation of investment returns using the total costs of the investment (EC, 2008). For future enterprises in the context of the LEPAP, three performance indicators will be considered for the financial analysis to determine whether the project is sound:

- The Net Present Value (NPV), which is the difference between the discounted total benefits and cost;
- The Internal Rate of Return (IRR), which is the discount rate that zeroes out the NPV or the interest rate that makes the net present value of all cash flows equal to zero; and
- The Benefit-Cost Ratio, which is the ratio of the present value (PV) of benefits over the PV of costs over the lifetime of the project.

In order to perform a sound financial analysis, careful attention must be paid to the following elements:

The Time Horizon

23. By time horizon is the maximum number of years for which forecasts are provided. Forecasts regarding the future trend of the project should be formulated for a period appropriate to its economically useful life and long enough to encompass its likely mid/long term impact.

Determining Total Costs

24. The data for the cost of a project are provided by the sum of costs of investment (land, buildings, vehicle, etc.) and operating costs (personnel, raw materials, supply of energy, etc.). Not included in the costs are: depreciation and amortization, as they are not effective cash payments; any reserves for future replacement costs; and any contingency reserves, because the uncertainty of future flows.

Revenue Generated by the Project

25. Some projects may generate their own revenue from the sale of goods. This revenue will be determined by the forecasts of the quantities of goods provided and by the relative prices. Not included in the revenues are: indirect taxes unless they are charged to the investor; any other subsidies (transfers from other authorities, etc.).

Residual Value of the Investment

26. Among the revenue items at the final year considered, there is the residual value of the investment (e.g., standing debt, standing assets, such as buildings and machinery, etc.) that should represented with a negative sign in the financial analysis.

Adjusting for Inflation

27. In project analysis, it is customary to use constant prices, that is to say prices adjusted for inflation and fixed at a base-year. However, in the analysis of financial flows, current prices may be more appropriate; these are nominal prices effectively observed year by year. Therefore, the use of current prices is in general recommended.

Financial Sustainability

28. The financial plan should demonstrate financial sustainability, which is that the project does not run the risk of running out of money; the timing of fund receipts and payments may be crucial in implementing the project. Sustainability occurs if the net flow of cumulated generated cash flow is positive for all the years considered.

Determining the Discount Rate

29. To discount financial flows to the present and to calculate NPV, the suitable discount rate must be defined and is usually considered roughly equal to the opportunity cost of capital.

Sensitivity Analysis

30. A sensitivity analysis needs to be performed by increasing the costs and/or reducing the revenues to gauge the risks and determine the factors that affect most the performance indicators.

Annex 7: Industrial Pollution Management System

Lebanon: Environmental Pollution Abatement Project (P143594)

Introduction

1. Lebanon is facing now with disquieting environmental issues which have begun to threaten the country's sustainable development and the potential for future generations to have access to the resources necessary for their socio-economic needs. Lebanon's present legal and institutional framework has begun to prepare the country for resolving these issues. In the meantime, these efforts need to be reinforced. As described below, Lebanon has made substantial progress to move towards environment sustainability but many challenges remain to be met.

A Progress towards Environment Sustainability

2. Despite Lebanon's unstable political situation and weak economic performance, it has achieved substantial progress in its institutional and legal framework since the establishment of the Ministry of the Environment in 1993. Today the Ministry consists of 70 administrative technical staff in all the major environment themes, complemented by about 30 staff working in the context of internationally funded/managed projects. This Ministry works closely with the sector ministries such as the Ministries of Finance, Industry, Energy and Water, Public Works and Transport, as well with the Banque du Liban (BDL) and the Council for Development and Reconstruction (CDR) in mainstreaming environment in several sectors of the economy.

3. Lebanon also has a plethora of environmental Laws and regulations as well as other legislations related to the environment. Most importantly are the Environment Protection Law no. 444-2002 which included all the principles of the Rio Declaration on Environment and Development (1992), as well the three major Decrees: the Strategic Environmental Assessment (SEA) Decree no. 8213-2012 (the first enacted Decree in the Middle East and North Africa Region to incorporate the environmental considerations at the early stage of the decision making process of policies, plans and programs); the Environmental Impact Assessment (EIA) Decree no. 8633-2012 which is a prevention tool for predicting and mitigating adverse impacts in projects; and the Environmental Compliance for Establishments Decree no. 8471-2012 that will regulate all activities that may cause harmful pollution and environmental degradation. All enterprises will be required to apply for an environmental compliance certificate every three years as part of a construction or operation permit.

4. The judicial system in Lebanon has also been reinforced by the designation of a special general prosecutor in each of the five governorates to look inter alia at environmental issues and many of the judges were provided with training and jurisprudence cases to enable them to enforce the environmental Laws and regulations. A draft Law to establish an independent environmental prosecutor was prepared with World Bank assistance, approved by the Council of Ministers in 2012 and forwarded to Parliament. A draft Decree for establishing the environment police was prepared and awaits clearance by the Ministry of Interior and Municipalities.

5. The MOE has also developed a series of policy tools for setting environmental- related priorities. In doing so, the MOE has relied on a number of processes, namely the National Environmental Framework Strategy of 1996 (updated in 2012-2013) followed by the draft National Environment Action Plan of 2005 -which will be updated within the context of the EU funded Support to Reforms- Environmental Governance (StREG) Program (further described below) which define Lebanon's environmental priorities; the Lebanon Country Environment Analysis (CEA) of 2011 which linked national environmental priorities to priorities for sustainable growth; and the State of Environment Report (SOER) of 2010 which is an objective compendium on the state of the environment with some analysis of environmental trends and the future today. The MOE in partnership with GIZ has prepared a policy paper (2012) on industrial wastewater management and compliance, which provides a set of recommendations to move forward towards achieving industrial compliance for wastewater discharge; this policy paper is currently being turned into an Action Plan in close coordination with all stakeholders. Also the MOE UNDP assistance has prepared a business plan for combating pollution of the Qaraoun Lake along the Litani River.

6. The Ministry of Energy and Water Resources has also developed in 2012 The National Water Sector Strategy and the National Wastewater Strategy which, inter- alia, aim at: improving the water and wastewater quality by improving environmental standards and establishing pollution control programs; reaching pre-treatment of all industrial wastewater by 2020; and evaluating the environmental consequences of the proposed strategies through the preparation of an SEA which will be conducted in the third quarter of 2013. Also the National Strategic Plan of the Electricity (2010) calls for the use of sources of conventional energy which are environmentally friendly namely the use of natural gas, of renewable energy and waste to energy.

7. In addition to the policy tools that were developed, the Lebanese Government has invested in water, waste water and solid waste, an average of US$200 million[20] a year between 1999-2008 or 1.3% of its GDP. Such percentage is considered by the CEA, as one of the highest among the Middle East and North African Countries. The BDL (Central Bank of Lebanon) is implementing an excellent initiative to support rural development and the environment through providing subsidy on interest rates to environmental projects and exemptions on compulsory reserves to stimulate commercial banks to grant concessionary loans to the environment sector and particularly to green investments.

8. All this progress could have not been achieved without the technical and financial support of many Development Partners working in Lebanon; among them are the AfD, EIB, EU, GIZ/KfW, Italy, The GEF, The Multi-Lateral Fund Protocol, UNDP, USAID, and the World Bank. The Development Partners succeeded not only in putting the issue of environment on Lebanon's environmental policy agenda, but in building the environmental infrastructure at the national level, and at the local level.

9. In order to support further Lebanon's policy, planning and investments in the environment sector, the MOE in collaboration with CDR is implementing, since 2007, a €8.5 million Environmental Fund for Lebanon (EFL) which is financed as a grant by the German Government

[20] Lebanon Country Environment Analysis, 2011.

trough GIZ. This program aims at reducing environment risks and economic impacts of the 2006 war and of undeserved areas in Lebanon. Until now 6 industrial enterprises have benefitted from this fund and have reduced their waste water pollution. Also EFL is providing TA to industrial enterprises in Lebanon for the preparation of environmental investment plans which would form the basis for acquiring financial support. The Ministry obtained an € 8.0 million grant from the European Union for the StREG Program. Its overall objective is to improve the environmental performance of the Lebanese public sector through environmental governance reforms. The program's specific objective is to build effective capacity within MOE to plan and execute environmental policy, including mainstreaming enforcement within key line-ministries. This program is scheduled to be implemented starting early 2014. Also, the GEF ReGoKo project and the World Bank are providing complementary TA in the amount of US$200,000 and US$80,000 respectively in developing and applying the procedures and the guidelines for the preparation of a CAP so that to have access concessionary loans and grants from BDL in order to finance their pollution abatement investments.

Several Challenges are still to be met

10. Despite considerable progress in shaping Lebanon's legal and institutional framework and providing substantial public funds for financing its infrastructure after the war, the MOE believes as the CEA stated that Lebanon is at the early stage of Lebanon's *transition* to environmental sustainability which remains low. Lebanon will not be achieving by 2015 the MDG target No.7 related to reversing environmental degradation in Lebanon. Lebanon's environment performance index (EPI) from 2012 shows that Lebanon is still ranked 94 among 132 countries indicating weak scores in environmental health and economic vitality in 2012. The cost of environmental degradation which is a measurement of environment sustainability and is related to the present welfare of the society was estimated by the CEA to be 3.7 % of GDP of 2005 corresponding at 970 million at 2008 prices. Water pollution remains the most prevailing cause of environmental damage and all the air pollutants increased in absolute terms over the period 2000-2005, which makes urban air pollution a growing problem. Furthermore, the enforcement and monitoring regime and the lack of disclosure of information continue to remain the weakest chain in the environmental management system.

A Proposed Industrial Pollution Management Policy (IPMP): **A Cornerstone of Environment Sustainability**

11. The Government believes that solutions aimed at remedying at Lebanese challenges should be implemented gradually and focusing first on those issues that are affecting public health and natural resources degradation. Addressing these issues should not be limited to policy statements and to investments that are disconnected from Lebanon's' environmental priorities. They should be driven by the performance record of the Government to engage in policy reforms, improve governance and accountability in specific and well defined pollution management systems that are considered to be the cornerstone for Lebanon transition to environmental sustainability.

12. The first comprehensive policy that the Lebanese Government would like to address with the assistance of its Development Partners is the establishment of an industrial pollution management system (IPMS). The reason for selecting the industrial sector is based on the

premises that Lebanese enterprises are an important pillar of the economy contributing to about 21.5% of the country's GDP. Contrary to Lebanon's land use planning, many of the 71 industrial zones[21] have been now surrounded and included among the urban areas. The industrial sector is also a major contributor to pollution especially in industrial waste water, putting greater pressures on the environment, while becoming increasingly prominent and visible and is likely to negatively affect Lebanon's future investments in the water, waste water, energy and industrial sectors.

13. The proposed Industrial Pollution Management System (IPMS) will consist of a set of processes and practices that would enable the polluting enterprises to control and reduce their pollution at an acceptable level, improve their environmental performance and promote their use of clean and efficient technologies.

14. Since this will be the first system that the MOE plans to introduce, the IPMS will be based on the following principles:

a) **Understanding the Lebanese Political Economy:** The proposed system should take into consideration the Lebanese reality which is usually based on a consensus between the different interest groups. Trying to provide solutions that may be optimal in other countries could not be transposed to Lebanon without understanding Lebanon's political economy.
b) **Maximizing the Participation of Major Stakeholders:** The success of such system depends on the involvement of major stakeholders that could have different objectives and benefits other than pollution management such as competitiveness and financial benefits. These stakeholders consist of five major groups: (a) the government; (b) the private and public polluting enterprises; (c) the financial institutions; (d) the judiciary; and (e) the civil society organizations. No one group should take precedence over another. The collaboration and cooperation of each group are essential for reaching common agreement on how best to maximize an effective pollution management system as these groups will act as checks and balances on one another.
c) **Piloting the System:** The introduction of this system should be on a pilot basis in which both the process and the product are important for experimenting these tools and assessing them on a roll-over basis.
d) **Voluntary Participation:** The implementation of this system should be on a voluntary basis during a period of 2-3 years in which the MOE and the Ministry of Industry (MOI) will effectively strengthen their monitoring and enforcement regime at the national and regional levels. When such monitoring and enforcement regime will be strengthened and be coupled with a mechanism of recourse to justice, The MOE will not rely on a voluntary approach and it will require that polluting enterprises will strictly comply with the Lebanese standards and guidelines.

15. Based on the above principles, the Government is prepared to put in place during the pilot phase, the following processes and tools for the implementation of the IPMS namely:

a) Reinforcing the Compliance and Enforcement System within the MOE, and at broader national level through the six Inter-Ministerial Permitting Committees (IPCs) which is headed by the MOI;

[21] GIZ policy paper on , Industrial waste water management and compliance, April 2012

b) Establishing an Environment Compliance Fund at the BDL for financing industrial pollution investments through selected commercial banks; and
c) Fostering partnership with the Association of Lebanese Industrialists (ALI), with the Chamber of Commerce, Industry and Agriculture (CCIA) and selected NGOs to be the advocate in encouraging industries to comply on a voluntary basis with the Lebanese environmental regulations provided that an incentive system is put in place.

In order to achieve these objectives, the following actions will be taken:

A. Reinforcing the Compliance and Enforcement System

16. Such reinforcement will consist of optimizing the existing compliance tools and strengthening the relevant services/departments at the MOE.

The following inter-related tools will be introduced:

a) The Compliance Action Plan (CAP), a core section of the Environmental Audit, as a requirement from benefiting from soft loans and economic incentives. The CAP is intended to improve the overall environmental performance of a polluting enterprise; and enable the enterprise to move towards compliance with the Lebanese environmental regulations. It will be a commitment document for each enterprise to develop a comprehensive pollution abatement plan, agree on its content with the MOE and on its financial and human resources over a period of realistic duration; and
b) The Environment Compliance Certificate as required in the Decree no. 8471-2012 which will be put in operation on a voluntary basis during the first period (as of the second half of 2013). It will be a tool for integrated pollution control and management by defining legally binding requirements to protect human health and the environment at the plant level and will complement the CAP.

Concerning the strengthening of the relevant services/departments, it will consist of three systems namely:

1. The Environment Impact Assessment (EIA) system, within the Environmental Technology Service
2. The Environmental Compliance Committee, within the Urban Environment Service
3. The Monitoring and Enforcement system

17. The EIA system will be strengthened by preparing EIA sector guidelines and terms of reference for EIA and audits of polluting enterprises that represent significant risk to human health and the environment such as cement, fertilizers, tanneries, metal and chemical industries, slaughterhouses and large agro business industry. Recently, all EIAs included in the EIA Decree no. 8633-2012 have been submitted for public consultation and access to these EIA reports facilitated to the public by the MOE.

18. A new Environmental Compliance Committee will be designated within the Urban Environment service that would: (a) provide technical support on pollution control technologies and their costs to the industry; (b) develop an information system on polluting enterprises; (c) assist the polluting enterprises in the development and follow-up of their Compliance Action

Plans; and (d) negotiate, issue and follow up on the environment compliance certificate as called for in the MOE Decree no. 8471-2012.

19. The Monitoring and Enforcement system will be strengthened within the context of the EU funded StREG Program by: (a) developing and providing specific guidelines for monitoring and enforcement that would be shared with the polluting enterprises; (b) establishing clear and transparent environmental rules and regulations for the privates sector for self-monitoring and inspections; and (c) inspecting polluting enterprises in accordance with an annual plan, reviewing and verifying the emissions and discharges charges, imposing fines and taking non-compliant industries if necessary to court.

20. The six Inter-Ministerial Permitting Committees chaired by the Ministry of Industry will be strengthened as they are responsible for issuing the final permit for construction and operation to all industrial enterprises in their respective governorates. The MOE will be prepared to provide TA and training to its members on industrial pollution control. Each of these committees should be able to follow up on the monitoring aspect the environment compliance certificate and ensure its collaboration with the polluting enterprises, which is essential for their buy in and for meeting their realistic actions for pollution control.

B. Establishing an Environment Compliance Fund

21. The present enforcement system as described in Law no. 444-2002 is based on the Command-and-Control (CAC) approach whereby all enterprises should abide by the air and water standards with no grace period provided. Many industries were found not in compliance with existing environmental Laws, regulations and standards. Many claims that the environmental Law, standards and regulations were not in effect when they made the necessary investments and many of them do not even have a license to operate, yet their facilities generate pollution. In order to help resolve such situation, the MOE would like to establish a complementary strategy to CAC that would ensure environmental compliance while improving the environmental performance of the enterprises and could in turn lead to an increase in their production and competitiveness in general. Experiences from developed countries and emerging economies show that such CAC must be complemented by an incentive-based approach to encourage polluting enterprises to comply with the terms of the Law and improve their production.

22. As stated above, the BDL through its Circular no. 187 is providing subsidized loans to industry (establishment/expansion of industrial enterprises). It has also expanded its subsidized loans to include ecological loans to individuals through Circular no. 7835 for renewable energy, green investments, preservation of cultural heritage and landscaping, these loans were not exclusively used for pollution control.

C. Communication and Awareness Raising

24. Communication and awareness raising constitute an instrumental element to achieve the objective of the IPMS. A well-designed communication and awareness raising activities will contribute to the needed shift to behaviours, approaches, and practices related to industrial

pollution control. Although the intention is to reach and involve a diversified set of stakeholders, it will be more appropriate during the pilot phase, to focus primarily on private sector industrialists represented by the Association of Lebanese Industrialists (ALI) and with the Chamber of Commerce and Industry and Agriculture (CCIA) and selected NGOs in the pollution control field. ALI is the main national association of manufacturing companies operating in Lebanon. It deals with both economic and social issues concerning business and advocates a policy of balanced industrial development for all Lebanese regions. CCIA represents the interests of the private economy, contributes to the formulation of economic policies and to the elaboration of legislation that impacts business activity, develops partnership and dialogue between the business sector and the government, and provides a broad array of services to enterprises. Both stakeholders are fully convinced that protecting the environment is good for business and for improving the performance and competiveness of their enterprises. Furthermore a limited number of selected NGOs, whose constituencies are actively involved in pollution control, will be also participating in the environmental awareness and communication campaigns.

25. The MOE intends to sign a memorandum of understanding with these partners in which they are expected to: (a) raise awareness about possible solutions to challenges and opportunities of controlling pollution and improving environmental performance; (b) stimulate the adoption of pollution management policies/practices, including the adoption of clean technology; (c) encourage the flux of information among industrialists to obtain their environment compliance certificate and have access to concessionary loans and grants for pollution control; and (d) stimulate the creation of synergies and cooperation with relevant pollution control initiatives, organizations and projects co financed by the development partners. Since each one of the partners has a particular mandate and set of responsibilities, the best methods of communication and awareness raising are considered those transmitting well-targeted messages. As such, the actions proposed will be a combination of publications, consultation meetings and events that will be defined by mutual agreement in the memorandum of understanding.

Implementation of the Industrial Pollution Management Policy

26. The Government of Lebanon is making substantial efforts to implement the industrial pollution management policy through projects that could be financed by its Development Partners. The World Bank has allocated a US$15 million loan for a Lebanon Pollution Abatement Project (LEPAP) whose objective is to reduce pollution in targeted industrial enterprises and strengthen the monitoring and enforcement capabilities of the MOE through TA and through establishing a financial mechanism for supporting pollution abatement investments. This project is under preparation GIZ has committed a grant amount of US$500,000 and GEF has allocated US$200,000 through the Regional Governance and Knowledge Generation Project (ReGoKo) of the Sustainable Med Program for participating in LEPAP. Assistance was also sought for the European Commission, the Agence française de Développement, the Italian Cooperation (who decided in June 2013 to give a grant of US$3 million), and the Republic of South Korea who will hopefully be able to join in this very important project. Meanwhile LEPAP, once financed, will work in synergy with the EU financed StREG Program as it will prepare a national environmental compliance program (NECP) to cover major sectors that would affect the economy as well as to strengthen the environmental capacity of other sector ministries.

The MOE also prepared below a set of actions with a time schedule to proceed with the implementation of this project.

ACTION SCHEDULE

Elements	Responsibility
Ministerial Decision highlighting terms, conditions, procedures and guidelines for the implementation of the Environment Compliance Decree	H.E. the Minister of Environment
Appointment of a Project Management Unit (PMU) with responsibilities and functions to complete the design and implement LEPAP	H.E. the Governor of BDL
Ministerial Decision to nominate a Compliance Committee within the Urban Environment Services and to appoint a Project Management Unit (PMU) with responsibilities and functions to complete the design and implement LEPAP	H.E. the Minister of Environment
Signing a Convention between BDL and the MOE for providing concessionary loans and grants for pollution abatement investments	H.E. the Minister of Environment/H.E. the Governor of BDL
Publication on the web site of the Ministries of Environment, and Industry, as well as BDL of the procedures, terms and conditions for accessing concessionary loans and grants for pollution abatement investments	MOE/PMU, MOI and BDL
Preparation of a pipeline of audited sub-projects for potential financing by BDL	PMU/EFL
Preparation of Matrix of Responsibilities between the various departments of the MOE	MOE
Preparation of an annual program for monitoring and enforcement	MOE and the Inter ministerial Permitting Committee
Selection of participating banks for LEPAP	BDL/participating banks/ PMU
Memorandum of Understanding for the implementation of the communication and environmental awareness campaigns	MOE with ALI, CCIA and selected NGOs