

SUSTAINABLE ENERGY STRATEGY FOR LEBANON

Country: **Lebanon**

UNDAF Strategic Goal 1: Enhanced National Decision-Making Capacity

UNDAF Operational Objective 1.1: To promote national commitment to a strategic development vision and its implementation

SRF/MYFF Outcome 2: National capacities and policy formulations supported and strengthened to reach Sustainable Development

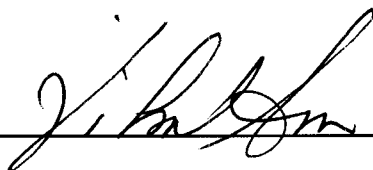
SRF/MYF Goal 3: Energy and Environment for Sustainable Development
SRF/MYFF Service Line 3.1: Frameworks and Strategies for Sustainable Development


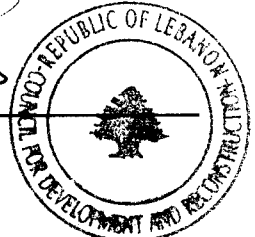
Implementing Partners: Ministry of Finance
Ministry of Energy and Water
United Nations Development Programme

Programme Period:	2007 - 2009
Programme Component:	Energy and Environment for Sustainable Development
Project Title:	Sustainable Energy Strategy for Lebanon
Award ID:	00045146
Project Duration:	2.5 years
Management Arrangement:	Support to NEX

Allocated Resources	
Government (MoF)	500,000 USD
LRF (Spanish)	2,000,000 USD *
UNDP TRAC	100,000 USD
LCECP (GEF)	550,000 USD*
SWH (GEF)	1,000,000 USD*
Greek	450,000 USD *
SIDA	150,000 USD *
Total Budget:	5,350,000 USD
UNDP Support Fees	7%

* these funds may not actually appear within this project budget but as a parallel contribution

Agreed by Ministry of Finance 

Agreed by Council for Development & Reconstruction  

Agreed by UNDP  



Government of Lebanon

United Nations Development Programme

Sustainable Energy Strategy for Lebanon

The energy sector in Lebanon faces great challenges from both the supply side and demand side. At present, the Government of Lebanon is subsidising huge deficits in the electricity sector which further stresses an already high public debt. The proposed sustainable energy programme aims at supporting the Government of Lebanon demand-side energy management which would decrease its fiscal burden and shift the national market towards increased energy efficiency and small-scale renewable energy applications. The programme works at two levels: implementation of demonstrative models of energy efficiency applications and solar thermal systems in all public buildings; and setting a fiscal and legislative environment that would encourage the private sector and the public at large to adopt similar sustainable energy approaches.

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Acronyms

APR	Annual Project Report
CDR	Council for Development and Reconstruction
CO	UNDP Country Office
CO ₂	Carbon dioxide
EE	Energy Efficiency
EDL	Electricite du Liban
ESCO	Energy Service Company
EU	European Union
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse Gas
IRI	Industrial Research Institute
LCECP	Lebanese Centre for Energy Conservation Project
LIBNOR	Lebanese Norms Institute
LASI	Lebanese Association for Solar Industries
LRF	Lebanese Recovery Fund
LSES	Lebanese Solar Energy Society
MDG	UN Millennium Development Goals
MoE	Ministry of Environment
MEW	Ministry of Energy and Water
MoET	Ministry of Economy and Trade
M&E	Monitoring and Evaluation
MYFF	Multi-year Funding Framework
O&M	Operations and Maintenance
QPR	Quarterly Progress Report
PM	Project Manager
PB	Programme Board
RCU	UNDP Regional Co-ordination Unit
RE	Renewable Energy
SWH	Solar Water Heating
SRF	Strategic Results Framework
TPR	Tripartite Review
UNDAF	United Nations Development Assistance Framework
UNDP	United Nations Development Program
UNEP	United Nations Environmental Program
UNFCCC	United Nations Framework Convention on Climate Change

Part I – Situation Analysis

National Context

One of the predominant challenges of the next century will be to provide the world's population with the needed resources for a better standard of living and ensure poverty alleviation while avoiding disastrous natural resource depletion and other environmental damage. A difficult path to economic growth still lies ahead for most countries; growth that depends on industry, transport and commerce. The expansion of energy supplies and supply of electricity are critical factors in economic growth that have high monetary and environmental costs.

In Lebanon, the combined consumption of energy in industrial plants, commercial and buildings is high, representing around 60% of the national energy bill. The potential for energy savings is important in these sectors and presents essential investment opportunities in Lebanon. Lebanon imports around 97% from its needs from fossil fuel and in 2004, the national energy bill amounted to around 1.6 billion USD (20% from the annual public expenditure and around 7.8% from the national GDP). This national energy bill increased in 2005 and reached 2.1 billion USD (26% from the annual public expenditure and around 10% from the national GDP).

Despite major steps that have been taken by the Government of Lebanon (GoL) since 1990 towards improving the electricity sector, it is still facing major problems mainly inability in meeting the national demand (high level of rationalisation of electricity), large financial subsidies to Eléctricité du Liban (EDL) (around 1.0 USD billion in 2006), and high technical and non technical losses. Lowering the budgetary support to EDL would pave the way for achieving fiscal sustainability, stimulating economic activity, and reducing the need to raise the tax burden in the future. With the sudden onset of the July 06 conflict, the financial burden of an already existing large public debt on the GoL was only worsened; the direct and indirect costs of the war far exceeded the capacity of any middle-income country to bear.

Accordingly, the reform of the power sector through phased fiscal adjustment that aims at increasing primary surplus through streamlining expenditures and raising revenues in ways that minimise the negative impact on the poor is the most important expenditure measure identified by the GoL, as proposed in the Paris III Conference¹. The GoL is under great pressure to initiate such a national energy reform that deals with supply-side energy management. However, it must be noted that this reform agenda does not look at any alternative to fossil fuel as an energy source. Furthermore, a gap remains in the energy demand-side management since no end-use energy conservation programmes are put forth.

Although, end-use energy conservation is emerging as a widely accepted viable alternative to supply side expansion, Lebanon finds itself today without the proper framework to address end-use energy conservation issues in a systematic and comprehensive manner. Therefore, the adoption of a national sustainable energy strategy would compliment and boost the GoL's already planned supply-side management reform of the energy sector with the demand side management approach. The proposed strategy would provide the following benefits to the GoL:

- Cost-effective solutions to the high national energy bill
- Practical and feasible measures to reduce the national energy consumption
- Lower financial investments needed for future power generation
- Preservation of national energy security
- Sound environmentally practices towards reductions of Green House Gases

National policy framework

In year 2002, the Government of Lebanon issued decree # 462 that recognizes the issue of renewable energy in Lebanon as well as the involvement of the private sector in the development of the electricity sector in Lebanon. Unfortunately, to date, this law is not properly implemented nor has an

¹ Paris III document entitled Recovery, Reconstruction and Reform: International Conference for Support to Lebanon, 25 January 2007, Paris

authority/regularity body been created to take on the responsibility of the renewable energy sector. The EU-IPP Energy Module drafted an energy law for Lebanon which it presented to the Ministry of Energy and Water for review and consideration. The EU-IPP draft energy law contains a section on energy conservation and renewable energy which briefly describes the measures needed to promote the use of energy efficiency and renewable energy technologies on the national level.

MEW, through the UNDP GEF-funded project, Lebanese Centre for Energy Conservation Project (LCECP), has provided the necessary technical baseline to the GoL to demonstrate the importance of energy efficiency, conservation and alternative sources of energy as an entry point for national energy reform. In order to sustain and institutionalise the work of the LCECP project, the MEW recently signed an agreement with UNDP to legally establish the Lebanese Centre for Energy Conservation within the structure of MEW. The centre will act as the national energy conservation and renewable energy institute providing the necessary support to the GoL in setting the trend for the energy efficiency and energy renewable in the Lebanese market, execute the adopted energy efficiency and renewable energy policies, and coordinate with national and international organizations to secure the necessary technical know-how, financial donations and investments required in promoting energy efficiency measures and renewable energy applications.

One of the on-going activities within the LCECP's responsibilities is the promotion of energy efficiency in Lebanon and to support the Government of Lebanon in the assessment of the existing national policies and regulations and to identify barriers to energy efficiency in order to facilitate the market development and penetration of energy efficient equipments. Accordingly the LCECP will follow on the official adoption of the government of Lebanon of the proposed policies. LCECP is developing an elaborated energy conservation law in close coordination with various stakeholders that aims at setting the national policy framework for energy efficiency equipment and services.

Moreover, the Energy Efficient Buildings (EEB) Project, completed in 2005 at the Ministry of Public-Works and Transport, has supported the development of a voluntary standard on energy conservation measures for building envelopes (Thermal Standard for Buildings). The project proposed that these standards remain voluntary till the year 2010 and mandatory thereafter if the construction market becomes ready. Nonetheless, the future adoption of the Thermal standards for Buildings was facilitated by the creation of certain optional incentives in the recently adopted Building Law.

Related On-going and Planned Projects

Since early 2006, and especially after the July 2006 conflict, Lebanon has seen an increase in the implementation of energy efficiency and renewable energy applications particularly in the reconstruction efforts underway in South Lebanon, the Bekaa and the southern suburbs of Beirut. A snowball effect has been recently observed with growing donor interest in this thematic area that not only improves the living conditions and ultimately decreases poverty of the population at large, but also decreases financial pressure on the GoL while reducing environmental impacts.

Below is a brief description of each of these projects:

A. Chinese Solar Thermal Water Heaters Donation

Funding Agency	Economic & Trade Cooperation (ETC) – China
Fund Amount	625,000 USD (estimated)
Target Area	South Lebanon
Beneficiaries	Residential areas (domestic applications)
Starting Date	Nov. 2005
Duration	1 year
Type of Project	Individual solar systems (Evacuated Glass Tube – Heat Pipe System)
Project Capacity	500 solar units (200 L) ²
Project Status	completed early 2007

B. Swedish Solar Thermal Water Heaters Donation

Funding Agency	Swedish International Development Agency (SIDA)
Fund Amount	500,000 USD
Target Areas	Beirut, Bekaa & South Lebanon

² Almost 220 solar units were damaged during July 2006 war

Starting Date	March 2007
Duration	1.5 years
Beneficiaries	Public buildings (public hospitals, orphanages, red cross centers, health centers, civil defense centers)
Type of Project	Individual & collective solar water systems
Project Capacity	93 individual units (100 – 200 L) 12 collective systems (35,000 L hot water)
Project Status	Beneficiaries selected Basic design/equipment specifications prepared International tender documents issued Offers received, evaluated and bidders selected

C. Hellenic Aid Donation – Energy Efficient Reconstruction

Funding Agency	Government of Greece (Hellenic Aid)
Fund Amount	680,000 USD ³
Project Areas	South Lebanon and southern suburb of Beirut
Starting Date	June 2007
Duration	1.5 years
Beneficiaries	Residential areas (domestic applications) and MEW
Type of Project	Individual solar units and solar testing facilities
Project Capacity	350 individual units (150 – 200 L) Solar testing facilities
Project Status	to be initiated

D. Spanish Donation – Community Energy efficiency & renewable energy Demonstration Project for Recovery Of Lebanon (CEDRO)

Funding Agency	Government of Spain through the Lebanese Recovery Fund- Fund
Amount	2 million Euros (approved) and 5 million Euros (earmarked)
Project Areas	Bekaa, South Lebanon and Akkar
Starting Date	August 2007
Duration	1.5 – 2 years
Beneficiaries	Public buildings (public hospitals, municipalities, ministries, etc...)
Type of Project	Solar thermal systems and energy efficient applications ⁴
Project Capacity	to be determined
Project Status	to be initiated

E. Global Environment Facility (GEF) – Gloval Solar Water Heating Market Transformation and Strengthening Project

Funding Agency	Global Environment Facility (GEF)
Amount	1,000,000 USD
Project Areas	National level
Starting Date	January 2008
Duration	5 years
Beneficiaries	Government institutions
Type of Project	Institutional strengthening
Project Status	to be initiated

All of these on-going and planned activities feed into and provide a prime opportunity to develop the proposed Sustainable Energy Strategy which would serve as an overarching umbrella plan for the GoL to implement better demand-side energy management. Ultimately, the proposed strategy would link all the outputs of the above-mentioned pilot projects in a comprehensive policy-level framework that would assist the Government of Lebanon in transforming the energy market to a more efficient and sustainable one.

Part II: Strategy

³ The donation considers the supply of 90,000 EE lamps to be distributed to residential households in the south amounting to 260,000 USD.

⁴ The program considers also EE lamps, PV street lighting, energy audit implementation, roof Insulation.

This programme builds on both the Ministry of Finance's efforts to reduce the government financial burdens by decreasing subsidies to the electricity sector and the Ministry of Energy and Water's objectives to meet the national electricity demand. The programme complements the planned national energy reform that deals with supply-side energy management and the on-going efforts of the Ministry of Energy and Water towards improving the energy supply.

In parallel, the implementation of the programme, and part of the programme co-financing sources, directly target early recovery and reconstruction efforts that assist local communities in overcoming post-conflict damages and alleviating poverty through household income savings. The programme will include implementation of actual demonstration projects while working on policy-level changes, awareness raising and capacity building at the national level.

The programme continues the on-going assistance provided to the Government of Lebanon by UNDP to enhance capacity for national decision making and for better environmental governance in line with the United Nations Development Assistance Framework (UNDAF) for Lebanon (2002 – 2007). On the other hand, the project also meets the Millennium Development Goal 7 (MDG 7) of achieving environmental sustainability.

Part III: Management Arrangements

The Ministry of Finance, on behalf of the Government of Lebanon, will be the overall national designated partner of the project under the UNDP support to National Execution (NEX), as per the Standard Letter of Agreement to be signed in parallel to the signature of this Programme Document (Annex 1). The programme will be implemented in close technical coordination with the Ministry of Energy and Water through the LCECP project which will act as the technical arm of the project.

The programme will have a management board responsible for taking key management decisions for the programme on a consensus basis. The board will be chaired by the Ministry of Finance and include the UNDP Resident Representative or Country Director and UNDP/LCECP technical representative. Programme quality assurance will be the responsibility of the UNDP Energy and Environment Programme Manager who would monitor and oversee the implementation of the programme and ensure project management milestones are managed and completed as planned. The structure and roles of the management board will be reviewed during the LPAC. The programme will adopt the management structure mentioned in Annex 2 – Programme organization chart.

UNDP will ensure high-quality managerial and financial implementation of the project and will be responsible for monitoring and ensuring proper use of administrated funds to the assigned activities, timely reporting of implementation progress as well as undertaking of mandatory and non-mandatory evaluations for each of their respective components. All services for the procurement of goods and services, and the recruitment of the personnel shall be provided in accordance with UNDP guidelines, procedures and regulations.

In addition to these general responsibilities, UNDP Lebanon will have the following specific tasks: (i) coordinating amongst all programme partners including MoF, MEW/LCECP, and donors; (ii) ensuring proper technical and managerial linkages between all the on-going and planned subprojects related to the SES; (iii) monitoring the financial management of the programme; and (iv) mobilising additional funds to the programme.

The funds allocated from the different on-going and planned projects that fall within this programme (as detailed in the signature page and in Section I above) will contribute to the implementation of this programme. In addition, UNDP has earmarked 100,000 USD from its own resources towards the programme and the Ministry of Finance will allocate 500,000 USD for the implementation of the remaining activities. The government's contribution is subject to yearly increases (add-ons) depending on the programme progress, need and availability of financial resources. Programme and budget revisions will be undertaken accordingly. Resource mobilisation for this programme will be an on-going process and any new sub-projects will be added on a case by case basis.

Part IV – Monitoring, Evaluation, and Reporting

Periodic monitoring of the implementation progress will be undertaken by the UNDP Country Office through regular meetings with the project teams. For the day to day follow-up of the programme, LCECP project will be responsible for the implementation of programme activities, particularly with respect to the technical issues. Once the LCECP project is completed (expected end date 2008), UNDP Lebanon Country office will undertake the necessary measures to ensure the mobilisation of needed personnel as deemed necessary.

Monitoring will be a continuous and systematic process review of the various activities and will be intended to (i) measure input, output, and performance indicators, (ii) provide regular and up-to-date information on the progress towards meeting the overall project objectives, (iii) and alert the implementation partners with problems in implementation, and provide basis on which performance may be improved, and (v) determine whether the relevant stakeholders are responding as expected.

The regular reporting from the project is governed by the UNDP reporting requirements which include the following reports:

- i- Biannual progress reports which will reflect the progress of the executed actual works vs. planned works, goods procured, works subcontracted, technical assistance, performance indicators and financial report;
- ii- Annual Project Progress (APR) as per UNDP format to be submitted annually as of project initiation. The APR will be discussed during the annual Tripartite Project Review (TPR) in the presence of the project donors, national counterparts and all concerned stakeholders.

Part V – Legal Context

This Project Document shall be the instrument referred to as such in Article I of the Standard Basic Assistance Agreement between the Government of Lebanon and the United Nations Development Programme, signed by the parties on 10 February 1986. The host country implementing agency shall, for the purpose of the Standard Basic Assistance Agreement, refer to the government co-operating agency described in that Agreement.

The UNDP Resident Representative in Lebanon is authorized to effect in writing the following types of revision to this Project Document, after consultation with the project partners. :

- i. Revision of, or addition to, any of the annexes to the Project Document;
- ii. Revisions which do not involve significant changes in the immediate objectives, outputs or activities of the project, but are caused by the rearrangement of the inputs already agreed to or by cost increases due to inflation;
- iii. Mandatory annual revisions which re-phase the delivery of agreed project inputs or increased expert or other costs due to inflation or take into account agency expenditure flexibility; and
- iv. Inclusion of additional annexes and attachments

Section II – Results and Resources Framework

Programme Outcome and Approach

This programme aims at assisting the Government of Lebanon to develop, promote and adopt a sustainable energy strategy (SES) for Lebanon. To reach this objective, the programme will work on two levels: the first involves the implementation of sustainable energy applications, energy efficiency measures (EEM) and solar thermal applications (STA) in all public buildings to establish a demonstrative model that would encourage the private sector and the general public to take up similar initiatives; the second involves creating an enabling environment in terms of financial mechanisms and legislative reforms that would encourage a market transformation towards sustainable energy use.

Programme Outputs (sub-projects)

Output 1: Implementation of model energy efficiency and small scale renewable energy applications

This output involves the implementation of energy efficiency and renewable energy applications at the national level. As a start the programme will apply energy efficiency measures (EEM) and install solar thermal applications (STA) in all public facilities in Lebanon based on a comprehensive feasibility assessment, followed by the actual procurement and installation of required goods and services. All activities will be closely analysed and monitored to ensure proper implementation and to analyse, in detail, the cost-benefit of such projects.

The Government of Lebanon, specifically the Ministry of Finance, will benefit from a reduction in national expenditure on the cost of electricity to government buildings with a relatively small investment cost. Such national savings have direct positive implications on national debt. In the larger scope of the SES, this output would set a trend aimed at encouraging the private sector and the public at large to adopt similar cost-effective sustainable energy applications.

This output/sub-project is composed of small pilot projects that originate from either within the early recovery programme or were initiated earlier by the UNDP Energy and Environment Programme. It is expected that additional resources will be mobilised for the implementation of this sub-project; accordingly, activities will be added on as created.

Below are brief explanations of EEMs and STAs applications that may be implemented:

i. Energy Efficiency Measures Applications

National and international experiences in energy efficiency measures confirm that a successful energy management system starts with an energy audit studies and energy wastes identifications that will definitely lead to 10 – 20% reduction in energy consumption. Some of these energy measures are common in all facilities such as:

- Replacement of incandescent lamps with CFLs and thermal ballast with electronic ones
- Motion sensors and timers for lighting control
- Boiler tuning and efficiency enhancement
- PF correction and enhancement
- HVAC works (insulation, air balance, etc.)
- Roof thermal insulation
- Windows film protection
- Computer management applications
- Standby power consumption
- Building Management System (BMS)
- Better O&M approach including preventive maintenance
- General awareness at all employment level

ii. Solar Thermal Applications

Lebanon enjoys a favourable environmental conditions mainly solar energy whereby there are more than 300 solar days in Lebanon. Accordingly, solar thermal energy should be efficiently

utilized to reduce the primary and secondary energy used in hot water production for public and residential buildings. It should be noted that energy used in hot water production represents around 30% of the household energy bill. UNDP/LCECP financial for solar thermal applications for both individual and collective systems demonstrate that a simple back period of 3 – 4 years for individual's solar water heaters and 5 – 6 years for collective water heating systems are achievable based on the current energy and electricity prices. Moreover, regional and international solar thermal experiences further support the UNDP/LCECP's studies and provide the basis for solar thermal applications development in Lebanon.

Output 2: Setting an enabling environment for the implementation of a SES

To date, no financial incentives or legislation exist in Lebanon that promote sustainable energy applications. This output tackles the financial and legal sectors and aims at proposing sector reforms to encourage the Lebanese market to shift towards more sustainable energy use and discourage energy inefficiencies.

In this output, various scenarios, opportunities, and approaches needed to create financial incentives and legal changes will be investigated and new modalities, policies/regulations and mechanisms will be developed to ultimately facilitate the development of a local market for energy efficiency measures, solar thermal applications among other renewable energy applications. Different actors will be involved in this output including the Ministry of Finance, Central Bank, private and public financial institutions (such as Bank Al Iskan).

The programme will build on the assessments currently undertaken by LCECP of policies, legislation and regulations that constitute barriers to market development and penetration of energy efficiency and renewable energy technologies. Such considerations include import tariffs structures, restrictions, taxation and incentives or disincentives, public sector procurement guidelines as well as equipment standards and codes.

Some of the proposed changes are, but not limited, to the following:

- National energy efficiency law developed, issued and adopted
- Energy efficiency standards / considerations integrated into the high energy consuming appliances
- Legal framework developed and adopted for the creation of the energy / solar thermal fund
- Energy efficiency measures and solar thermal applications Integrated within the permits issued for the new industrial / commercial facilities
- Solar thermal applications reflected in the current building code
- Property and municipality taxes legislation reviewed and modified to create certain incentives for solar thermal applications
- Necessary

There is presently no information or awareness at the policy level of policy options and modalities toward energy efficiency and solar thermal applications.

In parallel to the above-mentioned activities and the activities under the first output (sub-project), the programme will develop and run a comprehensive nation-wide awareness campaign targeting the general public as well as policy-makers on sustainable energy issues. Building a general momentum on renewable energy and energy efficiency would link between the different programme activities and the change the programme is hoping to achieve at the national level.

UNDAF Outcome #2: National capacities and policy formulations supported and strengthened to reach Sustainable Development

SRF/MYFF Goal 3: Energy and Environment for Sustainable Development

SRF/MYFF Service Line 3.1: Frameworks and Strategies for Sustainable Development

Project title and ID (ATLAS Award ID): Sustainable Energy Strategy for Lebanon

Intended Outcomes	Output Targets	Indicative Activities	Indicators	Responsible parties	Inputs	Funding source
1.0 Implementation of model energy efficiency and small scale renewable energy applications	1.1 EEMs and STAs applications in public buildings assessed and analysed (Dec 2007)	1.1.1 Data and information collection 1.1.2 Energy audits in 6 public buildings (including MEW) 1.1.3 Technical and financial analysis of EEMs and STAs (including financial estimates)	<ul style="list-style-type: none"> - Database of raw energy and financial data of all public facilities available - Energy audit reports of 6 public buildings available - Technical feasibility reports - Financial budgets - Implementation work plans 	UNDP/LECP UNDP/CEDRO MEW MoF	150,000 USD 100,000 USD	GEF/LCECP LRF (Spanish)
	1.2 Recommended EEMs and STAs installed in all public buildings (Dec 2009)	1.2.1 Procurement of sub-contractors for EEM and STA works 1.2.2 Implementations/installation & supervision of EEMs and STAs works 1.2.3 Technical capacity building and awareness raising 1.2.4 Development of O&M procedures	<ul style="list-style-type: none"> - Launch of ITB as per UNDP procurement rules and regulations - Issuance of contracts for sub-contractors - Installation and commissioning of EEMs and STAs - Training sessions held at all public facilities - O&M manuals published - Energy manager assigned at each public facility 	UNDP/CEDRO MEW MOF	2.4 m USD 200,000 USD 300,000 USD 150,000 USD	LRF (Spanish) Greek MoF SIDA
	1.3 Integration of lessons learnt and monitoring & evaluation of implemented works (Dec 2009)	1.3.1 Integration of EEM and STA equipment specifications into public procurement processes 1.3.2 Evaluation and verification of implemented activities	<ul style="list-style-type: none"> - EEM & STA equipment specifications adopted in public sector - Verified energy savings and data reports 	UNDP/LCECP MEW MoF	100,000 USD 250,000 USD 50,000 USD 250,000 USD	GEF/LCECP GEF/SWH UNDP Greek

Intended Outputs	Output Targets	Indicative Activities	Indicators	Responsible parties	Inputs	Funding Source
0 Setting an enabling environment for the implementation of a SES	2.1 Development of financial incentives for sustainable energy applications (Dec 2008)	2.1.1 Assessment of existing financial environment 2.1.2 Design and lobby for new financial mechanisms	- Report on existing financial environment for similar issues	UNDP/LCECP	100,000 USD	MoF
			- Report on proposed financial incentives per sector	MoF	100,000 USD	GEF/LCECP
			- Meetings/roundtables on proposed financial incentives	MEW	250,000 USD	GEF/SWH
			- Implementation of at least one financial incentive			
	2.2 Development of legislative reform to promote sustainable energy applications (Dec 2008)	2.2.1 Assessment of related legislation 2.2.2 Design and lobby for new legislation	- Report on related legislation	UNDP/LCECP	100,000 USD	MoF
			- Report on proposed legislation	MoF	100,000 USD	GEF/LCECP
			- Meetings/roundtables on proposed legislation	MEW	250,000 USD	GEF/SWH
	2.3 National awareness raising strategy developed and implemented (on-going)	2.3.1 Development of communication/marketing strategy and tools 2.3.2 Implementation of national marketing campaigns 2.3.3 Evaluation of impacts	- Adoption of at least one legal reform			
			- Development and adoption of national energy efficiency law			
			- Sustainable energy applications marketing strategy and tools available	UNDP/LCECP	50,000 USD	UNDP
			- Media campaigns available and broadcast	UNDP/CEDRO	100,000 USD	GEF/LCECP
			- Statistical reports and public survey results available	MoF	100,000 USD	LRF (Spanish)
			- Adoption of sustainable energy solutions by private sector (market transformation)	MEW	250,000 USD	GEF/SWH
			- Publication of a policy paper on the implementation of SES	MoE		

Section III – Workplan and Budget

Award Name: Sustainable Energy Strategy for Lebanon

Project ID	Output	Activity	Description	Responsible Party	Fund	Donor	Budget Account	Budget Description	Amount (USD)
	Implementation of model energy efficiency and small scale renewable energy applications	A1	Phase 1: Assessment and Analysis	UNDP		GEF	71300	Local Consultants	50,000
				UNDP		GEF	72100	Contractual Services - Companies	100,000
				UNDP		LRF	72100	Contractual Services - Companies	75,000
				UNDP		LRF	74200	Audio Visual & Print Prod Costs	5,000
				UNDP		LRF	74500	Miscellaneous expenses	10,000
				UNDP		LRF	75100	Facilities and Administration	10,000
								Sub-total	250,000
						LRF	71200	International Consultant	100,000
						LRF	71300	Local Consultants	50,000
						LRF	71600	Travel	25,000
		A2	Phase 2: Installation works	UNDP		LRF	72100	Contractual Services - Companies	2,000,000
						MoF	72100	Contractual Services - Companies	300,000
						Greek	72100	Contractual Services - Companies	200,000
						SIDA	72100	Contractual Services - Companies	150,000
				UNDP		LRF	74500	Miscellaneous expenses	25,000
				UNDP		LRF	75100	Facilities and Administration	200,000
								Sub-total	3,050,000
						Greek	71200	International Consultant	50,000
						UNDP	71300	Local Consultants	50,000
						GEF	71600	Travel	35,000
		A3	Phase 3: Monitoring, evaluation & cap bldg	UNDP		Greek	72100	Contractual Services - Companies	200,000
				UNDP		GEF	72100	Contractual Services - Companies	50,000
				UNDP		GEF	72100	Contractual Services - Companies	200,000
				UNDP		GEF	74500	Miscellaneous expenses	22,000
				UNDP		GEF	75100	Facilities and Administration	43,000
								Sub-total	650,000
								TOTAL	3,950,000

Project ID	Output	Activity	Description	Responsible Party	Fund	Donor	Budget Account	Budget Description	Amount				
									(USD)				
	Setting an enabling environment for the implementation of a SES	A1	Financial incentives	UNDP		GEF	71300	Local Consultants		50,000			
				UNDP		MoF	72100	Contractual Services - Companies		100,000			
				UNDP		GEF	72100	Contractual Services - Companies		200,000			
				UNDP		GEF	74200	Audio Visual & Print Prod Costs		50,000			
				UNDP		GEF	74500	Miscellaneous expenses		20,000			
				UNDP		GEF	75100	Facilities and Administration		30,000			
								Sub-total		450,000			
					A2	Legislative reform	UNDP		GEF	71300	Local Consultants		50,000
				UNDP				MoF	72100	Contractual Services - Companies		100,000	
				UNDP				GEF	72100	Contractual Services - Companies		200,000	
				UNDP				GEF	74200	Audio Visual & Print Prod Costs		50,000	
				UNDP				GEF	74500	Miscellaneous expenses		20,000	
				UNDP				GEF	75100	Facilities and Administration		30,000	
										Sub-total		450,000	
		A3	Awareness raising	UNDP				LRF	72100	International Consultant		50,000	
	UNDP						GEF	71300	Local Consultants		100,000		
	UNDP						LRF	71600	Travel		30,000		
	UNDP						GEF	72100	Contractual Services - Companies		218,000		
	UNDP						UNDP	74200	Audio Visual & Print Prod Costs		50,000		
	UNDP						LRF	74500	Miscellaneous expenses		20,000		
	UNDP						GEF	75100	Facilities and Administration		32,000		
							Sub-total		500,000				
							TOTAL		1,400,000				
							GRAND TOTAL		5,350,000				

Section IV – Project Risks

Since energy efficiency and renewable energy programmes and projects are relatively new approaches to the Government of Lebanon and to the Lebanese general public, the proposed programme may face some barriers and risks to proper implementation. Below is a summary of possible barriers and risks:

- Improper operation and maintenance of the installed energy efficiency and renewable energy equipment by the beneficiaries
- Low level of collaboration by the public buildings and facilities operation and maintenance personnel during the project implementation
- Low level of acceptance of the new installed technologies by the public buildings and facilities occupancies
- Insufficient funds to implement the proposed project especially after the detailed needs assessment outcomes
- Lack of adoption of the developed and proposed energy efficiency and solar thermal financial incentives and legislative reform
- Improper project ownership identification among Ministry of Finance, Ministry of Energy and Water and UNDP

On another level, the proper use, operation and maintenance of the installed equipment is necessary to ensure project continuation. The proper implementation of the programme by qualified national personnel, including adequate technical capacity building and awareness raising activities, will minimise the impact of the above listed risks.

In addition, continued or additional energy subsidisation by the Government of Lebanon may pose a risk to the continued adoption of this programme. Any changes in the political situation in Lebanon can also not be neglected. Both of these risks are beyond the control of the proposed project.

Risk Type	Description	Recommendation	Deadline	Responsibility
Financial	Delay in receipt of necessary funds may slow down some project activities especially output 2 of the project Inability to mobilise other third-party resources	Early identification of additional funds needed and their timely acquisition from Ministry of Finance Continued lobbying with bilateral and other donors		UNDP / LCECP / MoF
Technical	Improper O&M of the installed EEMs & STAs by the beneficiaries	Extensive training for the assigned Energy Managers and O&M personnel during and after installation of the EEMs & STAs Secure the necessary spare parts for extended period		UNDP/LCECP/Assigned Energy Managers
Organisational	Improper project ownership identification among Ministry of Finance, Ministry of Energy and Water and UNDP	Delineate relationship between the different project partners Maintain open communication with all project partners		UNDP/ LCECP
Security	The unstable security situation in Lebanon may obstruct or delay on-the-ground implementation of the project as well as policy level activities proposed	Preparation of alternative plans of action to achieving planned activities. Minimising missions by international consultants to Lebanon		UNDP / MoF / LCECP
Political	Frequent changes in the council of ministries especially ministries of Finance and Energy & Water	Maintain open communication with all various political parties to ensure that the project is well recognized		UNDP / LCECP

Section V – Annexes

Annex 1 – Letter of Agreement

Annex 2 – Programme Organisational Chart

Annex 3 – Letter of Endorsement MoF



REPUBLIC OF LEBANON
MINISTRY OF FINANCE

THE MINISTER

Dr. Mona Hammam
Resident Representative
United Nations Development Programme

July 3, 2007

Dear Dr. Hammam,

Subject: Sustainable Energy Strategy for Lebanon – Public Buildings and Facilities

In reference to our meeting last week concerning the UNDP presentation on the Sustainable Energy Strategy, we would like hereby to confirm the Ministry of Finance adoption of the said strategy which will fully contribute to our commitment to reach national energy reform in Lebanon.

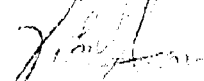
At this critical stage of launching the said strategy we would like to confirm that all efforts which contribute to a successful initiation are welcomed specifically the GEF Global Project on Solar Water Heaters (SWH), whereby Lebanon is one of the direct beneficiaries. This project will fulfill major technical and administrative components that will contribute successfully towards the implementation of the strategy in Lebanon mainly with respect to paving the market to adopt SWHs.

We are also pleased to learn that the co-financing needed for the Global SWH project was committed through the funds under Lebanese Recovery Fund that were recently approved and allocated to the implementation of energy efficient and renewable energy applications in public buildings and facilities.

Finally, the Ministry of Finance puts great hopes on identifying the appropriate financial incentives and legal reforms needed to ensure proper private sector involvement to reach a sustainable SWHs market development.

Looking forward to our future collaboration, I remain,

Sincerely Yours,


Jihad Azour
Minister of Finance

cc RR
CD
DRR

UNDP OFFICE IN BEIRUT	
FILE	00013325
JUL 2007	
INFO	RR
ACTION	EC

Annex 4 – SES Presentation

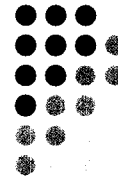
Sustainable Energy Strategy for Lebanon

Edgard Chehab, Programme Manager, UNDP
Anwar Ali, Project Manager, LCECP/UNDP
Jihan Seoud, Programme Associate, UNDP

16 June 2007
Beirut

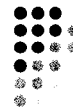


Republic of Lebanon
Ministry of Finance



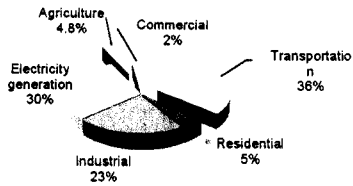
Presentation outline

- Introduction
- Proposed programme - examples
- Programme implementation and timeline
- Elements for success

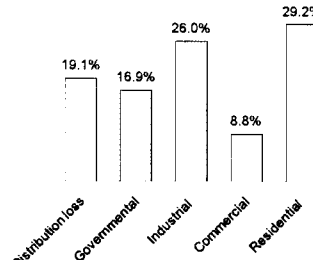


Why a sustainable energy strategy?

Consumption of Imported Fuel by Sector



Electricity Consumption per Sector

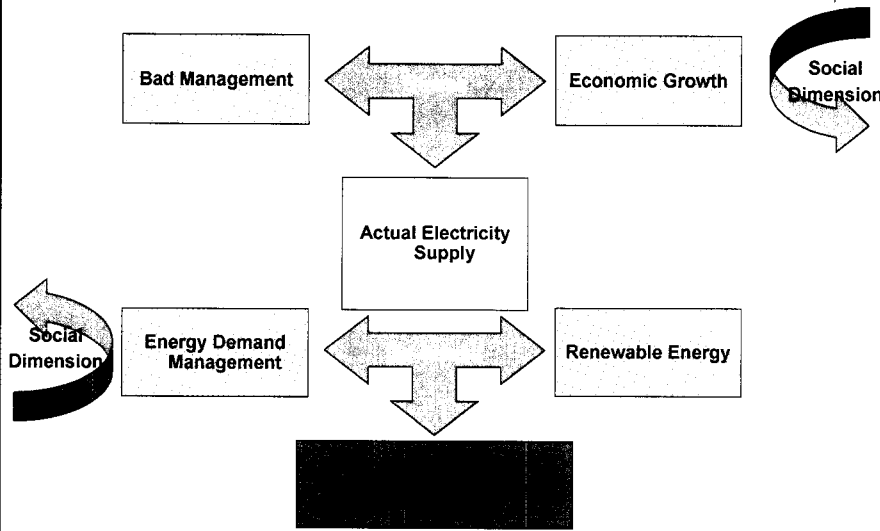


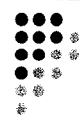
1.0 billion USD/yr subsidies to EDL

Sustainable energy strategy

- Cost-effective solutions to the high energy cost
- Feasible measures to reduce national energy consumption
- Decrease investment for future power generation
- Environmentally sound practices

National energy reform



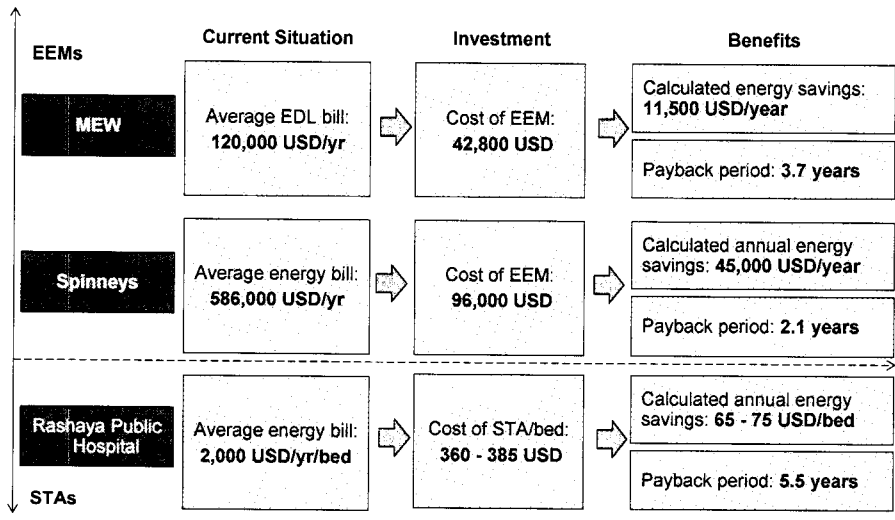


Defining the programme

- **Objective:** development, promotion and adoption of a sustainable energy strategy in Lebanon
- **Entry points:** public facilities
 - Reduce direct costs on GoL (EDL)
 - Reduce indirect costs on GoL (ministerial subsidies)
 - Decrease energy demand
 - Model for private sector
- **Approach:** implementation of
 - Energy efficient measures (EEM)
 - Solar thermal applications (STA)



Our experience





Presentation outline

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- **Proposed programme – examples**
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Examples of EEMs applications

- **Replacement of incandescent lamps with CFLs and thermal ballast with electronic ones**
- Motion sensors and timers for lighting control
- **Boiler tuning and efficiency enhancement**
- PF correction and enhancement
- **HVAC works (insulation, air balance, etc.)**
- Roof thermal insulation
- Windows film protection
- Computer management applications
- Standby power consumption
- Building Management System (BMS)
- Better O&M approach including preventive maintenance
- General awareness at all employment level

Energy Management System
starts with Energy Audit
leading to 10 – 20 % reduction
in energy consumption



Examples of STAs applications

- Favourable environmental conditions: more than **300 solar days** in Lebanon
- Energy for heating uses **20 – 25%** of household energy bill
- UNDP/LCECP studies show: simple payback period is **3 – 4 years (individual)** and **5 – 6 years (collective)**
- International experience

LCECP: installation of solar water heaters:

- Individual installations of more than **460 solar water heaters** (Chinese Donation)
- Collective Installations at **11 public facilities** (Swedish Donation)

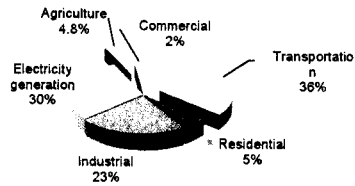


Presentation outline

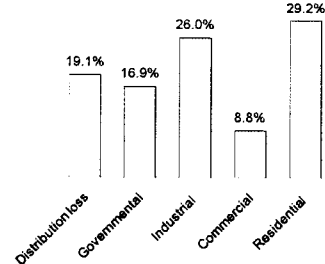
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Electricity Consumption per Sector



1.0 billion USD/yr subsidies to EDL

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Implementation schedule

Awareness Raising

Phase 1

Assessment & Analysis

Phase 2

Procurement, Installation & Capacity Building

Phase 3

M & E

Financial Incentive

Legislative Reform

Market Transformation

June 2007

Oct 2007

June 2009

Dec 2009

Programme implementation

	Activity	Outputs
	<ul style="list-style-type: none"> Collect data from public facilities Perform Energy Audits in 5 public facilities Undertake energy and financial analysis Recommend EEMs & STA Prepare EEM & STA specifications Estimate financial requirements 	<ul style="list-style-type: none"> EEM & STA implementation plans per facility Technical specifications (BOQ) per facility Financial budget breakdown Time Frame and schedule
	<ul style="list-style-type: none"> Issue tender documents Evaluate and select contractors Supervise procurement and installation works Commission and pay for contracted works Build capacity and raise awareness (in house) 	<ul style="list-style-type: none"> EEM & STA installed O&M procedures developed Spare parts and warranty specifications lists and available Energy Manager assigned at each public facility
	<ul style="list-style-type: none"> Follow up on the installed EEM & STA (including O&M) Integrate EEM & STA equipment specifications within Government procurement pre-requisites Evaluate and report on the energy savings Prepare a communicate/marketing campaign 	<ul style="list-style-type: none"> EEM & STA equipment specifications adopted in public sector Verified energy savings and data reports EEM & STA marketing strategy

Financial incentives

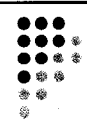
Based on Cost-Benefit Analysis

Energy Efficient Applications (EEM)

- Energy audit companies
- Energy Fund (Kafalat) ↓
- Energy Services Companies (ESCO)
- Custom increase on non-energy efficient appliances
- Decentives for inefficient energy consumption (industry)

Solar Thermal Applications (STA)

- Tax/custom reduction on STA
- Bank Al-Iskan initiation of 0% interest loan for STA
- Property tax reduction upon installation of STA
- Establishment of STA fund



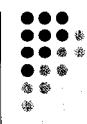
Legislative reforms

Energy Efficient Applications

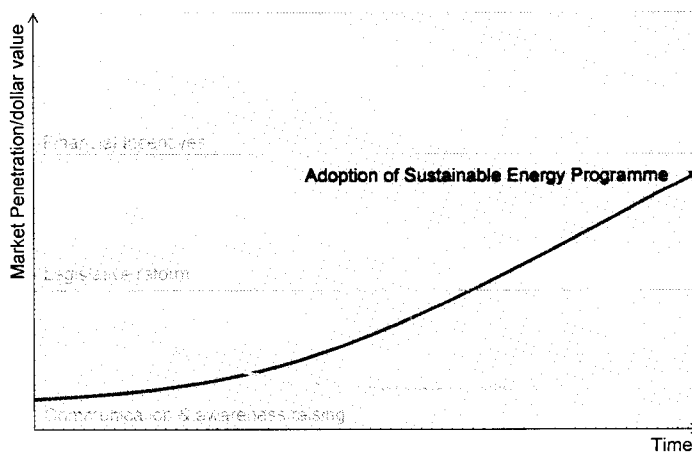
- Energy efficiency law issued and adopted
- Energy efficiency standards/considerations integrated into high energy consuming appliances
- Legal modifications undertaken to create the energy fund
- Permits for establishing new industrial/commercial facilities take EEM into consideration
- Energy audits become mandatory for high energy-consuming facilities
- LCEC created and adopted

Solar Thermal Applications (STA)

- STA reflected in recent building code
- Property tax legislation modified to create incentives for STA
- Municipality tax legislation modified to create incentives for STA
- Legal modifications undertaken to create the STA fund



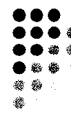
Ideal market transformation trend



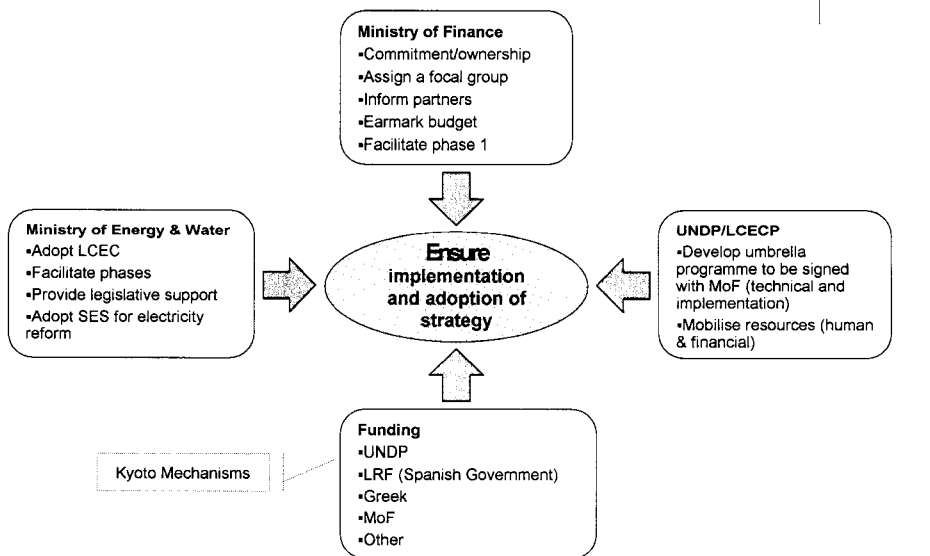


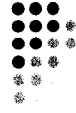
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Elements for success





If the global warming is an inconvenient truth

Sustainable energy is a convenient approach in an economic reform

Thank you