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MDG Costing - Lebanon

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1-1-1- Background

The Millennium Development Goals (MDGs) have their origin in the drive to redefine development in more human terms. They took on a "binding" characteristic aiming to integrate social development in the list of priorities for development. However, the eight goals that make up the MDGs come with a cost and the methodology of costing is still controversial and is related to the status of each individual country in terms of socio-economic structures and characteristics, possibilities and potentials, and the ability to mobilize (internal and external) resources technically and financially to meet the required targets.

1-1-2- Objectives

The objective of this study is to develop a costing for the efforts required in Lebanon to meet the MDG goals by 2015. The starting point of this costing is the already published "MDG Lebanon country report" (September 2003) which determined the situation analysis and the extent and nature of the "gaps" pertaining to each of the eight designated goals. The study, based on this report, aims at defining and then costing a specific set of interventions that need to be implemented in order to achieve each of the millennium goals. The concerned interventions are a combination of currently planned interventions (by CDR, ministries and other public entities) and additional ones proposed by the consultant. The study will detail each of these interventions and estimate its costs over the course of 10 years (from 2006 till 2015).

1-1-3- Methodology

Due to the lack of national accounts and raw data related to the evolution of household budget and patterns of consumption, the methodology adopted for this study is based on a sectoral approach, rather than a macroeconomic and econometric one[1]. This methodology, being common to each of the designated goals, first presents a background and rationale, then proposes a list of interventions to be undertaken, for which a detailed description is subsequently provided, and finally exhibits the cost structure based on a bottom-up approach. This approach allows for more concrete and precise identification of the interventions, thus improving cost estimates and providing a useful tool for advocacy purposes.

[1] A macroeconomic model will be developed by Consultation & Research Institute, at a later stage (during 2005), as soon as the raw data of the Multi-Purpose survey is available. The model will estimate the amount of investment needed for achieving MDG1, using the growth elasticity of poverty reduction.

1-1-4- Limitations and constraints

Several limitations and constraints were faced while implementing the costing exercise, including the following:

- Some of the statistical parameters used in the MDG 2003 report, are subject to more than one single official figure or estimate. This has direct implications on the gaps that should be bridged and thus on the costing exercise.
- Data needed for the identification and elaboration of some of the selected sectoral interventions, are partially missing, especially where there is a need to breakdown national indicators on specific geographic areas levels, or on specific social groups level. In order to fulfill this gap, reliable assumptions were made and used in the study.
- There were also difficulties pertaining to the translation of the recommendations of the MDG report into concrete interventions. In fact, some of the goals, as analyzed in the national Lebanese report, are very broad and address a wide range of issues and social groups where lower and middle segments of beneficiaries are targeted at the same time.
- Other difficulties are related to the impact assessment and the evaluation of intervention overlapping. Many of the sectoral interventions have multidimensional and cumulative effects on poverty alleviation schemes, since they address more than one issue at the same time, or at least would have derivatives that affect other issues.

1-2- Scope

The approaches adopted in the Lebanese case in order to reach the MDGs differ from the structural approaches usually developed by ministries and/or the Council for Development and Reconstruction (CDR), such as the "program laws" that have a wide national scope as opposed to very well defined areas directly related to the implementation of MDGs. After identifying existing programs and projects related to education, health and other fields related to MDGs – and included in CDR's exhaustive lists of current and planned programs – CRI suggests a set of punctual interventions, based on concrete criteria addressing specific sub-population groups, or specific themes or spheres of intervention, aiming essentially at reforming and improving the efficiency of current social public expenditures, rather than focusing on massive additional public infrastructure equipment, in an era of public financial weaknesses.

In an attempt to adequately address the framework of this costing exercise, its scope and the selection criteria of the proposed interventions, a set of key analytical issues should be highlighted:

a) **Lebanese economy in international comparison:** Lebanon ranks in the stratum of middle to upper middle developing countries, as to its GDP per capita level (around 4,500 USD in 2004). From a general perspective, a significant part of the targets and objectives, related to MDGs, tend to be more or less quasi-reached, although with huge social discrepancies and regional inequalities.

b) **Capital investment in the social sector:** During the last decade, considerable amounts of money were spent on infrastructural and social investments. However, the implementation and impact assessment of these structural and heavy investments show that, although necessary, they are not sufficient by themselves. In order to become more efficient developmental tools, they need to target and to be accompanied by other types of interventions addressing the underlying problems behind Lebanon's social challenges, such as regional inequalities that linger widely.

c) **Social current expenditure:** In addition to capital investment, social public current expenditure constitutes an important share of the total yearly current expenditures. One of the major objectives of this costing exercise is to focus on increasing gains in efficiency, through improving the reallocation and redistribution of the budget, rather than investing more money on physical social infrastructure.

d) **Specific interventions:** Based on the above, what is conceived for the Lebanese case of MDG costing is more punctual, very well-defined and concrete interventions, aiming at bridging specific gaps, rather than focusing on global structural national interventions. In other terms, the selected interventions are designed and adapted to specific geographic areas, specific social groups or sub-groups, and specific sectoral and thematic needs. Their aim, in light of MDGs implementation, is to improve the efficiency of resources allocation and management, rather than just increasing social expenditures and physical infrastructure.

1-3- Lebanon: Macro-Economic Overview

The Lebanese civil war (1975-1990) played a considerable role in aggravating the phenomena of poverty in Lebanon. When the Lebanese strife ended in the early 1990s, huge efforts were deployed by the government in order to:

i. Rehabilitate and develop basic physical infrastructure, which is a major condition to stimulate investment and economic development.
ii. Implement and pursue a monetary stabilization policy, aiming essentially at curbing inflation rates and strengthening confidence in the national currency.
iii. Control the fiscal imbalances induced by the civil war and aggravated during the reconstruction era.

This set of objectives was supposed be accompanied by an ascending trend in economic growth, with an average growth rate ranking between 8% and 9% at constant prices for the period 1995-2007[2]. However, the actual growth rates registered during the post-war period were by far lower than the projected ones. Three main phases can be identified in this respect:

[2] as per the outcomes of the reconstruction program elaborated by the Lebanese government in 1995 (entitled Horizon 2000)

i. The first phase covers the period 1993-1997, where the average annual growth rate was around 7%.
ii. The second phase comprises the period 1998-2002, where a net decrease in growth trend rates was confirmed, and where the latter varied within a range of 0% to 2.2% annually.
iii. The third phase is closely related to the post-Paris II conference that was held in November 2002, where a net improvement in the overall macro-economic framework occurred. This progress translated itself in a relatively strong increase in growth rates (3% in 2003 and around 5% in 2004) and in private investments, especially FDI.

Throughout those phases, major obstacles affected the performance of the Lebanese economy, thus modifying the pace from one phase to the other.

First, the reconstruction efforts were was subject to a set of inconsistencies pertaining to its size, sources of financing, geographical and sectoral priorities, and the predominance of its infrastructural component compared to the one directly related to private sector incentives. Although the major part of the basic physical infrastructure has been completed, its overall impact on economic growth remained to some extent limited. Besides, reconstruction program was associated with heavy over costs (high frequency of delays, slow and bureaucratic forms of management).

Second, the reconstruction efforts were essentially unilateral and focused mainly on infrastructure rehabilitation, without incorporating the latter into a global economic vision aiming at correcting major macroeconomic imbalances, identifying concrete and potential comparative advantages, developing sectoral policies and inter-sectoral flows, and enhancing labor market mechanisms.

Third, taken together, the main economic objectives of the post-civil strife era, were to some extent incoherent. With the blunt association of an expansionist public expenditure policy and a rigid monetary stabilization policy, one can predict the precarious implications that this association can produce on fiscal issues, public deficit and public debt.

Fourth, it is widely believed that the post-civil strife policies have contributed in aggravating the social conditions in Lebanon, despite the relatively high increase of the share of the so called "public social expenditure" out of total public expenditures.

It is obvious that the costing exercise will not explicitly address the structural adjustments and reforms needed to tackle the macro-economic distortions. However, while focusing essentially on the identification and elaboration of the "punctual" interventions pertaining closely to the MDG, it implicitly considers that these structural reforms should be on the government's agenda in the mean time. Current major issues[3] are considered to be progressively implemented in parallel with the interventions proposed to achieve the MDG.

[3] Such as educational system reform, public health reform including merging public health insurance schemes, fiscal reform, public expenditure reform, social development strategy…etc.

2- MDG Costing

The following table summarizes the costs pertaining to each of the proposed interventions in the four targeted sectors. Details of each of these interventions (background and rationale, detailed description, assumptions and costing model, in addition to impact analysis) are presented in the coming chapters. The overall number of proposed interventions is seventeen (2 for Poverty, 4 for Education, 6 for Health and 5 for Environment), in addition to two optional ones (one for Poverty and one for Environment). The latter have been classified as optional mainly because their costs are significantly higher than those of other interventions, as their scope covers issues beyond those required by the MDG. Some of these interventions have a locally targeted coverage (e.g. intervention #1), some have regional coverage (e.g. intervention #2), while others have national coverage (e.g. intervention #5).

Table 1: Consolidated Cost for MDG Lebanon (in '000 US$)

#		Total	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
	Poverty											
1	Rural Development	268,000	600	1,750	6,500	14,500	25,900	38,550	44,900	59,400	45,900	30,000
2	Training program for unemployed[4]	196,479	51,145	20,481	19,236	18,067	16,970	15,939	14,970	14,061	13,207	12,404
	Sub-Total Poverty	**464,479**	**51,745**	**22,231**	**25,736**	**32,567**	**42,870**	**54,489**	**59,870**	**73,461**	**59,107**	**42,404**
	Education											
3	Pre-school level accessibility to all children in public schools	46,736	4,134	4,311	3,728	3,988	4,266	4,615	4,884	5,227	5,594	5,988
4	Improved quality & productivity of primary education	21,378	2,467	2,223	1,923	1,923	2,223	2,323	1,923	1,923	2,223	2,223
5	Reducing the youth and adult illiteracy rates	18,522	2,183	1,938	1,638	1,638	1,938	2,038	1,638	1,638	1,938	1,938
6	Elimination double-shift system	19,520	4,880	4,880	4,880	4,880	-	-	-	-	-	-
	Sub-Total Education	**106,156**	**13,664**	**13,352**	**12,169**	**12,429**	**8,427**	**8,976**	**8,445**	**8,788**	**9,756**	**10,149**
	Health											
7	Strengthening primary health care services	53,327	5,821	4,264	4,607	4,607	4,983	4,983	6,955	5,398	5,854	5,854
8	Improved accessibility and coverage of vaccination services	26,977	2,529	2,084	2,365	2,685	2,707	3,724	2,718	2,718	2,724	2,724
9	Improved pregnancy and perinatal healthcare	8,984	1,463	809	821	831	842	843	837	842	846	850
10	Equipping hospitals	12,000	6,000	6,000	-	-	-	-	-	-	-	-
11	Tackling vitamin and mineral deficiency	4,735	850	370	370	490	370	685	370	370	490	370
12	Elimination of Tuberculosis	4,244	721	631	552	482	422	369	323	282	247	216
	Sub-Total Health	**110,267**	**17,384**	**14,157**	**8,714**	**9,096**	**9,324**	**10,605**	**11,204**	**9,609**	**10,160**	**10,013**
	Environment											
13	Environmental Framework Law	3,925	352	406	509	464	464	354	344	344	344	344
14	Environmental Information System	15,880	1,698	1,773	1,753	1,828	1,888	1,388	1,388	1,388	1,388	1,388
15	Reverse the loss of environmental resources	75,405	7,525	7,650	7,760	7,710	7,460	7,460	7,460	7,460	7,460	7,460
16	Water quality monitoring system and water awareness	4,060	812	312	812	312	552	52	552	52	552	52
17	Waste water network and treatment plants	7,500	750	750	750	750	750	750	750	750	750	750
	Sub-Total Environment	**106,770**	**11,137**	**10,891**	**11,584**	**11,064**	**11,114**	**10,004**	**10,494**	**9,994**	**10,494**	**9,994**
	Sub-total MDG	**787,672**	**93,931**	**60,631**	**58,203**	**65,156**	**71,735**	**84,073**	**90,013**	**101,852**	**89,516**	**72,561**
18	Unemployment Security Fund ***(Optional)***	674,895	2,000	2,000	136,823	99,409	77,865	75,608	73,419	71,296	69,236	67,238
19	Improvised dwelling unit ***(Optional)***	92,550	9,255	9,255	9,255	9,255	9,255	9,255	9,255	9,255	9,255	9,255
	Total MDG	**1,555,116**	**105,186**	**71,886**	**204,282**	**173,820**	**158,856**	**168,936**	**172,687**	**182,403**	**168,007**	**149,054**

[4] The decreasing unemployment rate scenario has been adopted in this consolidated table. It applies to both "training program for the unemployed" and "unemployment security fund". However, the increasing unemployment rate scenarios for both interventions have been detailed in the Poverty Chapter.

3- Inter-linkage between MDG sectors

The following matrix shows how the interventions (if achieved) within each goal impact the remaining MDGs. For example, column three of the matrix presents the impact of Education achievements on poverty, education, health and environment. Improving youth and adults literacy rates, in addition to educational attainment, will most probably allow access to new jobs. This will positively impact income levels, and eventually help achieve MDG1. This matrix, in fact, is only a consolidation of findings based on this report and literature review. Thus it is up to researchers to develop it further and/or conduct new researches on any of the points of the matrix, through qualitative, or even quantitative, studies for measurement purposes.

Table 2: Impact Analysis: inter-linkage between MDG sectors

	Impact of Poverty Achievements	Impact of Education Achievements	Impact of Health Achievements	Impact of Environment Achievements
On Poverty	• Improve of farmers' income • Help in skills acquisition and/or improvement, leading to higher exposure in the labor market • Develop of safety nets to protect the unemployed	• Increase in job opportunities • Better access to higher-paying jobs • Increase in income levels • Help in skills acquisition and/or improvement, leading to higher exposure in the labor market	• Increase in work attendance and performance • Decrease in the percentage of household expenditure on health •	• Improve the quality of life • Efficiently use environmental resources, thus avoid misallocation • Improve the housing conditions of the poor
On Education	• Increase access to education through alleviating the income obstacle • Increase enrollment rates • Reduce illiteracy • Reduce drop out rates • Reduce failure rates • Improve educational attainment	• Increase enrollment rates • Reduce illiteracy • Reduce drop out rates • Reduce failure rates • Improve educational attainment • Improve quality and productivity of educational system	• Better health = better education • Increase in school attendance and performance	• Improve the quality of education conditions
On Health	• Increase access to health services through alleviating the income obstacle • Increase access to vaccines • Increase access to vitamins • Decrease maternal mortality rates • Decrease under-five child mortality rates • Better income = better education = better awareness of HIV/AIDS • Access to medication	• Increase awareness on major health issues • Increase demand for vitamins, vaccines and medicines • Better awareness of nutrition issues • Reduce child and maternal mortality • Reduce HIV cases	• Increase access to health services • Increase access to vaccines • Increase access to vitamins • Decrease maternal mortality rates • Decrease under-five child mortality rates • Better awareness of HIV/AIDS • Access to medication	• Improve water quality and accessibility • Reduce diseases
On Environment	• Help integrate environmental issues into country policies and programs • Help reverse the loss of environmental resources • Efficiently use environmental resources	• Increase awareness on environmental issues • Help integrate environmental issues into country policies and programs • Help reverse the loss of environmental resources • Efficiently use environmental resources	• Strengthening the requirements of environmental sustainability	• Help integrate environmental issues into country policies and programs • Help reverse the loss of environmental resources • Increase access to safe drinking water • Improve waste water networks and treatment plants • Decrease in the number of slum dwellers

Chapter 1: Introduction

1.1. Objectives and Methodology

1. Background

The Millennium Development Goals (MDGs) have their origin in the drive to redefine development in more human terms. They took on a "binding" characteristic aiming to integrate social development in the list of priorities for development. However, the eight goals that make up the MDGs come with a cost and the methodology of costing is still controversial and is related to the status of each individual country in terms of socio-economic structures and characteristics, possibilities and potentials, and the ability to mobilize (internal and external) resources technically and financially to meet the required targets. From a global perspective, costing methodologies and figures vary greatly. In this respect, a major costing exercise developed worldwide by "the Monetary Conference on Financing for Development" held in 2002, estimated – through the "Zedillo Report" – the cost of MDG to be in the order of $50 billion a year from 2002 to 2015. Nevertheless, global estimates and the methodology associated with it are unable to produce - with an acceptable degree of reliability - estimates of the MDG costs on national levels. For that, specific country studies and specific methodologies are required.

2. Objectives

The objective of this study is to develop a costing for the efforts required in Lebanon to meet the MDG goals by 2015. The starting point of this costing is the already published "MDG Lebanon country report" (September 2003) which determined the situation analysis and the extent and nature of the "gaps" pertaining to each of the eight designated goals. The study, based on this report, aims at defining and then costing a specific set of interventions that need to be implemented in order to achieve each of the millennium goals. The concerned interventions are a combination of currently planned interventions (by CDR, ministries and other public entities) and additional ones proposed by the consultant. The study will detail each of these interventions and estimate its costs over the course of 10 years (from 2006 till 2015).

3. Methodology

Due to the lack of national accounts and raw data related to the evolution of household budget and patterns of consumption, the methodology adopted for this study is based on a sectoral approach, rather than a macroeconomic and econometric one. This methodology, being common to each of the designated

goals, first presents a background and rationale, then proposes a list of interventions to be undertaken, for which a detailed description is subsequently provided, and finally exhibits the cost structure based on a bottom-up approach. Some model-building will be conducted in order to arrive at average costs, returns and improvement conditions in specific targeted groups, which will be selected according to either geographical or sub-social dimensions. The results are then consolidated in order to reach an overall depiction of the means for achieving the goal and the overall set of goals. This bottom-up approach allows for more concrete and precise identification of the interventions, thus accounting, as far as data is available, for impact evaluation and cost overlapping pertaining to these different interventions.

Following is a detailed list of steps carried out by *Consultation and Research Institute* for arriving at this final report:

i. A general meeting was held with the technical committee of the MDG report in order to define the overall scope of the exercise, based on the outcome of the report and the review of the previous stage.

ii. Brainstorming sessions were organized with sectoral teams of the technical committee, in order to determine the major requirements needed to reach the MDGs by 2015. During these sessions, a preliminary set of interventions was sketched.

iii. A comprehensive review of the major national programs and projects, whether being currently planned or executed, was undertaken. This review aims at studying the impact of these programs on issues related to the MDGs in order to determine the "gaps" and thus the additional interventions to be undertaken in order to fulfill the MDGs. The precise list of interventions was determined in this stage.

iv. Interventions were approached according to gender whenever possible. In the case of health, the goal in itself focuses mainly on women and their health and thus was reflected in the selection of the interventions. The education status in Lebanon does not particularly require major specific interventions that concentrate on females in specific, as statistics show no significant discrepancy between performance of boys and girls. As for the other MDGs, gender specific analysis was presented depending on the availability of sufficient data.

v. After determining this list of interventions needed to fill the gaps, per goal, the rationale analysis, detailed description and costing exercise, per intervention, were undertaken. Each of the interventions in the list was then elaborated to include rationale analysis, detailed description, and a costing model.

vi. Whenever possible, impact evaluation and cost overlapping were addressed on goal and/or intervention level, bearing in mind that the prevailing data status has not allowed in many cases, to adequately approach these two dimensions.

4. Limitations and constraints

Several limitations and constraints were faced while implementing the costing exercise, including the following:

- Some of the statistical parameters used in the MDG 2003 report, are subject to more than one single official figure or estimate and thus vary from one source to the other. This has direct implications on the gaps that should be bridged and thus on the costing exercise. An example would be the enrollment rates in elementary education.
- Data needed for the identification and elaboration of some of the selected sectoral interventions, are partially missing, especially where there is a need to breakdown national indicators on specific geographic areas level, or on specific social groups level. In order to fulfill this gap, reliable assumptions were made and used in the study. With respect to some specific interventions, such as those addressing the poverty gap of Goal 1, data pertaining to the late nineties has been used and projected to date, awaiting the results of the Multi-Purpose Household Survey[5] that is expected to be out in the second half of 2005.
- There were also difficulties pertaining to the translation of the recommendations of the MDG report into concrete interventions. In fact, some of the goals, as analyzed in the national Lebanese report, are very broad and address a wide range of issues and social groups where lower and middle segments of beneficiaries are targeted at the same time. Accordingly it was an intricate task to try to disaggregate this type of interventions in such a way to limit their scope within the MDG's one.
- Other difficulties are related to the impact assessment and the evaluation of intervention overlapping. Many of the sectoral interventions have multidimensional and cumulative effects on poverty alleviation schemes, since they address more than one issue at the same time, or at least would have derivatives that affect other issues. However available databases do not permit us to adequately overcome this kind of difficulty.

[5] The Multi-Purpose Household Survey is currently conducted by the Central Administration for Statistics (CAS), in collaboration with the Ministry of Social Affairs and United Nation Development Program (UNDP). The results of this survey are expected to be out in the second half of 2005.

1.2. Scope

The approaches adopted in the Lebanese case in order to reach the MDGs differ from the structural approaches usually developed by ministries and/or the Council for Development and Reconstruction (CDR), such as the "program laws" that have a wide national scope as opposed to very well defined areas directly related to the implementation of MDGs. After identifying existing programs and projects related to education, health and other fields related to MDGs – and included in CDR's exhaustive lists of current and planned programs – CRI suggests a set of punctual interventions, based on concrete criteria addressing specific sub-population groups, or specific themes or spheres of intervention, aiming essentially at reforming and improving the efficiency of current social public expenditures, rather than focusing on massive additional public infrastructure equipment, in an era of public financial weaknesses.

In an attempt to adequately address the framework of this costing exercise, its scope and the selection criteria of the proposed interventions, a set of key analytical issues should be highlighted:

a) **Lebanese economy in international comparison:** Lebanon ranks in the stratum of middle to upper middle developing countries, as to its GDP per capita level (around 4,500 USD in 2004), and allocates formally an important budget for social development, in addition to which civil society and private sector add an essential contribution. As a matter of fact, from a general perspective, a significant part of the targets and objectives, related to MDGs, tend to be more or less quasi-reached (as is the case of education), although with huge social discrepancies and regional inequalities. The focus on social intervention is to some extent confirmed by the relatively large amount of capital investments and current public expenditures allocated to sectors such as education, health, and environment.

b) **Capital investment in the social sector:** During the last decade, considerable amounts of money were spent on infrastructural and social investments. From 1992 to 2003, approximately US$ 202.3 million of capital investments were allocated to national education (general and vocational), of which US$ 35.1million have been used for the construction of new schools and US$ 86.2 million for the rehabilitation of schools. The educational program, for instance, includes urgent rehabilitation projects: 1,284 primary, intermediate and secondary schools have been rehabilitated; and 24 destroyed public schools have been reconstructed, which provided around 10,000 school seats and cost US$ 20 million. Besides, educational projects in progress include building 15 new schools in the Mohafazat of the South, Nabatieh, Bekaa, Beirut, and Mount Lebanon, and supplying them with computer lab equipment.

In parallel, the work contracts for the construction of 50 new schools were expected to be awarded in 2004.

On the other hand around US$ 252.8 million were allocated to the financing of capital investments in public health, of which more than US$ 221.3 million were due for the construction of hospitals and medical centers. The achievements of public health sector to date include completion of 27 new health care centers and 8 new hospitals in different regions of the country. Technical assistance and construction projects are also being prepared; these include the basic health services reform, the development of the additional health centers, the rehabilitation and equipment of public hospitals, etc.

Furthermore, around US$ 571.1 million were allocated for disposal sites out of US$ 862.1 million due for the treatment of solid wastes. In addition, around US$ 298.1 million were due for treatment plants and networks out of a total of US$ 382.6 million in the wastewater sector. However, the implementation and impact assessment of these structural and heavy investments show that, although necessary, they are not sufficient by themselves. In order to become more efficient developmental tools, they need to target and be accompanied by other types of interventions addressing the underlying problems behind Lebanon's social challenges, such as regional inequalities that linger widely.

In environment, work is being conducted to implement a new framework for the management of the solid waste sector. As for the wastewater sector, the government's plan is based on the compliance with the provisions of the Barcelona Convention for Protecting the Mediterranean from Pollution, and the protection of inland water resources from pollution.

Table 3: Sector overview- contracts awarded from Jan. 1992 to Dec. 2003

	Contracts awarded from January 1992 to December 2003					
	Total		Completed		In Progress	
	No	Amount	No	Amount	No	Amount
National Education	606	130.8	510	104.4	96	26.4
Vocational & Technical Education	159	71.5	121	61.7	38	9.8
Public Health	250	252.8	194	207.4	56	45.4
Wastewater	170	382.6	129	196.9	41	186
Solid Waste	71	862.1	55	249.9	16	612.2
TOTAL	1256	1699.8	1009	820.3	247	879.8

Source: CDR, Progress Report July 2004

c) **Social current expenditure:** In addition to capital investment, social public current expenditure constitutes an important share of the total yearly current expenditures. One of the major objectives of this costing exercise is to focus on increasing gains in efficiency, through improving the reallocation and redistribution of the budget, rather than investing more money on physical social infrastructure. In terms of figures, around 25.4% of total public expenditure in 2004 (including public debt service), i.e. 46.82% of public expenditure (excluding public debt service), is spent on social affairs, which represents more than 8.12% of the total GDP. If we were to include the expenditure of households and local and international NGOs, the share of social expenditure in total GDP might increase to around 25%.

Table 2 illustrates the amount of total public expenditures during the last decade in key sectors related to the social domain such as health, education, and environment:

Table 4: Social Expenditure "SE" in the concerned ministries

In billion LBP	GDP	Total public expenditure	Total public expenditure (excl. debt service)	SE in total budget	SE/GDP (in %)	SE / Total public expenditure (in %)	SE / Total public exp. (excl. debt service, in %)
	(a)	(b)	(c)	(d)	(d)/(a)	(d)/(b)	(d)/(c)
1994	15,322	4,106	2,748	739	4.82%	17.99%	26.90%
1997	22,880	6,433	3,733	1,344	5.87%	20.89%	36.00%
2004	29,416	9,400	5,100	2,388	8.12%	25.40%	46.82%

Source: Budget laws 1994-2004, project of budget law 2005, Ministry of Finance, Banque du Liban, IMF

d) **Specific interventions:** Based on the above, what is conceived for the Lebanese case of MDG costing is more punctual, very well-defined and concrete interventions, aiming at bridging specific gaps, rather than focusing on global structural national interventions. In other terms, the selected interventions are designed and adapted to specific geographic areas, specific social groups or sub-groups, and specific sectoral and thematic needs. Their aim, in light of MDGs implementation, is to improve the efficiency of resources allocation and management, rather than just increasing social expenditures and physical infrastructure. Thus the costing exercise will not include the national "heavy" sectoral or urban and rural master plans, currently under execution or preparation, except for the remaining needed specific interventions which will improve the efficiency of these plans.

1.3. Lebanon: Macro-economic overview

The Lebanese civil war (1975-1990) played a considerable role in aggravating the phenomena of poverty in Lebanon. Destruction of national and private capital, great losses in income, massive forced migration, split of the state in several mini-de facto states and disintegration of the public services, structural monetary and fiscal imbalances, and escalation of the hyperinflationary phenomenon coupled with the sharp decrease in the purchasing power of large segments of society: these were some of the major consequences of the civil strife, which drastically affected the present and potential role of the Lebanese economy in both its local and Arab regional dimensions.

When the Lebanese strife ended in the early 1990s, huge efforts were deployed by the government in order to:

i. Rehabilitate and develop basic physical infrastructure, which is a major condition to stimulate investment and economic development.

ii. Implement and pursue a monetary stabilization policy, aiming essentially at curbing inflation rates and strengthening confidence in the national currency (the average inflation rate exceeded 110% annually during the period 1984-1992).

iii. Control the fiscal imbalances induced by the civil war and aggravated during the reconstruction era.

This set of objectives was supposed to be accompanied by an ascending trend in economic growth, with an average growth rate ranking between 8% and 9% at constant prices for the period 1995-2007, as per the outcomes of the reconstruction program elaborated by the Lebanese government in 1995 (entitled Horizon 2000). However, the actual growth rates registered during the post-war period were by far lower than the projected ones. Three main phases can be identified in this respect:

i. The first phase covers the period 1993-1997, where average annual growth rate was around 7%, and was mainly stimulated by public investment in the physical infrastructure, the real estate boom and the relatively huge increase in public and private consumption.

ii. The second phase comprises the period 1998-2002, where a net decrease in growth trend rates was confirmed, and where the latter varied within a range of 0% to 2.2% annually. The adverse macro-economic situation during this phase were mainly induced by the growing burden of the public debt, the deterioration of the sovereign risk, and the relative contraction of public and private investments because of the quasi-completion of the rehabilitation of physical infrastructure and the end of the boom in the real estate sector.

iii. The third phase is closely related to the post-Paris II conference that was held in November 2002, where a net improvement in the overall macro-economic framework occurred. This progress translated itself in a relatively strong increase in growth rates (3% in 2003 and around 5% in 2004) and private investments, especially FDI. Furthermore, one of the leitmotivs of this improvement lies in the decrease of public deficit ratio as a result of the slower increase in public debt service – due to a tangible decrease in interest rates – and the persisting increase in public revenues.

Throughout those phases, major obstacles affected the performance of the Lebanese economy, thus modifying the pace from one phase to the other.

First, the reconstruction efforts were subject to a set of inconsistencies pertaining to its size, sources of financing, geographical and sectoral priorities, and the predominance of its infrastructural component compared to the one directly related to private sector incentives. Although the major part of the basic physical infrastructure has been completed, its overall impact on economic growth remained to some extent limited. Besides, reconstruction program was associated with heavy over costs, mostly because of the high frequency of delays and the slow and bureaucratic forms of management it was subject to. These have later on negatively affected the coordination of the different components of the reconstruction program, and disrupted the different stages of project implementation (the concept, the prequalification conditions, the procedures of consultant selection, the construction and equipment stage, the supervision and then the functioning of the project, its management, its maintenance, etc). These bottlenecks have generated huge losses and wastes in terms of time, and human and financial resources.

Second, the reconstruction efforts were essentially unilateral and focused mainly on infrastructure rehabilitation, without incorporating the latter into a global economic vision aiming at correcting major macroeconomic imbalances, identifying concrete and potential comparative advantages, developing sectoral policies and inter-sectoral flows, and enhancing labor market mechanisms. In fact, sectoral dimensions – industry, agriculture, tourism – remained unaddressed concretely until the late 1990s. The new orientation emerged mostly from pressures generated by external factors (new forms of regional and international economic integration, such as thee Arab Free Trade Area, the Euro-Med partnership, and WTO negotiations…), rather than from the context of an inclusive national and concerted developmental plan. Unfortunately, the challenges and problems facing sectoral development are very significant and complex: low labor productivity and weak inter and intra sectoral flows, predominance of micro and small establishments (less than 10 employees), import substitution oriented activities rather than export oriented, modest exposure to innovation, technology and financial market, pronounced price distortions, relatively high production costs, inconsistent clustering dynamic and mechanisms….

Third, taken together, the main economic objectives of the post-civil strife era, were to some extent incoherent. With the blunt association of an expansionist public expenditure policy and a rigid monetary stabilization policy, one can predict the precarious implications that this association can produce on fiscal issues, public deficit and public debt. During the period 1993-1997, the increase in public investment exceeded 270%, and this can be to some extent justified by the launching of the reconstruction program. However, the parallel increase by around 240% of current expenditures – other than wage and social allowances – during the same period, constituted a serious threat to the financial and macroeconomic stability. In fact total public deficit (budget and treasury) increased from 39% of total public expenditures in 1993 to 59% in 1997, coupled with the increase of the primary deficit from 13% to 22% in the same period. While keeping on financing public expenditures and especially consumption (in a country ranked by World Bank statistics 138th out of 140 countries as per the ratio of public and private consumption to GDP[6]) through short term foreign capital inflows, the declared objectives aiming at controlling public deficit and debt seemed to be not sustainable with one of the major components of the monetary stabilization policy, i.e. the prevailing high interest rates. Moreover, the high interest rates inherent to this monetary policy discouraged private borrowing for productive investment and accelerated the flow of domestic and foreign capital into the high-profit government treasury bills rather than towards productive employment-generating activities. The year 1997 can be considered as a turning point, after which growth rates tended to decrease sharply at least until 2002, when Paris II conference was held. The latter notably contributed in containing financial imbalances, although its key reformist components have not been sufficiently implemented, mainly with respect to public sector restructuring and the launching of the privatization process.

Fourth, it is widely believed that the post-civil strife policies have contributed in aggravating the social conditions in Lebanon, despite the relatively high increase of the share of the so called "public social expenditure" out of total public expenditures. On one hand, these policies led to major changes in the GDP internal structure, confirming the ascending share of interest compared to the share of profits and wages. Throughout a decade, the share of interests in GDP has more than doubled (reaching more than 20% in the late 1990s) and surpassed by far similar ratio in middle and high-income economies (respectively 7% and 11%[7]). On the other hand, growth rate of the per capita income – at constant prices – has clearly exceeded that of both minimum wage and average wage during the 1990s, knowing that no official wage adjustment has occurred within the private sector since 1997. Based on available national surveys' results, around 60% of the total number of households in Lebanon are earning a declared monthly revenue of less than USD800, keeping in mind that this figure is more or less equal to the estimated upper poverty line for an average household in urban area. The national report on MDGs details other proxy poverty indicators in Lebanon, mainly the Unsatisfied Basic Needs (UBN) in terms of health, education and other public goods and services. Other key

[6] The government's 5-year plan for economic and fiscal reform, Ministry of Finance 1999
[7] Lebanon poverty review, prepared for the World Bank by Consultation and Research Institute, July 2000

indicators reflect the huge social disparities prevailing in the country. Among these discrepancies are the extremely high concentration of financial resources (mainly bank deposits), their uneven accessibility, the inequality with respect to taxation and public debt burden, and the mismanagement of social spending and programs.

To go back to the costing exercise, it is obvious that it will not formally and explicitly address the structural adjustments and reforms needed to tackle the macro-economic distortions. However, while focusing essentially on the identification and elaboration of the "punctual" interventions pertaining closely to the MDG, it implicitly considers that these structural reforms should be on the government's agenda in the mean time. More specifically current major issues - such as educational system reform, public health reform including merging public health insurance schemes, fiscal reform, public expenditure reform, social development strategy - are considered to be progressively implemented in parallel with the interventions proposed to achieve the MDG.

Table 5: Macro-economic indicators, Yearly fiscal performance (in billion LBP)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Budget revenues (effective)	**1,855**	**2,241**	**3,033**	**3,533**	**3,510**	**3,979**	**4,466**	**4,188**	**4,263**	**5,385**	**6,219**	**7,075**
o/w Tax revenues	*1,208*	*1,656*	*2,100*	*2,869*	*2,894*	*3,097*	*3,350*	*2,936*	*2,961*	*3,995*	*4,502*	
o/w Non-tax revenues	*647*	*585*	*933*	*665*	*616*	*882*	*1,116*	*1,252*	*1,302*	*1,390*	*1,717*	
Budget Expenditures (effective)	**3,017**	**5,204**	**5,856**	**7,225**	**9,162**	**7,563**	**8,190**	**8,868**	**8,255**	**8,931**	**9,533**	**8,305**
o/w salaries and social allowances	*1,295*	*1,710*	*1,869*	*2,261*	*2,466*	*2,352*	*2,760*	*2,908*	*2,992*	*3,008*	*3,078*	
o/w Debt service	*784*	*1,488*	*1,875*	*2,653*	*3,378*	*3,352*	*3,624*	*4,197*	*4,312*	*4,622*	*4,874*	*4,021*
o/w Other current expenditures	*545*	*756*	*896*	*1,088*	*1,851*	*798*	*709*	*863*	*626*	*691*	*868*	
o/w Investments	*393*	*1,250*	*1,216*	*1,223*	*1,467*	*1,061*	*1,097*	*900*	*325*	*610*	*713*	
Budget deficit	**1,162**	**2,963**	**2,823**	**3,692**	**5,652**	**3,584**	**3,724**	**4,680**	**3,992**	**3,546**	**3,314**	**1,234**
Treasury Receipts	*0*	*0*	*0*	*0*	*243*	*470*	*407*	*581*	*386*	*445*	*436*	*439*
Treasury Payments	*0*	*0*	*0*	*0*	*0*	*343*	*265*	*1,754*	*624*	*1,208*	*1,058*	*2,234*
Net Treasury account	0	0	0	0	243	127	142	-1,173	-238	-763	-622	-1,795
Total revenues (Budget + Treasury)	**1,855**	**2,241**	**3,033**	**3,533**	**3,753**	**4,449**	**4,873**	**4,769**	**4,649**	**5,830**	**6,655**	**7,514**
Total expenditures (Budget + Treasury)	**3,017**	**5,204**	**5,856**	**7,225**	**9,162**	**7,906**	**8,455**	**10,622**	**8,879**	**10,139**	**10,591**	**10,539**
Total Budget and Treasury deficit	**-1,162**	**-2,963**	**-2,823**	**-3,692**	**-5,409**	**-3,457**	**-3,582**	**-5,853**	**-4,230**	**-4,309**	**-3,936**	**-3,025**
Primary surplus	**-378**	**-1,475**	**-948**	**-1,039**	**-2,031**	**-105**	**42**	**-1,656**	**82**	**313**	**938**	**996**
Total deficit as % of total expenditure	-39%	-57%	-48%	-51%	-59%	-44%	-42%	-55%	-48%	-42%	-37%	-29%
Primary surplus as % of total expenditure	-13%	-28%	-16%	-14%	-22%	-1%	0%	-16%	1%	3%	9%	9%
Debt services as % of total revenues	42%	66%	62%	75%	90%	75%	74%	88%	93%	79%	73%	54%
GDP growth rate (at USD constant prices)	10.7%	5.6%	7.5%	5.5%	4.0%	2.2%	1.2%	0.4%	2%	2%	3.1%	5%

Source: Ministry of Finance, Banque du Liban, Lebanon Country Profile 2004 and CRI estimates

Chapter 2: Poverty

"Goal 1: Eradicate Extreme Poverty and Hunger"

2.1. Background on Goal 1

Official recent data pertaining to the national poverty situation in Lebanon is quite limited. However, the Central Administration for Statistics (CAS), in collaboration with the Ministry of Social Affairs (MOSA) and UNDP, is currently working on a multipurpose survey (MPS). The survey, which covers all aspects of household living conditions, including income and expenditure patterns of around 14,000 households, will allow identifying the extent and severity of poverty, its main sectoral and geographical characteristics, and the profile of the poor. The results of this survey are expected to be out in the second half of 2005, based on which sound recommendations and interventions would be modeled. It should be noted that addressing Goal 1 will not be conclusive and consistent unless the results of the MPS (and its raw data) are available, in order to:

i. Develop a macroeconomic model that estimates the amount of investment required for achieving MDG1, using the growth elasticity of poverty reduction[8].

ii. Develop a model that measures the proportion of population below minimum level of dietary energy. This model will be based on the methodology adopted by FAO for Food Security Analysis[9].

Thus, in the meantime, we will base our analysis on the currently available data pertaining to poverty and develop a set of punctual interventions aiming at alleviating this phenomenon.

2.2. Rationale for Intervention Selection

Classically, poverty is defined as the level of income/expenditure at which needs of basic survival cannot be met. These needs include the minimum requirements for food calories intake, clothing housing, and transportation. Poverty lines, one way of measuring poverty, differ across countries, and even across regions of the same country due to their dependability on income/consumption levels needed to attain a certain standard of living. In this view, two poverty lines are defined; lower and upper. The lower poverty line is

[8] This model will be based on and inspired by "Investment Requirements and Macroeconomic Framework for Reducing Income Poverty to Half by 2015 in Yemen", Khalid Abu-Ismail, Nanak Kakwani, Hyun H. Son and John Roberts-2004.
[9] This methodology was presented by the National Demonstration Center (NDC) on Food Security and Consumption Statistics from Household Income and Expenditure Surveys (HIES), FAO, Cairo-Egypt, April 2005.

the level of income necessary to sustain physical existence, mainly food items. Upper poverty line includes in addition to the minimal basket of food items, other consumption items such as clothing, housing, transportation, health, education, etc. It is essentially this upper line that varies with the standard of living and the availability and accessibility of public goods and services.

Lower poverty line computation, based on the size and composition of households with respect to gender and age distribution, was estimated in 2001 to be 340US$ per month on a national level for an average household consisting of 4.46 members. However, removing the effect of auto-consumption, the poverty line becomes 314US$ per month per household. Auto-consumption, in most of the cases, is inversely related to the degree of urbanization.

The headcount index, the proportion of households whose income/expenditure is below the poverty line, was 7.1% in 2001, up from 6.3% in 1995. This means that, in 2001, on average 7.1% of households in Lebanon lived below the lower poverty line, i.e. not being able to ensure their existence on a sustainable basis. The deterioration occurring between 1995 and 2001 could be attributed to the tough economic situation that Lebanon has experienced during this period, along with the GDP decreasing trend.

The poverty gap measures the distance of the poor's income from the lower poverty line; it is the average amount of money needed monthly to reach an income level that ensures sustainable physical existence. Based on poverty headcount and average poverty gap per Caza, as derived from available data pertaining to the poverty phenomena, the total national poverty gap per household can be estimated as follows: an average of 63US$, varying from 25US$ in Jbeil to 122US$ in peripheral areas such as Hermel.

Table 6: Poverty Line, Poverty Gap and headcount index

Caza name	Total population	Total households	Poverty gap (US$)	Head count index (hhd)	Total household under Absolute Poverty Line	Total monthly US$ needed to reach the poverty line
Akkar	252,917	42,723	-84	19.4%	8,304	696,536
Aley	163,869	38,021	-224	0.4%	165	36,907
Baabda	520,166	111,385	-106	1.4%	1,584	167,850
Baalbeck	227,570	43,347	-80	21.8%	9,449	758,089
Batroun	46,127	10,071	-69	11.9%	1,195	82,951
Beirut	21,239	4,568	-82	0.7%	32	2,634
Bint-Jbeil	403,337	98,527	-95	16.7%	16,421	1,554,776
Bsharre	65,517	13,209	-88	9.8%	1,291	113,023
Chouf	66,118	13,746	-103	1.3%	183	18,854
Hasbayya	31,006	7,261	-57	9.4%	681	38,825
Hermel	36,180	6,277	-122	22.2%	1,395	170,735

Jbeil	80,754	17,218	-25	2.2%	370	9,359
Jezzin	20,254	5,804	-57	10.3%	600	34,244
Kesserwan	161,292	40,730	-34	0.4%	162	5,589
Koura	48,217	11,161	-90	2.4%	272	24,465
Marjeyoun	52,926	11,788	-41	4.4%	518	21,495
Matn	428,167	103,173	-85	1.8%	1,871	158,122
Minyeh	118,682	20,895	-88	14.7%	3,069	268,786
Nabatiyeh	125,322	26,836	-40	7.2%	1,925	76,281
Rashayya	33,145	6,682	-65	8.1%	542	35,253
Saida	250,902	51,100	-69	10.1%	5,173	359,282
Sour	153,312	33,401	-57	14.9%	4,989	284,589
Tripoli	200,948	39,950	-96	9.4%	3,745	360,101
West Bekaa	264,894	50,941	-96	6.1%	3,119	300,604
Zahle	177,036	37,991	-84	9.2%	3,509	295,592
Zghorta	55,127	12,169	-26	2.9%	354	9,250
Lebanon	**4,005,025**	**863,152**	**-63**	**7.1%**	**61,284**	**3,875,451**

Source: CRI estimates, 2001

The total national poverty gap is then estimated at around USD 46.5 Million annually. In the absence of data pertaining to the country poverty profile, this estimate should be considered with precaution, knowing that it is covering only the minimal unmet requirements in terms of physical (food) existence.

There are two approaches to tackle Goal 1, either through geographical poverty pockets or through deprived social segments, categories or sub-categories. The former can be based on two indicators; the first measures the number of poor residents in the area as a percentage of the total population of this specific region, and the other measures the number of poor residents in the concerned area as a percentage of the total poor population of Lebanon. This approach would require numerous steps starting with the selection of the poorest regions, according to adequate indicators. The chosen regions would be assessed through field surveys, which will also allow determining the most deprived or poor clusters or pockets. Studying the specific needs of the Cazas or clusters and planning local development projects would also be necessary. Once the plan is set, the resources needed for every area are to be specified. The most deprived areas include rural regions such as Akkar, Baalbeck, and Hermel, and urban poverty clusters in the vicinity of towns such as Tripoli, Beirut & its suburbs, Saida.

As for the second approach, it concerns interventions that address specific social segments or sub-groups that suffer from extreme poverty. These include women headed households, the elderly, the youth, the unemployed and the handicapped. Interventions pertaining to these groups would focus on providing specific interventions targeting these concerned segments in addition to broader national interventions such as national health coverage system, an effective retirement system, local development programs, etc.

Although the two approaches are based on different logics and can be adopted separately, they can be integrated and used to support each other; which would undoubtedly lead to refined and well-targeted outcomes. However, in the different above-mentioned cases, the concrete and operational delimitation of the boundaries of the targeted geographic areas or social sub- groups are faced by huge obstacles.

Poverty in Lebanon could be thought of as rural phenomenon, since available data confirm its concentration in peripheral areas. However, migration of families from rural regions into cities over the past few decades did induce urban poverty, which is in part a redistribution of poor families over new geographical regions.

2.3. Intervention List

Target 1: Halve between 1990 and 2015, the proportion of people whose income is less than 1US$ a day
1. Rural Development (Irrigation)
2. Training Program for the unemployed
3. Unemployment Security Fund

2.4. Intervention Brief # 1: Rural Development (Irrigation)

2.4.1. Background and Rationale

Implementing rural development interventions constitutes a major step in reducing extreme poverty in Lebanon's peripheral areas. Historical evidence shows that labor productivity in agricultural activity has been always far beyond average labor productivity in other sectors. Although this phenomenon appears to be an international one, it is more than confirmed in the Lebanese case, where public support to agricultural activity in terms of infrastructure, financing, marketing, power and water availability and accessibility, was structurally lacking.

Based on available data, one can underline that Cazas with a relatively high percentage of agricultural employment out of total employment are more exposed to the poverty phenomenon than other Cazas, mainly urban ones. In fact, the poorest seven Cazas in Lebanon (Akkar, Minyeh, Baalbeck, Hermel, Sour, Batroun, and Bent Jbeil), in terms of lower poverty headcount ratio, are by far more implicated by agricultural activity than other Cazas, since agricultural active population within the concerned Cazas, ranks between 18.5% and 33% out of total active population in the Caza (except for Batroun, where this percentage is around 9.6%), compared to an average of 8% on national level.[10]

Moreover, beyond this high correlation between the predominance of agricultural activity on one hand and poverty on the other, two major factors justify the urgency and priority of undertaking specific rural development programs in these Cazas. These factors (stated below) address only the Cazas that will be covered by the proposed intervention, which are the above stated ones excluding Bent Jbeil, as this latter will mainly benefit from the "Canal 800 project", currently being implemented.

i) Most of the farmers of the concerned Cazas are actually small-sized. In fact around 77% of the total number of farmers in these Cazas are handling "useful agricultural area" ("Surface Agricole Utile"=SAU) less than 20 dounoms, i.e. 2 hectares (where 1 dounom=1,000m^2), noting that this percentage varies from one Caza to the other with a maximum in the Caza of Batroun (94.7%) and a minimum in the Caza of Hermel (63.3%).

ii) Designated Cazas do not only concern the highest poverty headcount ratio, as previously mentioned, but also represent a high percentage of the total number of extremely poor households in Lebanon. In fact, around 29,000 households are extremely poor in these seven Cazas, representing around 50% of the total number of extremely poor households in Lebanon.

[10] Living Conditions, CAS-1997. General Agriculture Census, Ministry of Agriculture-1997.

The following table illustrates the major parameters discussed above, justifying the elaboration and implementations of rural development interventions targeting extremely poor areas.

Table 7: Major indicators on rural development and poverty

	Nb. of Owners with SAU < 20 dounoums	% of total owners	Area <20 dounoums used	% of total area	Active Population	Active Agricultural Population	% agricultural active pop of total active population	Poverty Head count index	Number of poor HH
Akkar	16,447	72.8%	112,160	30.9%	65,582	12,171	18.6%	19.4%	8,137
Minyeh	10,831	91.6%	50,574	60.1%	35,851	7,531	21.0%	14.7%	3,007
Baalbeck	11,972	63.5%	90,725	16.3%	67,329	13,151	19.5%	21.8%	9,259
Hermel	1,887	63.3%	16,934	20.8%	10,654	3,524	33.1%	22.2%	1,367
Sour	12,416	88.3%	64,367	45.2%	59,796	13,803	23.1%	14.9%	5,847
Batroun	5,337	94.7%	26,391	72.3%	16331	1,561	9.6%	11.9%	1,171
Total CAZA	**58,890**	**77.6%**	**361,151**	**28.6%**	**255,543**	**51,742**	**20.2%**	**18.0%**	**28,788**
Total Lebanon	**162,823**	**84.8%**	**863,640**	**34.8%**	**1,362,238**	**108,757**	**8.0%**	**7.1%**	**59,759**

Source: General Agriculture Census, Ministry of Agriculture-1997; Living conditions, CAS-1997; CRI estimates- 2001

2.4.2. Description

Implementing a specific set of dam and irrigation projects, targeting the most economically deprived rural areas, should take into consideration that some major dam and irrigation projects are currently being either prepared or under implementation. These include South Irrigation Project-Canal 800 and Noura El-Tahta Dam & Irrigation Project. In our exercise, the following six projects have been selected:

1- Kfarsir Dam Project (Caza of Sour)
2- Massa Dam & Irrigation Project (Caza of Baalbeck)
3- Younine Dam & Irrigation Project (Caza of Baalbeck)
4- Laal Dam Project (part of Caza Batroun)
5- Bared Dam & Irrigation Project (Caza of Minyeh, and part of Caza Akkar)
6- Assi Dam & Irrigation Project (Caza of Baalbeck and Caza of Hermel)

Selection Criteria
The selection criteria for damn and irrigation projects is essentially based on the potential benefit these latter will provide to the designated Cazas or areas. The irrigation and rural development projects adopted above were based on an exhaustive list of investment and developmental projects available at governmental departments, and compiled by the Council for Development and Reconstruction (CDR). Although most of the listed projects had no performed studies and financing schemes, the above six projects were selected because they address six of the seven poorest areas in Lebanon mentioned above.

Following are the major objectives of the proposed interventions:

- Allowing farmers in these areas to shift from present patterns of farming, which are based to a great extent on non-irrigated cultivation schemes, to more efficient, market-oriented and high value-added ones.
- Providing direct contribution and incentives, in setting water networks for on-farm irrigation purposes
- Identifying new marketable, competitive and economically more viable crops in order to ensure developmental sustainability
- Reducing unemployment by providing employment opportunities. The South Irrigation Project-Canal 800, for example, is expected to provide around 45,000 job vacancies, as per Food and Agriculture Organization (FAO) estimates.

Projects

As per the implementation phasing process applying to similar projects, these latter would eventually take five years to be completed: a two-year research and planning period, followed by a three-year construction period. The implementation scheme would be as follows:

- The first project would start in 2006;
- The rest would start in the following years (one every year).

Following this pattern, all the six projects would be operational by the end of 2015. It should be noted that the model constructed is quite flexible, and hence would allow smooth application of any changes.

The cost incurred during the first and the second year of the projects' execution period is 10% of the project's total cost (5% every year). The remaining 90% of the cost would be broken-up equally among the three years of construction.

Impact Analysis

Based on pre-feasibility and feasibility studies of previous irrigation projects, once the irrigation project is completed, the overall additional net revenue per hectare is estimated to vary between 2,500 and 3,000 US$ per year. This revenue is net of all extra installation costs, which are to be paid for by the farmer above those undertaken by the government, and all operational costs. According to FAO and "Litany Office" experts, this new level of per hectare revenue would be four to five times the one realized on non-irrigated similar areas. This higher return is realized as a result of introducing new types of crops, in addition to the improved techniques used that would allow producing more of the old crops efficiently. The new crops would necessarily need to be diversified and subjected to proper marketing channels to ensure disposal in both local and international markets. Supply in excess of internal consumption should be oriented towards export markets.

For the sake of the exercise, two assumptions were undertaken. The first, considers that the additional revenue per hectare per year would be only 1,500 US$, and not varying between 2,500US$ and 3,000US$ as deduced from available studies. This assumption could be attributed (justified) to many factors:

a- Different forms of de facto irrigation practices exist in some parts of the addressed Cazas, which means that a percentage of the target potential revenue is already being realized.
b- The per hectare revenues realized in the existing non-irrigated areas vary significantly with respect to different types of crops. This means that the additional potential revenue to be induced by the proposed irrigation project will be variable in itself.

As for the second assumption, it considers that it is the addressed farmers that make up the poor segment of residents in the covered Cazas. Although this assumption might seem exaggerated, it can be to some extent justified by the close correlation between small-sized farmers and poverty as it has been developed in the rationale of this intervention.

Based on the above assumptions, and measuring the combined effect of all the projects together, the total yearly additional net revenue would amount to US$ 54.172 Million, for all the 58,890 farmers in the six Cazas; this is translated to a monthly additional income per farmer varying between US$ 58 in Minyeh and US$ 112 in Hermel. Comparing the additional net revenues in each Caza to the poverty gap of the same Caza, we can deduce that the poverty gap is more than dispatched in three of the addressed six Cazas (Akkar, Baalbeck and Sour). Although poverty gap was not fully eradicated in the remaining Cazas, it has registered a notable improvement. It should be noted that the following table, which shows the impact of this exercise in details, assumes that there is only one farmer/owner per household, thus allowing the comparison between the additional revenue per month and the poverty gap per Caza. However, if the number of farmers/owners per household is more than one, the additional revenue per month per household would increase substantially and the total number of impacted households will decrease. For example, if the number of farmers/owners per household were 1.1, the additional net revenue per month per household would increase from an average of 76 US$ to 85 US$, and the total number of impacted households would decrease from 58,890 to 53,000.

Table 8: Impact analysis of the rural development intervention (irrigation)

	Akkar	**Minyeh**	**Baalbeck**	**Hermel**	**Sour**	**Batroun**
Total area (hectares)	11,216	5,057	9,073	1,693	6,437	2,639
Additional revenue per hectare (US$)	1,500	1,500	1,500	1,500	1,500	1,500
Total revenue (US$)	16,824,046	7,586,054	13,608,780	2,540,139	9,655,002	3,958,683
Total farmers to benefit	16,447	10,831	11,972	1,887	12,416	5,337
Revenue per year per owner (US$)	1,023	700	1,137	1,346	778	742
Revenue per month per owner (US$)	**85**	**58**	**95**	**112**	**65**	**62**
Poverty Gap per Caza	(84)	(88)	(80)	(122)	(57)	(69)
New Poverty Gap	1	(29)	14	(10)	8	(8)
% Improvement	101.6%	66.6%	118.1%	91.7%	113.6%	89.0%

The last row of the above table, the percentage improvement, shows that despite the fact that the poverty gap was not fully covered in Minyeh, for example, it was compensated to an extent as high as 66%. When the percentage improvement is more than 100%, this indicates that the additional monthly revenue per farmer exceeds the poverty gap, thus eliminating it.

Based on the above analysis and the results expected to be achieved by all the six projects, we can confidently conclude that the impact of the projects would be reflected upon poverty, which will be alleviated substantially in the addressed Cazas, knowing that only six of the projects proposed by the CDR list, have been incorporated in the intervention. The investment costs of the selected projects constitute only 19.8% of the total investment costs of the listed forty-one projects pertaining to rural development and irrigation purposes, the total cost of which amounts to US$ 1,353 Million.

More specifically, two main points should be noted:

i- This overall impact would not be realized until all the projects become operational, since they would not be completed in the same year. This does not abandon the expected effects; it only delays it.

ii- The figure pertaining to the revenue per month per farmer in each of the Cazas might not be realized directly after the completion of the irrigation and dam project in the same Caza. This means that in the first year or two only part of the proposed additional revenues would be earned; the overall revenues per farmer estimated in this exercise would we attained in later years.

2.4.3. Estimated Costs

Table 9: Estimated Costs for rural development intervention (Irrigation)

	Total Cost US$	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Kfarsir Dam Project	12,000,000	600,000	600,000	3,600,000	3,600,000	3,600,000					
Massa Dam Project	16,000,000		800,000	800,000	4,800,000	4,800,000	4,800,000				
Massa Irrigation Project	7,000,000		350,000	350,000	2,100,000	2,100,000	2,100,000				
Younine Dam Project	20,000,000			1,000,000	1,000,000	6,000,000	6,000,000	6,000,000			
Younine Irrigation Project	15,000,000			750,000	750,000	4,500,000	4,500,000	4,500,000			
Laal Dam Project	45,000,000				2,250,000	2,250,000	13,500,000	13,500,000	13,500,000		
Bared Dam Project	45,000,000					2,250,000	2,250,000	13,500,000	13,500,000	13,500,000	
Bared Irrigation Project	8,000,000					400,000	400,000	2,400,000	2,400,000	2,400,000	
Assi Dam Project	50,000,000						2,500,000	2,500,000	15,000,000	15,000,000	15,000,000
Assi Irrigation Project	50,000,000						2,500,000	2,500,000	15,000,000	15,000,000	15,000,000
Total	**268,000,000**	**600,000**	**1,750,000**	**6,500,000**	**14,500,000**	**25,900,000**	**38,550,000**	**44,900,000**	**59,400,000**	**45,900,000**	**30,000,000**

Source: List of projects, CDR- 2003, CRI estimates

2.5. Intervention Brief # 2: Training Program for the Unemployed

2.5.1. Background and Rationale

The second intervention addresses the unemployed in peripheral areas through an advanced training program that would benefit namely those with low levels of education. Unemployment, coupled with low levels of education, is highly correlated in most of the cases to extreme poverty. This intervention aims at providing substantial assistance to this specific group of the unemployed. Once accomplished, it would facilitate the process of finding a job, enhance exposure to better jobs and lead to productivity gain in an era of economic openness and liberalization of trade (EuroMed partnership, AFTA, potential adhesion to WTO) through increasing the competitiveness of workers in the work place. With its global impact, the intervention will necessarily contribute to poverty alleviation.

The training program, an intervention that addresses the strategic needs, would focus not only on technical/vocational skills (familiarize trainees with the actual type of equipment that they are likely to work with later on) but also on life/practical skills (including literacy and numeracy). It ultimately aims at educating the unemployed in order to well-prepare them for future work place competition.

The following points are to be taken into consideration. The intervention should:

- Incorporate specialized courses, in addition to the general curricula (technical and vocational divisions)
- Appoint qualified trainers in order to provide high-quality training (e.g. orientation seminars, demonstrations, guest speakers, exposure visits, one-on-one counseling and technical consultancies)
- Spread geographically to cover unemployed from different locations, especially in the urban poverty pockets and peripheral areas.

2.5.2. Description

Beneficiaries
Not all unemployed people would benefit from this intervention. According to the USJ 2001 study ("L'entrée des Jeunes Libanais dans la Vie Active et L'emigration"), the national unemployment rate was 11.5% then. Considering the results of the USJ study as a starting point, and using CRI's projections, two scenarios regarding the evolution of the 10-year unemployment rate were taken. As for the active population projection figures, these were based on the estimates prepared by Consultation and Research Institute in 2003 for the "Schéma d'Aménagement du Territoire Libanais".

According to the USJ study, the female unemployment rate for the 18-35 age group was 23.2% in 2001. This means that almost one-fourth of the female active population was unemployed at the time of the study. This percentage is quite high when compared to the 11.8% male unemployment rate for the same age group. This being said, it is reasonable to suppose that this intervention would be more of a gender-oriented one, inclined towards benefiting females.

However, due to the unavailability of statistics pertaining to gender for unemployment figures, the exercise would take into consideration total unemployment projections and develop the costing accordingly.

Scenario one: Decreasing unemployment rate

Table 10: Unemployment rate (decreasing scenario)

U/E Rate	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Beirut	15.9%	15.3%	14.6%	14.0%	13.5%	12.9%	12.4%	11.9%	11.4%	10.9%
Mt-Lebanon	13.0%	12.5%	12.0%	11.5%	11.0%	10.6%	10.1%	9.7%	9.3%	8.9%
North	10.5%	10.1%	9.7%	9.3%	8.9%	8.5%	8.2%	7.8%	7.5%	7.2%
Bekaa	14.3%	13.7%	13.1%	12.6%	12.1%	11.6%	11.1%	10.6%	10.2%	9.8%
South	8.8%	8.5%	8.1%	7.8%	7.5%	7.2%	6.9%	6.6%	6.3%	6.1%
Nabatieh	12.4%	11.9%	11.4%	10.9%	10.5%	10.0%	9.6%	9.2%	8.8%	8.5%
Total	**12.5%**	**12.0%**	**11.5%**	**11.0%**	**10.5%**	**10.1%**	**9.7%**	**9.2%**	**8.9%**	**8.5%**

Scenario two: Increasing unemployment rate

Table 11: Unemployment rate (increasing scenario)

U/E Rate	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Beirut	15.9%	16.5%	17.0%	17.6%	18.3%	18.9%	19.5%	20.2%	20.9%	21.6%
Mt-Lebanon	13.0%	13.5%	13.9%	14.4%	14.9%	15.4%	16.0%	16.5%	17.1%	17.7%
North	10.5%	10.9%	11.2%	11.6%	12.0%	12.5%	12.9%	13.3%	13.8%	14.3%
Bekaa	14.3%	14.8%	15.3%	15.8%	16.4%	16.9%	17.5%	18.1%	18.7%	19.4%
South	8.8%	9.2%	9.5%	9.8%	10.1%	10.5%	10.9%	11.2%	11.6%	12.0%
Nabatieh	12.4%	12.8%	13.3%	13.7%	14.2%	14.7%	15.2%	15.7%	16.3%	16.8%
Total	**12.5%**	**12.9%**	**13.3%**	**13.8%**	**14.3%**	**14.7%**	**15.2%**	**15.8%**	**16.3%**	**16.9%**

It should be noted that the number of the unemployed on which the beneficiaries of this intervention were based is net of any overlapping from one year to the other (except for the first year, 2006, where all the unemployed of this period were considered). That is to say, it is only the group of the yearly additional unemployed that will be used to calculate the number of people eligible to benefit from the training program. Overlapping from one year to the other was calculated in each Mohafazat according to the following table, which shows that the national average of people who remain unemployed for more than a year is 51.4%.

Table 12: Duration of unemployment (in months) per Mohafazat

	Unemployment Period (months)						
	1	2-3	4-6	7-12	>12	N.A.	Total
Beirut	8.8%	13.7%	16.4%	17.6%	43.5%	0.0%	100.0%
Mt-Lebanon	5.1%	11.4%	14.8%	19.1%	48.6%	0.9%	100.0%
North	8.0%	10.0%	12.1%	18.1%	50.9%	0.9%	100.0%
Bekaa	2.7%	4.5%	11.1%	9.9%	71.4%	0.4%	100.0%
South	5.7%	11.4%	17.4%	23.9%	41.1%	0.5%	100.0%
Nabatieh	6.7%	11.2%	14.9%	14.1%	53.1%	0.0%	100.0%
Total	**5.7%**	**10.4%**	**14.3%**	**17.5%**	**51.4%**	**0.7%**	**100.0%**

Source: « L'entrée des Jeunes Libanais dans la Vie Active et L'émigration », USJ- 2001

Of this group, only the unemployed who are between 18 and 35 years of age, residing outside Beirut and Mount Lebanon, and have not achieved any educational diploma are addressed by this intervention. The second criterion, place of residence, would limit the beneficiaries to those who live in peripheral and poorer areas. Although the unemployed living in Beirut and Mount Lebanon have been excluded from the training program, the model developed for this intervention is quite flexible, and thus can be easily adjusted to cover some of the unemployed in these two Mohafazat, namely those living within the poverty pockets, such as Borj Hammoud and the southern suburbs of Beirut. As for the latter criterion, educational background, it covers those who have never been enrolled or enrolled only for a period not long enough to achieve the minimum official diploma, Brevet level. Assuming that the age structure for educational achievement had undergone no change since the 2001 USJ study, and given that there is no updated data regarding this point, the addressed people make up about 46% of unemployed aged between 18 and 35 in 2006 in the four Mohafazat. This rate is expected to decrease to 30% in 2015, as a result of improvement in educational attainment.

Training Costs

Technical and vocational training is significantly more expensive than general education. It requires, in addition to adequate curricula, qualified instructors, workshops and equipment relevant to the field of specialization, which need regular update to go inline with technological developments. Thus, a major factor determining training costs concerns the price levels of the training input, including type of training facilities, equipment used and instructors required. It should be noted that instructors' fees, in addition to adequate capitalistic equipment, constitute a considerable portion of the total budget for the training program.

Based on the "MEDA Countries: Skills Acquisition for the Informal Micro-Enterprise Sector- a Synthesis Report of Country Studies on Egypt, Jordan, Lebanon and Tunisia" study, prepared in October 2003 by World Bank (Washington) and European Training Foundation (Turin), training costs for such programs would vary between 1,500 and 2,200US$ per trainee. As the intervention we are suggesting here resembles to a large extent the real world of work, we will assume the highest limit of the range as the cost of training per person (this cost is inclusive of all the elements mentioned above).

Training Fees
Training programs provided by the public sector, i.e. financed from the general government budget, are more often than not free of charge. If the program is to entail some fee, it would be only a low commitment fee of some 5 to 10% of the actual training costs, taking the form of a registration fee. Likewise, training programs organized by NGOs are usually for free, and might charge in some cases a low commitment fee. In our case, since the program is intended to address those who are jobless, and consequently have no source of income, it would be implemented free of charge for all the trainees.

Training Financing
Financing of training programs is usually conducted by specialized training providers, in both the public and the non-public sectors. The non-public sectors include for-profit training providers and NGOs who both have training programs of their own.

Training Impact
This intervention, which would provide substantial assistance to a specific group of the unemployed, is a training program that would focus on technical/vocational skills as well as practical skills. This is expected to educate the unemployed, and thus well-prepare them for future work place competition, i.e. facilitate the process of finding a job, enhance exposure to better jobs, and lead to productivity gain. The percentage of the young unemployed, in all the four mentioned Mohafazats, who find a job in less than a year, was calculated to be 43%. This rate was arrived at by weighting the results of unemployment periods in each Mohafazat in the USJ 2001 study[11] according to the sample of unemployed in the Mohafazat. It is assumed that it is this percentage of the trained people that are expected to find a job within twelve months after the training program. This figure varies from one Mohafazat to the other, depending on the economic conditions and labor market of each Mohafazat.

As the program might not have gained national recognition in the first year, it might be difficult to assemble all the unemployed to be addressed by the intervention in 2006. Thus the theoretical number of people to be addressed in 2006 can be divided over three groups to be trained over three consecutive years, 2006, 2007, and 2008. Since this grouping is only a redistribution of the beneficiaries, it would not affect the total cost. Thus the model adopted for this intervention still shows the cost of the theoretical number of beneficiaries to be trained.

[11] « L'entrée des Jeunes Libanais dans la Vie Active et L'émigration », USJ- 2001

2.5.3. Estimated Costs: Decreasing Unemployment Rate Scenario

Table 13: Number of beneficiaries per Mohafazat

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Beirut										
Mt-Lebanon										
North	9,201	4,156	3,908	3,676	3,457	3,251	3,057	2,875	2,704	2,543
Bekaa	6,920	1,742	1,632	1,530	1,434	1,344	1,260	1,181	1,107	1,037
South	3,090	1,683	1,580	1,484	1,394	1,309	1,230	1,155	1,085	1,019
Nabatieh	4,037	1,729	1,623	1,523	1,429	1,341	1,258	1,180	1,107	1,039
Total	**23,248**	**9,310**	**8,743**	**8,213**	**7,714**	**7,245**	**6,805**	**6,391**	**6,003**	**5,638**

Table 14: Unemployed training cost per Mohafazat (in US$)

	Total Cost	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Beirut	-	-	-	-	-	-	-	-	-	-	-
Mt-Lebanon	-	-	-	-	-	-	-	-	-	-	-
North	85,420,037	20,241,102	9,142,549	8,598,174	8,086,213	7,604,735	7,151,927	6,726,079	6,325,588	5,948,944	5,594,726
Bekaa	42,213,364	15,224,579	3,831,566	3,591,321	3,366,140	3,155,079	2,957,251	2,771,827	2,598,029	2,435,129	2,282,443
South	33,060,596	6,798,184	3,701,722	3,476,602	3,265,173	3,066,601	2,880,106	2,704,952	2,540,451	2,385,953	2,240,852
Nabatieh	35,784,819	8,880,991	3,804,742	3,570,045	3,349,826	3,143,190	2,949,302	2,767,373	2,596,666	2,436,490	2,286,194
Total (US$)	**196,478,817**	**51,144,856**	**20,480,579**	**19,236,143**	**18,067,351**	**16,969,606**	**15,938,585**	**14,970,231**	**14,060,735**	**13,206,516**	**12,404,215**

2.5.4. Estimated Costs: Increasing Unemployment Rate Scenario

Table 15: Number of beneficiaries per Mohafazat

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Beirut										
Mt-Lebanon										
North	9,201	4,841	4,913	4,987	5,061	5,137	5,214	5,292	5,371	5,451
Bekaa	6,920	2,255	2,281	2,308	2,334	2,361	2,389	2,416	2,444	2,472
South	3,090	1,912	1,938	1,965	1,991	2,018	2,046	2,074	2,102	2,130
Nabatieh	4,037	2,029	2,055	2,081	2,107	2,134	2,161	2,188	2,216	2,244
Total	**23,248**	**11,037**	**11,187**	**11,341**	**11,493**	**11,650**	**11,810**	**11,970**	**12,133**	**12,297**

Table 16: Unemployed training cost per Mohafazat (in US$)

	Total Cost	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Beirut	-	-	-	-	-	-	-	-	-	-	-
Mt-Lebanon	-	-	-	-	-	-	-	-	-	-	-
North	122,030,383	20,241,102	10,650,350	10,809,563	10,971,155	11,135,164	11,301,624	11,470,572	11,642,046	11,816,084	11,992,723
Bekaa	61,999,308	15,224,579	4,961,867	5,019,129	5,077,053	5,135,644	5,194,912	5,254,864	5,315,507	5,376,851	5,438,902
South	46,788,086	6,798,184	4,207,448	4,264,570	4,322,467	4,381,150	4,440,630	4,500,918	4,562,024	4,623,959	4,686,736
Nabatieh	51,156,396	8,880,991	4,464,799	4,521,220	4,578,355	4,636,211	4,694,799	4,754,127	4,814,205	4,875,042	4,936,647
Total (US$)	**281,974,174**	**51,144,856**	**24,284,464**	**24,614,482**	**24,949,030**	**25,288,169**	**25,631,965**	**25,980,481**	**26,333,782**	**26,691,936**	**27,055,009**

2.6. Intervention Brief # 3: Unemployment Security Fund

2.6.1. Background and Rationale

Vulnerability, one of the basic determinants of poverty, involves many groups such as the elderly, the disabled, women, and child labor. Unemployment can be considered specifically as a transversal phenomenon that affects most of the vulnerable social sub-groups. In this view, unemployment is to some extent a poverty indicator, inversely related to income levels.

In a country such as Lebanon, where job opportunities are limited, it is usually a tedious and lengthy process to get employed, where many individuals' job search periods extend for more than a year. The average unemployment period was calculated to be 19.3 months according to the Saint Joseph University (USJ) 2001 study. The study estimates unemployment at 11.5% in 2001. According to MOSA's 1996 "Database of Housing and Household Survey", the unemployment rate varies significantly among Cazas, where it registers a minimum of 4.2% in Metn & Kesserwan, and a maximum of 20% in Hermel, Bekaa.

The unemployment security fund is an intervention of a social nature essentially, but has at the same time an economic dimension, since it directly impacts the overall effective demand. Yet it does not create job opportunities and/or recruitment processes; it just aims at benefiting the unemployed in the time of their job search. In particular, the following are its main goals:

i. concretize one of the fundamentals of human rights, in its economic and social dimension
ii. contribute in alleviating poverty
iii. enhance labor market mechanisms through increasing the degree of formality in this market, in terms of wage earners registration in the unemployment security fund and consequently National Social Fund for Security (NSSF).

This intervention serves as follows:

i. The fund will be financed in more than one mode, the first being accumulation of monthly allowances. These would be extracted as a percentage of the salaries of working employees, a structure similar to that of the National Social Security Fund (NSSF). Apparently, only those who contribute to this fund will have the chance to benefit from it in case of unemployment. The fund would be also financed through the government's general budget and international donations.
ii. Only a specific number of the unemployed would be addressed according to conditions explained below.

2.6.2. Description

Rate of Unemployment
The unemployment rate in the USJ study was the starting point on which the projection model was based. Two scenarios were taken into consideration, an optimistic and a pessimistic one. In the former, the unemployment rate falls to 8.5% in 2015, while in the latter, the rate rises to 16.9%. It should be noted that in both scenarios, it is assumed that the workforce is increasing at a yearly rate of about 1.2%, based on demographic and active population data and indicators.

Number of Unemployed
Measuring the number of unemployed individuals who can benefit from the security fund required adequate assumptions at many levels. The main assumption is that the number of those who benefit from the fund is a flow variable (except for the first year, 2006, where the number was taken as a stock variable), i.e. the addressed can benefit only once from this fund. This means that the percentage of people who remain unemployed for more than a year should be determined and deducted from the stock variable of the following year, so as to preclude double-counting[12]. This percentage, along with the unemployment rate, varies across Mohafazat; the combined effect of both causes fluctuations in the number of the unemployed, who are to benefit from the fund, across the years.

The beneficiaries would be:

1- Only employees, which excludes all self-employed, employers and informal workers. This makes up about 57% of the total unemployed people.
2- Employees with work experience, which excludes all first-time job-seekers. This is estimated at 55% of employees addressed in level 1 above.
3- Employees with more than one-year of experience, which excludes all employees who have worked for less than 12 months. These comprise 90% of employees with work experience mentioned in level 2 above.

Taking all the above conditions into consideration, the total number of beneficiaries is determined.

Capital Allocation
The principal to be received by each beneficiary in every Mohafaza is directly related to the average monthly income for employees[13] in that specific Mohafaza, and is weighted depending on the duration of unemployment. For the sake of avoiding misuse of capital, two groups of unemployed individuals were defined. Group one, comprising those who remain unemployed for less than a year, would receive a monthly allowance equivalent to

[12] Refer to Intervention 2 of Goal 1 for overlapping calculation
[13] "Household Living Conditions in Lebanon", Central Administration for Statistics, 1997

70% of the average monthly income of employees in the private sector for the whole period of unemployment. As for group two, those who remain unemployed for more than a year, they would receive monthly allowances for a period equivalent to the average unemployment period in the Mohafazat. The amount received by individuals in group two is the same monthly allowance as that of group one in the first year (12 months); however, the amount would drop to 50% of the average monthly income, per Mohafazat, during the remaining period of the second year.

Intervention Implementation

Since the security fund does not exist in Lebanon, it would take some time to be established. The preparation period is estimated to extend for two years and cost around US$ 4 M (US$ 2 M in 2006 and US$ 2 M in 2007). It should be noted that during this two-year period, monthly allowances would be collected as a percentage of the salaries of working employees, thus raising funds sufficient for the fund contributions that would start in 2008. Despite the fact that some costs will be incurred in the first two years (planning), the bulk amount will be realized starting 2008, where the unemployed would start to benefit from the fund.

Impact

Evidently, only those who contribute to the fund during their employment period will have the chance to benefit from it in case of their unemployment. This would encourage workers to join the fund, pressuring their employers if they must. In the long-run, this is expected to narrow down the percentage of informal wage earners.

2.6.3. Estimated Costs: Decreasing Unemployment Rate Scenario

Table 17: Number of unemployed per Mohafazat that benefit from insurance

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Beirut			7,038	3,717	3,581	3,449	3,322	3,200	3,083	2,969
Mt-Lebanon			21,078	10,171	9,851	9,541	9,241	8,950	8,669	8,396
North			8,610	4,050	3,966	3,885	3,804	3,726	3,649	3,574
Bekaa			7,550	1,979	1,931	1,885	1,840	1,796	1,753	1,711
South			4,330	2,455	2,402	2,349	2,297	2,247	2,198	2,149
Nabatieh			3,305	1,474	1,441	1,408	1,375	1,344	1,313	1,283
Total	**-**	**-**	**51,911**	**23,847**	**23,172**	**22,517**	**21,881**	**21,264**	**20,664**	**20,083**

Table 18: Unemployment Security Fund Yearly Cost per Mohafazat

Total Cost (US$)	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Beirut										
70% of annual avg income	-	-	22,616,260	11,946,769	11,507,583	11,084,542	10,677,053	10,284,544	9,906,464	9,542,283
50% of annual avg income	-	-	-	2,157,567	1,139,709	1,097,811	1,057,453	1,018,579	981,134	945,066
Mt-Lebanon										
70% of annual avg income	-	-	63,390,226	30,588,247	29,625,906	28,693,841	27,791,100	26,916,760	26,069,928	25,249,738
50% of annual avg income	-	-	-	16,898,585	8,154,224	7,897,683	7,649,213	7,408,560	7,175,478	6,949,729
North										
70% of annual avg income	-	-	17,846,344	8,394,436	8,221,283	8,051,701	7,885,618	7,722,960	7,563,657	7,407,641
50% of annual avg income	-	-	-	5,331,427	2,507,759	2,456,031	2,405,370	2,355,754	2,307,161	2,259,571
Bekaa										
70% of annual avg income	-	-	18,028,417	4,724,956	4,611,952	4,501,652	4,393,989	4,288,902	4,186,327	4,086,206
50% of annual avg income	-	-	-	6,578,438	1,724,102	1,682,868	1,642,620	1,603,335	1,564,989	1,527,560
South										
70% of annual avg income	-	-	7,725,415	4,380,684	4,284,520	4,190,467	4,098,479	4,008,511	3,920,517	3,834,455
50% of annual avg income	-	-	-	1,482,416	840,601	822,149	804,101	786,450	769,186	752,301
Nabatieh										
70% of annual avg income	-	-	7,216,813	3,219,722	3,146,125	3,074,211	3,003,940	2,935,275	2,868,180	2,802,619
50% of annual avg income	-	-	-	3,705,949	2,101,452	2,055,321	2,010,203	1,966,076	1,922,917	1,880,706
Total										
70% of annual avg income	-	-	136,823,476	63,254,814	61,397,369	59,596,414	57,850,179	56,156,951	54,515,074	52,922,942
50% of annual avg income	-	-	-	36,154,381	16,467,846	16,011,862	15,568,960	15,138,753	14,720,865	14,314,933
Sub-Total (US$)	**-**	**-**	**136,823,476**	**99,409,195**	**77,865,215**	**75,608,276**	**73,419,139**	**71,295,704**	**69,235,939**	**67,237,875**
Planning (US$)	**2,000,000**	**2,000,000**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Total (US$)	**2,000,000**	**2,000,000**	**136,823,476**	**99,409,195**	**77,865,215**	**75,608,276**	**73,419,139**	**71,295,704**	**69,235,939**	**67,237,875**

2.6.4. Estimated Costs: Increasing Unemployment Rate scenario

Table 19: Number of unemployed per Mohafazat that benefit from insurance

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Beirut	-	-	8,197	4,955	5,151	5,355	5,566	5,786	6,015	6,253
Mt-Lebanon	-	-	24,549	13,729	14,351	15,000	15,679	16,389	17,130	17,905
North	-	-	10,028	5,495	5,808	6,139	6,488	6,858	7,248	7,661
Bekaa	-	-	8,794	2,985	3,144	3,312	3,489	3,675	3,871	4,078
South	-	-	5,043	3,251	3,431	3,622	3,823	4,035	4,259	4,495
Nabatieh	-	-	3,849	2,015	2,125	2,241	2,363	2,492	2,628	2,771
Total	-	-	**60,460**	**32,429**	**34,009**	**35,667**	**37,408**	**39,234**	**41,151**	**43,164**

Table 20: Unemployment Security Fund Yearly Cost per Mohafazat

Total Cost (US$)	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Beirut										
70% of annual avg income	-	-	26,340,947	15,924,013	16,553,562	17,208,000	17,888,312	18,595,518	19,330,684	20,094,915
50% of annual avg income	-	-	-	2,512,898	1,519,134	1,579,192	1,641,625	1,706,526	1,773,992	1,844,126
Mt-Lebanon										
70% of annual avg income	-	-	73,830,006	41,289,817	43,158,397	45,111,540	47,153,073	49,286,996	51,517,490	53,848,926
50% of annual avg income	-	-	-	19,681,625	11,007,052	11,505,178	12,025,848	12,570,080	13,138,942	13,733,548
North										
70% of annual avg income	-	-	20,785,470	11,389,344	12,037,937	12,723,466	13,448,034	14,213,865	15,023,307	15,878,845
50% of annual avg income	-	-	-	6,209,463	3,402,459	3,596,220	3,801,016	4,017,473	4,246,258	4,488,071
Bekaa										
70% of annual avg income	-	-	20,997,530	7,126,515	7,507,055	7,907,914	8,330,179	8,774,992	9,243,557	9,737,143
50% of annual avg income	-	-	-	7,661,845	2,600,413	2,739,269	2,885,540	3,039,621	3,201,930	3,372,906
South										
70% of annual avg income	-	-	8,997,719	5,799,191	6,121,150	6,460,983	6,819,683	7,198,297	7,597,932	8,019,753
50% of annual avg income	-	-	-	1,726,556	1,112,796	1,174,576	1,239,786	1,308,616	1,381,268	1,457,953
Nabatieh										
70% of annual avg income	-	-	8,405,355	4,400,537	4,640,540	4,893,634	5,160,530	5,441,984	5,738,788	6,051,779
50% of annual avg income	-	-	-	4,316,284	2,781,922	2,936,368	3,099,389	3,271,461	3,453,085	3,644,793
Total										
70% of annual avg income	-	-	159,357,028	85,929,416	90,018,641	94,305,538	98,799,812	103,511,652	108,451,758	113,631,360
50% of annual avg income	-	-	-	42,108,670	22,423,775	23,530,804	24,693,203	25,913,778	27,195,476	28,541,398
Sub-Total (US$)	-	-	**159,357,028**	**128,038,087**	**112,442,416**	**117,836,342**	**123,493,015**	**129,425,430**	**135,647,234**	**142,172,758**
Planning (US$)	**2,000,000**	**2,000,000**	-	-	-	-	-	-	-	-
Total (US$)	**2,000,000**	**2,000,000**	**159,357,028**	**128,038,087**	**112,442,416**	**117,836,342**	**123,493,015**	**129,425,430**	**135,647,234**	**142,172,758**

2.7. Consolidated Cost

The consolidated cost in order to achieve MD Goal 1 is shown in the table below.

Table 21: Total Consolidated Cost MD Goal 1 (in '000 USD)

In '000 USD	Total Cost US$	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Scenario 1: Decreasing Unemployment Rate											
Rural Development	**268,000**	600	1,750	6,500	14,500	25,900	38,550	44,900	59,400	45,900	30,000
Training Program for Unemployed	**196,480**	51,145	20,481	19,236	18,067	16,970	15,939	14,970	14,061	13,207	12,404
Unemployment Security Fund	**674,894**	2,000	2,000	136,823	99,409	77,865	75,608	73,419	71,296	69,236	67,238
Total Scenario 1	**1,139,374**	**53,745**	**24,231**	**162,560**	**131,977**	**120,735**	**130,097**	**133,289**	**144,756**	**128,342**	**109,642**
Scenario 2: Increasing Unemployment Rate											
Rural Development	**268,000**	600	1,750	6,500	14,500	25,900	38,550	44,900	59,400	45,900	30,000
Training Program for Unemployed	**281,973**	51,145	24,284	24,614	24,949	25,288	25,632	25,980	26,334	26,692	27,055
Unemployment Security Fund	**1,052,411**	2,000	2,000	159,357	128,038	112,442	117,836	123,493	129,425	135,647	142,173
Total Scenario 2	**1,602,386**	**53,745**	**28,034**	**190,472**	**167,487**	**163,631**	**182,018**	**194,373**	**215,159**	**208,239**	**199,228**

(*) Figures included in this table are rounded

Impact Analysis

Taking the joint effect of all the three interventions, it can be confidently stated that poverty is significantly alleviated, since the interventions take effect at different levels, providing both indirect and direct aid.

The first two interventions address poverty from a sustainable perspective, where they provide strategic long-run support that is related to poverty alleviation. The effects of the suggested irrigation projects would take some time to develop, but once materialized would reduce poverty to a great extent in the addressed Cazas through providing extra net revenue to the farmers. The other intervention, training program, as mentioned before, would well-prepare and help the trained unemployed to find new and better-paying jobs. As for the direct financial aid, a short-run solution, it is achieved through the unemployment security fund. It allocates different amounts of cash to different unemployed individuals, depending on their period of unemployment.

As for gender, it is a transversal variable within all the selected interventions, the implementation of which will undoubtedly benefit females. Since all the three interventions would address farmers and unemployed in general, without differentiating according to gender, gender equality would be secured, in addition to economic independency.

Chapter 3: Education

"Goals 2: Achieve Universal Primary Education"

3.1. Background on Goal 2

The Lebanon MDG report prepared in September 2003 covers several topics in education such as enrolment rates, gender and geographical distribution, and expenditure on education. Lebanon has attained significant achievement in education, but still further measures have to be taken in order to reach the millennium goals, such as ensuring primary education for all children, boys and girls. Lebanon's strengths lie in the willingness of groups to cooperate and adopt new educational schemes.

The following is the target that has to be met by 2015 in order to achieve the above goal.

Target 3: Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling

3.2. Rationale for Intervention Selection

A number of interventions is suggested to move from the current state to the one proposed by the above goal. The following is a background summary that highlights some major facts about the education sector status in Lebanon, using available studies and statistics.

The educational status in Lebanon is characterized by the following:

i. Primary level enrolment rate is close to satiation[14] as it reaches between 91.5% and 98.3% for net enrolment.

ii. There is no gender inequality in enrolment rates (90.8% for males and 92.2% for females), as per the Centre for Educational Research and Development (CERD) database. Besides, the ratio of girls to boys reached 93% in primary, 110% in intermediate, and 121% in secondary levels in the academic year of 2003-2004.

[14] It varies between 91.5% of net 2001-2002 enrolment according to the National Educational Plan and 98.3% according to 1999-2000 MDG's. Enrolment rates vary according to sources that use different population estimates, as there is no up-to-date and comprehensive population census.

iii. The educational system in Lebanon is flexible, adjusts quickly to meet educational needs and experiences forms of competitiveness due to its public/private dual structure.

iv. Despite the above, the system needs organization and coordination among schools of both sectors to avoid inefficient allocation of:

- ***Human resources***. In the public sector, both the average number of students per section and the average number of students per teacher are low; where the former varies between 14 and 27 depending on the Mohafazat and the latter reaches 8.6.

- ***Employed resources***. The failure and dropout rates are both relatively high in public schools. Failure rates start at 7.3% for the first elementary class, rise to 33.43% for the fourth elementary and then decrease to 18.67% for the sixth elementary. As for the dropout rate, it reaches 3.86% for the sixth elementary class.

- ***Financial resources***. These resources could be public (administering public education, supporting none-profit private education or providing scholarships to the public sector employees to assist them pay tuition fees), as well as private (parents' full or partial contribution in their children's education expenditures). Expenditure on education was estimated to be 11.4% of GDP in 2001 (4.4% paid by the government and 7% paid by parents), which is relatively high according to international and regional comparisons.

v. The educational system, being complex, requires various interventions at many levels to overcome obstacles facing accessibility of primary education to all children. This means identifying those who do not benefit from the educational system, reasons for not being enrolled, and provide appropriate basis for them to join schools. In addition, educational weak productivity is to be settled through reducing failure and dropout rates, increasing efficiency of teachers, developing learning and teaching techniques mainly in primary levels, and improving the allocation of resources employed in education. Along with these interventions, it is essential to maintain the public/private dual structure of the educational system, reinforce the role of the non-governmental sector and avoid employing new workforce before efficiently utilizing the existing human resources, especially that the current economic situation does not allow expansionary policies on public schooling system.

Reviewing the MDG and other major reports, in addition to numerous analyses, statistical data and indicators pertaining to education from both a regional and international comparative perspectives, a very focal conclusion arises. In the case of Lebanon, and given its concrete conditions, the major measure for the realization of the MDGs is the improvement of the quality of elementary education, rather than simple horizontal expansion of elementary education opportunities (supply side) that takes place through constructing new schools and recruiting additional human resources. In other words, the challenge lies in the capability of the interventions to address quality of education rather than quantity.

Reform of the educational public sector should be the main point to focus on in the interventions for two reasons. First, this sector is in massive need for major reforms, and second, the well-being of this sector positively affects the whole educational situation.

The main factors of the required interventions for the reform of public education are:

- Improve preparation of children for basic education by expanding the pre-school level to cover all public schools.
- Improve the quality of and expand primary basic education
- Halt illiteracy

3.3. Intervention List

The following is the list of three proposed interventions to meet goal 2.

Target 3: Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling
1. Pre-School Age: Finalize organization and implementation of the pre-school level in all public schools to make it accessible to all children 2. Primary Education: Improve the quality and productivity of this level and apply the law of compulsory education 3. Reduce youth and adult illiteracy rates

3.4. Intervention Brief # 1: Make pre-school level accessible to all children in all public schools

To achieve this, the following activities are proposed:

i- Make pre-school level education accessible to all children in public schools
ii- Improve the quality of pre-school levels

3.4.1. Background and Rationale

Low productivity of basic education, reflected in failures and dropouts, is partly due to the inadequate educational preparation of students in pre-school levels. Despite the existence of specific cases of notable pre-school student preparation, efforts are still needed to develop the pre-school network and expand this level from two years (ages 4 and 5) to three years (ages 3, 4 and 5) in public schools, i.e. add a nursery class. Such an intervention would raise the percentage of students enrolled in public pre-school levels from 24.6% in 2005 (of the total pre-school level students) to 36.5% in 2015, which is the current percentage of enrolled students in the first year of the primary level in public schools.

This increase (from 24.6% to 36.5%) will require that the total pre-school enrollment rate improves from 71% (in 2005) to 83% (in 2015). This will ensure that the distribution of children between public and private sectors is not affected (i.e. the new share of the public sector in the total pre-school enrollment would arise from currently non-enrolled children).

This measure would not prove effective unless two steps are taken. The first is to allocate a specialized administration for pre-school level in the Ministry of Education and Higher Education, as currently the pre-school administration is part of that of the primary. And the second is to reconsider the pre-school taught program to include a nursery class.

3.4.2. Description

This intervention is made up of different steps, some coming with a cost. These are detailed below:

i- Legislative modification of the structure of the pre-school level from two years (ages 4 and 5) to three years (ages 3, 4 and 5).

ii- Creation of a separate administration for pre-school level in the Ministry of Education and Higher Education. This can be done by legislating then assigning head officers and specialists in every Governorate, a total of 14 all over Lebanon- 4 centrally and 10 regionally (2 in every Governorate). This step does not incur any extra costs, as it will benefit from the surplus in the number of teachers in the public sector.

iii- Setting up the pre-school level in all public schools and expanding it to three years would lead to many improvements, detailed as follows:
  - The total pre-school enrollment rate would rise from 71% in 2005 to 83% in 2015.
  - The share of public schools in the total enrollment in pre-school level would rise from 24.6% in 2005 to 36.5% in 2015.
  - Based on the above two improvements, the estimated total number of additional places to be added over the ten-year period (2006-2015) in public schools is 36,084. Assuming that each section holds 20 students, the estimated number of additional sections is 1,804.
  - The average cost for adding one section is estimated at around 24,930 USD[15] (i.e. 1,247 USD per additional place). This figure is a weighted average of the following four components:
    - Refurbishment cost of existing sections and/or schools wherever needed, which will mainly take place in rural areas.
    - Construction cost of new sections and/or new schools wherever needed, which will mainly take place in main cities and its suburbs.
    - Equipment cost
    - Training of new additional teachers who would be reallocated from levels 1 and 2 of basic education

iv- Development of pre-school taught programs to include a nursery class, the cost of which is estimated to be 50,000USD to be incurred twice, in 2006 and 2011.

v- Habilitate current kindergarten teachers in public schools. This would be done through a one-month training course that addresses around 3,300 teachers and would cost around 500 US$ per teacher. As it is not possible to give the course to all teachers in one year, the teachers would be divided into two groups, where group one undertakes the training in 2006 and the second in 2007. This training course would take place in collaboration with CERD and Faculty of Education-Lebanese University, in accordance with the criteria set in the "National Work Plan of Education for All 2005-2015"[16]

vi- Develop both an educational orientation team and an educational inspection team to give more attention to the pre-school level, in collaboration with CERD, Faculty of Education- Lebanese University, and concerned parties in central administration of the Ministry of Education.

15 CRI estimates, based on "National Work Plan of Education for All 2005-2015", Ministry of Education and Higher Education, 2004

16 "National Work Plan of Education for All 2005-2015", Ministry of Education and Higher Education, 2004

3.4.3. Estimated Costs

Table 22: Estimated cost for pre-school level in all public schools (in US$)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Population in 3-5 age bracket	223,276	226,840	230,067	233,144	236,110	239,000	241,387	243,706	245,598	247,244	247,029
Net enrolment rate in pre-school	71%	72%	73%	74%	75%	76%	77%	78%	80%	81%	83%
Number of enrolled in pre-school	158,548	162,928	167,316	171,803	176,439	181,255	186,020	190,998	196,011	201,226	205,801
o/w in private sector	*119,497*	*121,263*	*122,855*	*124,352*	*125,788*	*127,182*	*128,286*	*129,346*	*130,166*	*130,893*	*130,665*
o/w in public sector	*39,051*	*41,665*	*44,461*	*47,452*	*50,650*	*54,073*	*57,734*	*61,652*	*65,845*	*70,332*	*75,136*
Share of private sector	75.4%	74.4%	73.4%	72.4%	71.3%	70.2%	69.0%	67.7%	66.4%	65.0%	63.5%
Share of public sector	24.6%	25.6%	26.6%	27.6%	28.7%	29.8%	31.0%	32.3%	33.6%	35.0%	36.5%
Additional places needed in public schools		2,614	2,796	2,990	3,199	3,422	3,661	3,918	4,193	4,488	4,803
Estimated unit cost (in US$)		1,247	1,247	1,247	1,247	1,247	1,247	1,247	1,247	1,247	1,247
Sub-Total Cost		3,259,257	3,485,596	3,728,077	3,987,879	4,266,265	4,564,597	4,884,334	5,227,045	5,594,420	5,988,271
Pre-school taught programs (in US$)		50,000	-	-	-	-	50,000	-	-	-	-
Rehabilitation current teachers (in US$)		824,950	824,950	-	-	-	-	-	-	-	-
Total cost (in US$)		**4,134,207**	**4,310,546**	**3,728,077**	**3,987,879**	**4,266,265**	**4,614,597**	**4,884,334**	**5,227,045**	**5,594,420**	**5,988,271**

3.5. Intervention Brief # 2: Improve the quality and productivity of primary education and apply the law of compulsory education

To achieve this, we propose the following activities:

i- Rehabilitate teachers
ii- Prepare recuperation programs (for drop-outs, late enrolled and handicapped)
iii- Apply the law of compulsory primary basic education

3.5.1. Background and Rationale

Weak performance in primary levels, reflected in failures and dropouts, can be tackled in the educational public sector by:

- Preparing children before enrolment, which can be done through expanding the pre-school level to cover all public schools and improve its quality of education

- Improving educational care by developing orientation programs for teachers in public primary schools and educational inspection teams to monitor functioning in these schools. These teams would be formed of the surplus of teachers in the public primary levels.

- Legislating university preparation programs for teachers in the Faculty of Education-Lebanese University in collaboration with CERD, and then training teachers during primary preparation in collaboration with faculty of education.

3.5.2. Description

This intervention can be divided into three components: law of compulsory primary education, scholastic support program, and scholastic recuperation program. The first comes without any extra cost, as for the remaining two components, their costs are presented in the table that follows. Each of the three components is discussed in details below.

Law of compulsory primary education (6 years)
The primary compulsory education law is to be applied, and a specialized inspection team is to be developed to follow-up and control the implementation of the law of compulsory education. This team will have two regulators in every Governorate to monitor execution of the above law with concerned parties, such as Municipalities and school directors.

Scholastic support program to reduce failures and dropouts

This program requires that head-teachers and teachers are trained continuously in collaboration with general directorate (orientation), CERD and Faculty of Education-Lebanese University. It would address 17,922 current teachers[17] under 55 years of age, and would cover:

1- Subjects to be taught,
2- Tools for inspecting learning difficulties,
3- Special programs for teaching the handicapped.

The scholastic support program would be held twice, over two phases. The first phase will extend over 2006-2010 and the other over 2011-2015. This program is meant to improve the quality of teaching and reduce the failure rate.

In fact, it is recommended that the implementation of the scholastic support system is done inside current schools and within the framework of educational activities. Thus, for educational and financial purposes, it is necessary to avoid having separate or independent centers.

Scholastic recuperation program to reclaim dropouts and bring in non-enrolment

This program, which aims at reducing the drop-out rate and addressing late-enrolment, will address 250 teachers (reallocated from the surplus in the number of teachers in the first two levels of basic education) below 55 years of age. It will cover topics such as recuperation programs for drop-outs and special scholastic programs on learning difficulties for the recuperated students. It will be a monthly course in the first year of training and will be followed by a one-week course in the following years[18].

It should be noted that the drop-out rate reached 2.1% in 2001-2002 for the primary level, and it is assumed that 50% of the total drop-out cases originate from public schools.

[17] Based on CERD's "National Work Plan of Education for All 2005-2015", costs are estimated to be US$ 500 per teacher per phase

[18] Based on CERD's "National Work Plan of Education for All 2005-2015", costs are estimated to be US$ 500 per teacher per month (first year) and US$ 125 per week (following years)

3.5.3. Estimated Costs

Table 23: Estimated cost for quality and productivity improvement in primary education

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1- Reduce Failure & Drop-outs										
Create tools for primary detection of learning difficulties	100,000	-	-	-	-	100,000	-	-	-	-
Training of 17,922 teachers	1,792,200	1,792,200	1,792,200	1,792,200	1,792,200	1,792,200	1,792,200	1,792,200	1,792,200	1,792,200
Evaluation of student's performance	-	300,000	-	-	-	300,000	-	-	-	300,000
Total (1)	**1,892,200**	**2,092,200**	**1,792,200**	**1,792,200**	**1,792,200**	**2,192,200**	**1,792,200**	**1,792,200**	**1,792,200**	**2,092,200**
2- Recuperation Program										
Develop recuperation programs for drop-outs	50,000	-	-	-	-	-	-	-	-	-
Training of 250 teachers	125,000	31,250	31,250	31,250	31,250	31,250	31,250	31,250	31,250	31,250
Periodical project assessment (1&2)/once every 3 years	300,000	-	-	-	300,000	-	-	-	300,000	-
Total (2)	**475,000**	**31,250**	**31,250**	**31,250**	**331,250**	**31,250**	**31,250**	**31,250**	**331,250**	**31,250**
Overheads-Inspection Teams of 10 to control compulsory education	**100,000**	**100,000**	**100,000**	**100,000**	**100,000**	**100,000**	**100,000**	**100,000**	**100,000**	**100,000**
TOTAL	**2,467,200**	**2,223,450**	**1,923,450**	**1,923,450**	**2,223,450**	**2,323,450**	**1,923,450**	**1,923,450**	**2,223,450**	**2,223,450**

3.6. Intervention Brief # 3: Reduce youth and adult illiteracy rates

To achieve this, we propose the following activities:

i- Improve and make basic education compulsory till the end of third stage (age of 15)
ii- Introduce literacy classes as part of vocational training programs (this would be tackled through the poverty alleviation intervention of training the unemployed with no education)
iii- Encourage small productive projects to make use of the training sessions

3.6.1. Background and Rationale

Reducing youth illiteracy rates would only be achieved by tackling this problem at early stages, i.e. well-prepare children in pre-schools levels, ensure inclusive enrolment at the elementary levels, reduce failures and dropouts, and apply the law of compulsory basic education after extending it to three stages instead of the current two. In addition, the productivity of teaching in the third stage of basic education (ages 12 to 15) should be improved. This is to be done in collaboration with concerned parties in general directorates and municipalities, in addition to forming a unit specialized in project execution in the Faculty of Education- Lebanese University. Execution of this project necessitates creation of municipal and national funds to finance all extra fees. Besides, special educational attention should be given to disabled students and those with special needs.

3.6.2. Description

- **Scholastic support program to reduce failures and dropouts in the third stage of basic education**
  - Implement the scholastic support program in the third stage of primary education (age 12 to 15)
  - Carry out a one-month training course, for third-stage primary level teachers (grades seven, eight, and nine), that would be made up of two separate programs. The first would address 15,059 current teachers under 55 years of age, and would cover:
    1- Subjects to be taught,
    2- Tools for inspecting learning difficulties,
    3- Special programs for teaching the handicapped.

    It will be held twice, over 2006-2010 and over 2011-2015. This first part of the training program will improve the quality of teaching and reduce failures, which according to CERD's "National Work Plan of Education for All 2005-2015" reached 20.31% in grade seven, 11.5% in grade eight, and 8.7% in grade nine in 2001, as well as repetitive failures, which according to the same source reached 42.8% in grade seven and 42.4% in grade nine and stage three in 2001.

- **Scholastic recuperation program to reclaim dropouts and bring in non-enrolled in the third stage of basic education**
  - The second program, which aims at reducing the drop-out rate, will address 255 teachers[19] (reallocated from the surplus in the number of teachers of the third level) below 55 years of age. It will cover topics such as recuperation programs for drop-outs and special scholastic programs on learning difficulties for the recuperated students. It will be a monthly course in the first year of training and will be followed by a one-week course in the following years.
  - The one-month training course mentioned above would also focus on teaching programs for recuperated students to either integrate them into the standard educational system (regular classes of public schools or special class sections if necessary) or vocational/technical training system, be it regular or fast track classes, starting from grade nine. This would take place in collaboration with The General Directorate of Technical and Vocational Training in the Ministry of Education and Higher Education.

- **Location of the programs**
  These scholastic support and drop-out programs are to take place in public school blocks, otherwise in intermediary centers among many schools depending on availability.

- **Law of compulsory education**
  The compulsory education law for primary classes should be implemented till the third level (age of 15), according to a scheme recommended by the regional UNESCO office, presented in a seminar in the Lebanese Parliament on the 11th of July 2002. It was decided that the project execution would take place in collaboration with governmental institutions and the civil society; and that local municipal and central funds are established to raise money to provide free education for those who cannot afford it. This would ensure that no extra costs in the government's budget would be incurred. It should be also noted that execution of this project requires a special legislation, in addition to a governmental and civil committee to supervise implementation of the project's legislations.

- **The double-shift System**
  Resources have to be allocated efficiently in order to increase the capacity of classes to embrace students, especially in grades seven, eight and nine, and, where needed, to add extra sections to eliminate the double-shift system in public schools. The CERD "Regional Assessment of Current Public Schools 2002-2003" shows that schools with double-shift systems are currently limited to urbanized areas and main cities, such as Beirut and its suburbs; and this system exists only in the third stage of basic education and the secondary level.

[19] Based on "National Work Plan of Education for All 2005-2015" data, the number of drop-outs reached 5,100 students in 2001-2002. Assuming that one teacher, specialized in recuperation program, is needed for every 20 students, the total number of teachers to be trained is 255.

The following table shows the regional distribution of current afternoon shift sections.

Table 24: Schools having afternoon shifts

Area	Number of sections	Stage
Beirut 1- Ashrafieh	6	Third stage
Beirut 2- Mouseitbeh, Mazraa	12	Third stage
Beirut Northern Suburbs, Borj- Hammoud	6	Third stage
Beirut Southern Suburbs, Ghobeiri	46	Third stage
Beirut Southern Suburbs, Borj El-Barajneh, Al-Lailaki	91	Third stage
Beirut Southern Suburbs, Haret Hreik, Al-Ghadir	34	Third stage
Caza of Kesserwan	18	Third stage
Beirut Northern Suburbs, Metn (Jal El-Dib)	3	Third stage
Caza of Aley, Choueifat	12	Third stage
Caza of Aley, Amrousieh	19	Third stage
Caza of Chouf, Haret El-Nehmeh	8	Third stage
Tripoli and its Suburbs	159	Third stage
Zahleh	6	Third stage
Rachaya	6	Third stage
Total	**426**	**Third stage**

This table shows that the number of extra sections needed to eliminate the double-shift system is around 426, distributed among different areas, which could be arrived at by either increasing the capacity of classes to embrace more students or constructing new buildings in the case of saturation of the current sections. The cost per school was estimated according to "National Work Plan of Education for All 2005-2015" to be around USD 1.1 million. Assuming that there are 24 sections in every school, the total cost for constructing the new sections would be USD 19.5 million.

In addition, it is expected that some class seats will be cleared once the failure problem is handled. Tackling failure will positively affect the problem of drop-out, which reached 9.38% for grade seven and 5.9% for grade nine during 2001-2002 academic years20. These seats could be used to enroll all new students expected to register between 2006 and 2015.

- **Education for students with special needs**

  Law #220, which was issued in 2000, is to be implemented. It is related to the rights of individuals with special needs (disabled) to education by activating the specialized committee in the Ministry of Education and Higher Education. This committee was formed on the 11th of February 2004 as stated by decree #11853; it includes representatives of different governmental and concerned non-governmental administrations. This provides education to students with special needs in the regular

[20] "National Work Plan of Education for All 2005-2015", Ministry of Education and Higher Education, 2004

classes or special sections and even centers if necessary. While awaiting the statistics for the exact number of students with special educational needs and adequate conditions to provide their right to education, efforts of NGOs concerned with teaching these students and vocationally habilitating them within the Ministry of Social Affairs are to be supported. The percentage of slow-learners and handicapped children who need direct educational intervention is currently estimated at 3%[21] of residents in the primary level age; however, it is the updated statistics that will be used to evaluate the cost of providing education to these groups.

- **Recommendations for implementation**

  To ensure avoiding extra construction and administrative expenses, it is suggested that:
  - The recuperation program for stages one and two of primary education takes place in public school blocks. As for the stage three recuperation program, it can take place either in public schools or in vocational training centers (the vocational preparatory program of stage three, be it academic or practical, is to take place only in vocational training centers).
  - Training teachers in general or specialized training sessions for recuperation programs can be conducted in public school blocks, vocational training centers, or teachers departments that are related to CERD (these amount to 34 centers in Lebanon, distributed over Mohafazats and Cazas)[22].
  - Planned school-blocks (CDR projects), if executed, can be utilized for the above programs. Costing of these projects is listed in special programs.

[21] MOSA report, July 2004

[22] According to the General Inspection Department report, there are 319 employees in teachers departments, with no specific job to pursue (including 122 secondary level teachers, 77 instructors, 72 administrative employees, and 48 janitors)

3.6.3. Estimated Costs

Table 25: Estimated cost for the reduction of youth and adult illiteracy rates

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1- Reduce Failure & Drop-outs										
Create tools for primary detection of learning difficulties	100,000					100,000				
Training of 15,059 teachers	1,505,910	1,505,910	1,505,910	1,505,910	1,505,910	1,505,910	1,505,910	1,505,910	1,505,910	1,505,910
Evaluation of student's performance		300,000				300,000				300,000
Total (1)	**1,605,910**	**1,805,910**	**1,505,910**	**1,505,910**	**1,505,910**	**1,905,910**	**1,505,910**	**1,505,910**	**1,505,910**	**1,805,910**
2- Recuperation Program										
Develop recuperation programs for drop-outs	50,000									
Training of 255 teachers	127,000	31,750	31,750	31,750	31,750	31,750	31,750	31,750	31,750	31,750
Periodical project assessment (1&2)/once every 3 years	300,000				300,000				300,000	
Total (2)	**477,000**	**31,750**	**31,750**	**31,750**	**331,750**	**31,750**	**31,750**	**31,750**	**331,750**	**31,750**
Overheads-Inspection Teams to control compulsory education	**100,000**	**100,000**	**100,000**	**100,000**	**100,000**	**100,000**	**100,000**	**100,000**	**100,000**	**100,000**
TOTAL	**2,182,910**	**1,937,660**	**1,637,660**	**1,637,660**	**1,937,660**	**2,037,660**	**1,637,660**	**1,637,660**	**1,937,660**	**1,937,660**

Table 26: Estimated cost for the elimination of the double shift system

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Construction of Extra Sections Needed to Eliminate the Double-Shift System (426 sections)	**4,880,000**	**4,880,000**	**4,880,000**	**4,880,000**	-	-	-	-	-	-

3.7. Consolidated Cost

The consolidated cost in order to achieve MD Goal 2 is shown in the table below.

Table 27: Total Consolidated Cost of MDG2 (in '000 US$)

In '000 USD	Total	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Make pre-school level accessible to all children in all public schools	**46,735**	4,134	4,311	3,728	3,988	4,266	4,615	4,884	5,227	5,594	5,988
Improve the quality and productivity of primary education and apply the law of compulsory education	**21,374**	2,467	2,223	1,923	1,923	2,223	2,323	1,923	1,923	2,223	2,223
Reduce youth and adult illiteracy rates	**18,525**	2,183	1,938	1,638	1,638	1,938	2,038	1,638	1,638	1,938	1,938
Elimination of the double-shift system	**19,520**	4,880	4,880	4,880	4,880	-	-	-	-	-	-
Total Cost MDG2	**106,154**	**13,664**	**13,352**	**12,169**	**12,429**	**8,427**	**8,976**	**8,445**	**8,788**	**9,755**	**10,149**

(*) Figures included in this table are rounded

3.8. Impact of Proposed Interventions

The effect of the suggested modifications in the field of education on the remaining developmental millennium goals

Any progress occurring in fulfillment of each of the millennium goals positively influences the remaining goals. An example would be the expected effects of the educational interventions on eradicating poverty, promoting gender equality and empowering women, reducing child mortality, combating diseases, achieving environmental sustainability and developing a global partnership for development.

Improving the productivity of basic education and reducing misuse of its resources would certainly enhance the flow of students into the educational system, and allow many, if not all, students to reach the third stage level of basic education, i.e. complete levels 7, 8 and 9. This will ensure that students develop their abilities and move on to either high school or technical levels, an achievement that would tackle child labour (below 15 years of age) and empower youth, males and females, to pursue high educational levels. In this way, good jobs are secured and thus poverty is reduced.

Applying the system of free compulsory primary education for the first two stages (ages 6 to 12), and then expanding this system to the end of the third level of basic education would ensure halting youth illiteracy gradually (ages 15 to 24) before 2015, as well as reducing adult illiteracy. It would also raise the gross enrolment rate for general and vocational education together from 78.5% to 100%, for the ages of 12 to 15, and improve the quality of the educational and social preparation for this very age group.

The consequence of this educational and moral attainment is better social awareness, namely of health and environment, which are part of the new academic programs being taught. These programs require adopting new teaching techniques that help students acquire a practical perception of the taught concepts.

From all the above, we can clearly observe that improving the productivity of the educational system in general, and expanding primary education to 3 stages (as well as the pre-school level) in particular, will inevitably help achieve proper preparation of children in the corresponding age groups. This will in turn exhibit improvement at many levels, such as social, vocational, moral preparation, and thus help achieve the remaining millennium goals.

Chapter 4: Health

"Goals 4: Reduce Child Mortality
Goal 5: Improve Maternal Health
Goal 6: Combat HIV/AIDS"

4.1. Background on Goals 4, 5 & 6

The MDG report prepared in September 2003 includes several areas related to health, including vitamin and mineral deficiency, diseases such as hepatitis, measles, AIDS and tuberculosis, and maternal health care. Although Lebanon has achieved a significant improvement since the beginning of the nineties, it is indispensable to take further measures to reach the millennium goals by 2015. Lebanon represents an active setting where cooperation and coordination occurs among many parties including civil society, media, private and public sectors.

Following are four targets, which have to be met by 2015 in order to achieve the goals above.

Target 5: Reduce by two-thirds, between 1990 and 2015, the under-five child mortality rate
Target 6: Reduce by three-quarters, between 1990 and 201, the maternal mortality rate
Target 7: Have halted by 2015, and begun to reverse the spread of HIV/AIDS
Target 8: Have halted by 2015, and begun to reverse the incidence of malaria and other major diseases

4.2. Rationale for Intervention Selection

To shift from the current health state to the proposed one by the above goals, we suggest a number of interventions. Each of the proposed interventions consists of a number of activities that were grouped together to make one Intervention. These activities may be classified into various categories; they include training, vaccines acquisition, equipping hospitals and centers, and nationwide campaigns. The following is a background summary that highlights some major facts about the health sector status in Lebanon, using available studies and statistics.

Reducing maternal and infant mortality is closely related to the following two factors:

- Geographic Location
  The National Perinatal Survey (1999-2000) has shown that the place of residence and place of delivery is the most important factor determining maternal and neonatal mortality rates. Risks related to pregnancy and delivery increase in remote areas such

as Akkar, Minyeh, Dinniyeh, Baalbeck and Hermel. It is worth noting that these areas are among the poor locations determined in different national studies.

- Health Insurance
  "The State of Children in Lebanon" survey, prepared by the Central Administration for Statistics and UNICEF, has shown that child mortality rates for uninsured groups are two times more than that of the insured. This is mainly due to the fact that health services in Lebanon are dominated by the private sector, which means that only well-off individuals have access to quality medical services. The majority of the uninsured are poor or low-income groups (farmers, seasonal workers, fishermen, unemployed, widows, etc.), where pregnant women do not receive adequate perinatal care. In such cases, delivery takes place either at home (30% in Akkar) or in governmental hospitals, which are not available in underserved areas. In best cases, deliveries take place in hospitals and delivery centers, which are not well-equipped to deal with unexpected complications and provide intensive care for both mothers and newborns, especially premature deliveries and low-birth weights. Besides, there are no emergency arrangements, especially in remote areas, to transfer mothers and newborns in cases of emergencies to hospitals. In fact, many newborn complications/deaths have taken place on the way to hospitals, mainly in Baalbeck, Hermel, Akkar, Minyeh and Dinniyeh.

The Ministry of Public Health (MOPH), in collaboration with the Ministry of Social Affairs (MOSA) and the non-governmental sector, is placing considerable efforts to expand the primary health care network (including the reproductive health) and improve the quality of its services. MOPH has built some hospitals and renovated others, and is in the process of setting a plan to publicise primary heath care. However, preparing, supplying and operating these hospitals have been delayed, thus depriving poor areas of its medical services that can not be reached in the private sector for the reasons mentioned before. It should be noted that reducing maternal and infant mortality rates requires establishing a fair and well-oriented primary health care system aiming at sheltering vulnerable groups, such as women, children and the disabled, and an effective transfer system to ensure wide coverage.

Experiences of developed countries have proved that in order for strategies to be achieved, the following has to take place:

a- Combating both poverty and unemployment; the former by enabling households to improve their income levels and the latter by oriented programs, addressing mainly youth unemployment
b- Expanding social and health security system to gradually cover all social groups by 2015
c- Eliminating discrimination against women, enhancing their role and improving maternal protection (maternal leave, working conditions, etc.)

No matter how health care develops, as long as 35% of the low-income and poor people are not covered by a proper and fair health security system the infant mortality rate of 20 per thousand can never be overcame unless the above-mentioned interventions take place.

4.3. Intervention List

The following interventions are proposed to meet goals 4, 5 & 6.

Target 5: Reduce by two-thirds, between 1990 and 2015, the under-five child mortality rate *Target 6: Reduce by three-quarters, between 1990 and 2001, the maternal mortality rate*
1. Strengthen Primary Health Care Services 2. Reduce Perinatal Mortality 3. Tackle Vitamin and Mineral Deficiency
Target 7: Have halted by 2015, and begun to reverse the spread of HIV/AIDS
4. Combat AIDS
Target 8: Have halted by 2015, and begun to reverse the incidence of malaria and other major diseases
5. Eliminate Tuberculosis

4.4. Intervention Brief # 1: Strengthen Primary Health Care Services

To achieve this, the following two activities should be implemented:

i- Expand the number of primary health care centers to 160
ii- Introduction of vaccines to reduce infant and child mortality rates

4.4.1. Background and Rationale

The following points present the global guidelines that need to be adopted in order to successfully achieve this intervention:

- Expand primary health care services to cover all areas with emphasis on regions of low coverage
- Well-position the patient referral system between primary health care centers and hospitals, mainly public, to ensure providing wide health care coverage
- Ten years ago, MOPH has initiated a national plan of action to expand primary health care services through close collaboration between the public sector and the non-governmental sector, supported by international organizations and donors (on both financial and technical levels). MOPH is currently evaluating the first stage and setting a new five-year plan.
- Expand the network of primary health care centers to reach 160, covering all regions
- Establish partnership between primary health care centers and health centers present in the same geographical area, where the primary care centre coordinates all health services available (social and health care centers) and aims at achieving more global goals to suit the local community.
- Provide essential drugs and first aid to all those who need it
- Periodically update the clinical guide of common diseases for physician in the primary health care, develop national protocols and issue an accreditation guide.
- Continuous training for all those who work in the primary health care services
- Strengthen collaboration between the public and the private sector to ensure implementation of national protocols and essential drugs list in the field of diagnosis and treatment services
- Implement health education programs through primary health care network and cooperate with specialized partners to develop proper health education

4.4.2. Description

Health Care Centers
Currently, there are 849 health care centers and dispensaries in Lebanon, 87 of which are primary health care designated by MOPH. The new strategy aims at expanding this network of primary health care centers to around 160, i.e. reallocating 73 new centers. The restoration would allow all the 160 primary health care centers to coordinate the services of dispensaries in catchments areas.

As for the costing associated with reallocating 73 dispensaries, it was calculated using, in most of the cases, per-center item costs. The per-center cost of essential drugs and equipment are the highest, where the former is estimated at US$ 26,300 and the latter at US$ 21,300. Training and health education is expected to cost US$ 5,000 and information systems US$ 3,000, both figures per center[23]. As for the costs of the remaining items incorporated in the health care centers table, they were taken as lump sums, based on current expenditures estimated by MOPH and UNICEF.

Vaccination Program
This program aims at providing the necessary vaccines to all residents below 12 years of age by 2015. The MOPH purchases the needed vaccines through the UNICEF, which ensures lower than market prices. The MOPH will then distribute these vaccines to all hospitals (public and private), health care centers (public and private) and some private clinics.

The total cost of the vaccination program is a combination of costs of vaccines, overheads, and special campaigns.

1. Vaccine costs were arrived at using both the number of residents[24] who are to take these vaccines and the per unit price[25] of every vaccine. It should be noted that Hepatitis B will be given in hospitals to all newborns. As for the remaining vaccines, it is estimated that only 55% of residents will be taking it in 2006, the same rate of that of 2005. This rate is expected to increase to 65% in 2007, 75% in 2008 and 85% from 2009 and on. The latter rate is not expected to rise to reach 100% since there will always be a proportion of people who would go to private clinics that are not benefiting from MOPH's free vaccines, thus having to pay for it. The vaccine prices per unit, according to MOPH, are listed in the following table.

[23] "Primary Health Care in Lebanon: Ten Years Later", Nabil Kronfol MD, DrPh, 2004
[24] Estimates for residents below 12 years of age are according to the Lebanese Master Plan, 2003
[25] Vaccines prices are those that the MOPH is currently paying, through the UNICEF

Table 28: Cost of Vaccines (in US$)

Residents Age Group	Cost per Vaccine
Below 1 year of age	
Hepatitis B	$ 0.30
DPT-Hib-Polio-HB	$ 4.70
DPT-Hib-Polio-HB	$ 4.70
DPT-Hib-Polio-HB	$ 4.70
Between 1 & 2 years	
MMR 1	$ 3.20
DPT-Polio	$ 0.75
Between 4 & 5 years	
MMR 2	$ 3.20
DPT-Polio	$ 1.50
Between 10 & 12 years	
dT-Polio	$ 0.50

2. Overheads for this program are incurred annually and pertain to two different sets of aims. The first is to supervise, monitor and evaluate halting polio, measles and German measles (addressed in the vaccination program). While the second is to activate the vaccination program in underserved regions.

3. A special vaccination campaign that aims at halting measles would take place twice, in 2006 and 2011. Thus the costs pertaining to this very item will be incurred only in the mentioned years.

4.4.3. Estimated Costs

Table 29: Estimated Cost of the Expansion of Primary Health Care Centers (in US$)

Item in USD	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Cost of essential drugs to Primary Health Centers[26]	1,925,283	1,925,283	2,117,811	2,117,811	2,329,592	2,329,592	2,562,551	2,562,551	2,818,806	2,818,806
Cost of drugs for dispensaries	1,500,000	1,500,000	1,650,000	1,650,000	1,815,000	1,815,000	1,996,500	1,996,500	2,196,150	2,196,150
Training & Health Education	365,000	365,000	365,000	365,000	365,000	365,000	365,000	365,000	365,000	365,000
Information System	223,867	223,867	223,867	223,867	223,867	223,867	223,867	223,867	223,867	223,867
Equipment	1,557,333	-	-	-	-	-	1,557,333	-	-	-
Supervision & Evaluation (experts in all regions)	250,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000
Total Cost	**5,821,483**	**4,264,149**	**4,606,677**	**4,606,677**	**4,983,459**	**4,983,459**	**6,955,251**	**5,397,918**	**5,853,823**	**5,853,823**

[26] It was assumed that the cost of essential drugs for both Primary Health Care Centers and Dispensaries will increase by 10% every two years.

Table 30: Estimated Cost of the Vaccination Program (in US$)

Cost / Residents / Age Group (in USD)	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Residents below 1 year of age										
Hepatitis B	24,186	24,480	24,632	24,892	25,056	25,134	24,828	24,750	24,740	24,658
DPT-Hib-Polio-HB	208,400	249,285	289,429	331,473	333,666	334,697	330,622	329,593	329,456	328,359
DPT-Hib-Polio-HB	208,400	249,285	289,429	331,473	333,666	334,697	330,622	329,593	329,456	328,359
DPT-Hib-Polio-HB	208,400	249,285	289,429	331,473	333,666	334,697	330,622	329,593	329,456	328,359
Residents aged between 1 & 2										
MMR 1	138,845	166,006	193,870	221,083	223,406	224,878	225,571	222,823	222,127	222,031
DPT-Polio	65,084	77,815	90,877	103,633	104,722	105,412	105,736	104,448	104,122	104,077
Residents aged between 4 & 5										
MMR 2	264,237	316,823	370,537	425,508	430,741	435,870	439,859	443,537	447,324	449,483
DPT-Polio	123,861	148,511	173,689	199,457	201,910	204,314	206,184	207,908	209,683	210,695
Residents aged between 10 & 12										
DT-Polio	32,424	46,614	40,395	60,301	60,603	61,999	63,022	64,043	64,974	65,835
Vaccine Cost-Subtotal 1	1,273,837	1,528,105	1,762,289	2,029,292	2,047,436	2,061,700	2,057,066	2,056,290	2,061,338	2,061,858
+ 20% wasted vaccine*	254,767	305,621	352,458	405,858	409,487	412,340	411,413	411,258	412,268	412,372
Vaccine Cost-Subtotal 2	1,528,604	1,833,726	2,114,747	2,435,151	2,456,923	2,474,039	2,468,479	2,467,548	2,473,605	2,474,230
Halt Polio, Measles & German Measles	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
Activate vaccination in underserved regions (ambulatory teams)	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000
Vaccination Campaign according to the national plan of halting measles (once every 5 years)	750,000					1,000,000				
TOTAL COST	2,528,604	2,083,726	2,364,747	2,685,151	2,706,923	3,724,039	2,718,479	2,717,548	2,723,605	2,724,230

4.5. Intervention Brief # 2: Reduce Perinatal Mortality

To achieve this, the following two activities are proposed:

i- Enhancement of mother and child care in perinatal period
ii- Equipping governmental hospitals

4.5.1. Background and Rationale

First-week death of newborns constitutes around half the total number of infant deaths during their first year of life. Studies have shown that newborn first-week deaths are determined by the following factors:

1- Woman's age: pregnancy and delivery risks increase when a woman is younger than 18 years and older than 34 years. Risks also increase when the number of pregnancies per woman exceeds four.
2- Woman's educational background: in general, higher educational levels affect the health of both mother and child positively.
3- Medical coverage: this assures that both the mother and child receive better health care
4- Pre-in- and postnatal medical consultations: proper health care during pregnancy, delivery and first few weeks after delivery, can in fact half the infant mortality rate of those who do not receive adequate medical care.
5- Deliveries at home or small centers unequipped for emergency cases: about 50% of delivery complications are unanticipated irrespective of the medical care received during pregnancy. Thus the place of delivery must be well-equipped to cope with emergency cases and unexpected complications.

Studies have also shown discrepancies in figures pertaining to different geographical locations, where:

1- Health security covers around 66% of Beirut and Mount Lebanon's residents, whereas it covers only 40% of residents in the less developed Cazas (Akkar, Minyeh-Dinniyeh, Baalbeck and Hermel)[27].
2- Pregnancy period care: less than 2% of women in Beirut, Mount Lebanon and the South have not sought at least one medical consultation during their pregnancy period. Whereas the percentage increases to 11% in Bekaa and to 9% in the North, and to 15% in Akkar, Minyeh-Dinniyeh, Baalbeck and Hermel.
3- Premature deliveries (less than 33 weeks of pregnancy) are two times more in Bekaa than in Mount Lebanon.
4- Perinatal mortality is three times more in Akkar, Minyeh-Dinniyeh, Baalbeck and Hermel than in other Governorate.

[27] National Perinatal Survey, MOPH, WHO and UNICEF 1999-2000

It should be also noted that throughout the duration of the survey, it was only in the four less developed regions (Akkar, Minyeh-Dinniyeh, Baalbeck and Hermel) that deliveries have taken place in the car, while commuting to delivery centers.
For the above mentioned reasons, adequate care should be provided for mothers and infants in pre-in-and postnatal periods, as this is a right that has been declared in the constitution and the Convention of the Right of the Child (CRC).
The MOPH, in collaboration with international organizations, civil services and MOSA, is putting efforts to provide proper health care.

4.5.2. Description

The goal is to provide each woman residing in the four less developed areas, Akkar, Minyeh-Dinniyeh, Baalbeck and Hermel, with adequate care during pregnancy (at least four medical consultations), delivery and postnatal periods, through improving heath care and equipping hospitals, in addition to proper implementation of the pre-marital certification. Thus, the intervention could be specifically divided into parts:

i- Improving health care, which is translated into:
- Increasing the percentage of women who get medical care during their pregnancy period (more than four consultations) from 81%[28] nationally, to 95% in 2015, mainly by providing care to women residing in the aforementioned areas.
- Reducing the number of deliveries at home to less than 5% in poorer regions, as well as put an end to deliveries by midwifes.

ii- Equipping hospitals, which is translated into:
- Employing and supplying public hospitals in poorer regions to ensure comprehensive and specialized care for women and children
- Setting-up an operational referral system with well-equipped ambulances and trained team for emergency cases to transfer women and newborns to specialized services centers

The first step in estimating the cost of the first part of this intervention was estimating the total number of women residing in Bekaa and North[29], who are between 15 and 49 years of age. Then, of this group, the number of pregnant women was projected based on the 2003 figures of "House to House Vaccination Campaign in Akkar, Minyeh-Dinniyeh, Baalbeck and Hermel-UNICEF-2003"[30]. The proportion of women who give birth either through a normal delivery or caesarian section (C-section) was estimated using the "National Perinatal Survey, MOPH, WHO and UNICEF 1999-2000" figures.

[28] National Perinatal Survey, MOPH, WHO and UNICEF 1999-2000
[29] Lebanese Master Plan, 2003
[30] Source: UNICEF, MOPH, unpublished report

According to the MOPH, the average costs for a pregnant woman are as follows.

Table 31: Average cost for consultancy and delivery

Cost per woman for	Cost (US$)
All consultations during pregnancy (4 perinatal + 1 postnatal)	75
Normal delivery	300
C-section delivery	800

Multiplying the number of women by the average costs, the total cost of the intervention, detailed in the following table, was arrived at.

As for the costing of second part of the intervention, equipping hospitals, it was done according to Council of Development and Reconstruction (CDR) figures. Five hospitals are addressed, the cost of which totals to US$ 12 M. However, since it is not possible to equip all these hospitals in only one year, it was assumed that the process would take two years to be completed, hence dividing the total amount equally between 2006 and 2007.

4.5.3. Estimated Costs

Table 32: Pregnancy and perinatal health care cost (in US$)

Item	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Increase number of women who get consultation during pregnancy	184,024	186,694	188,917	190,859	190,959	189,368	189,995	190,847	191,320	191,344
Reducing the number of deliveries at home										
Cost of normal delivery	806,714	818,622	829,428	840,272	841,365	835,357	839,711	843,987	847,681	848,952
Cost of caesarean delivery	472,223	479,194	485,519	491,867	492,506	488,989	491,538	494,041	496,203	496,948
Total cost	**1,462,962**	**1,484,510**	**1,503,863**	**1,522,998**	**1,524,831**	**1,513,713**	**1,521,245**	**1,528,876**	**1,535,204**	**1,537,244**

Table 33: Equipping governmental hospitals (in US$)

Item	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Baalbeck	1,150,000	1,150,000								
Hermel	1,250,000	1,250,000								
Halba	1,150,000	1,150,000								
Marjeyoun	800,000	800,000								
Bent Jbeil	1,650,000	1,650,000								
Total	**6,000,000**	**6,000,000**								

4.6. Intervention Brief # 3: Tackle Vitamin and Mineral Deficiency

To achieve this, we propose the following two activities:

i- Fortifying flour with iron and folic acid
ii- Encouraging breast-feeding and child nourishment

4.6.1. Background and Rationale

The national report[31] has shown that anemia is a major health problem, where 25% of children below 5 years of age suffer from it. The percentage reaches 43% for the 12-23 age group. As for women in childbearing age, anemia caused by iron deficiency is 27%, and it increases for pregnant women and teenagers.

Despite the implementation of the national strategy of iodizing salt, more than 10% of people still do not benefit from it.

As for vitamins, no clinical symptoms were recorded as a result of Vitamin A deficiency, but there are certain indicators that show that children do not receive adequate amounts of it[32].

UNICEF has asked a committee of experts to examine the damage effects of iron, iodine and vitamin deficiency. The following results were highlighted by "Vitamin and Mineral Deficiency[33]" report, on the health of children in Lebanon:

1- 40-60% of infants aged between 6 to 24 months are at risk of disrupted brain development caused by iron deficiency.
2- Around 7,000 newborns are at risk of intellectual impairment development caused by iodine deficiency. The study has shown that in a country such as Lebanon were the goiter rate caused by iodine deficiency afflicts 10% of people, the average IQ level would drop by 10 to 15 points.
3- Around 100 children died of infectious diseases due to increase of and susceptibility to infection caused by deficiency of Vitamin A.
4- Around 150 children die in the perinatal period because their mothers suffer from anemia.
5- 100 birth defect cases Spina Bifida including infantile paralysis caused by folic acid deficiency
6- Lower productivity of adult workforce, estimated at 0.4% of GDP, is caused by iron and iodine deficiency.

[31] National Anemia Survey, conducted by MOPH and UNICEF, in collaboration with American University of Beirut, 1997
[32] Rapid Assessment of Vitamin A Deficiency (UNICEF and AUB), 1996
[33] "Vitamin and Mineral Deficiency", a damage assessment report for Lebanon, Unicef-MI, 2004

7- Iron and iodine deficiency has significant, but unmeasured, effects on health services and educational systems.

Lebanon has taken many measures to combat these problems, mainly:

- Iodizing salt
- Free distribution of iron droplets to infants aged between 6 and 12 months, and minerals and vitamins to pregnant women and teenagers through the primary health centers
- National efforts to encourage breast-feeding for children till the age of six months and introduce nutritious foods in addition to breast-feeding till the age of two.

4.6.2. Description

The proposed intervention builds on the past achievement and aims at extending it to completely put an end to vitamin and mineral deficiency in Lebanon, which is one of the many causes of infant and child mortality. This would be done through the following strategy, which has proved efficient in both developed and developing countries:

- Conduct a survey to update the need for iron by children aged less than 5 years and women in childbearing age. This step is very essential as the current study is more than six years old.
- Execute the national plan of fortifying flour with iron and folic acid that has been approved by the MOPH, in collaboration with World Health Organization and UNICEF.
- Provide salt factories with potassium iodide for free, to ensure adequate amounts of iodine are added to salt.
- Control local production to guarantee good quality and adequate quantities of vitamins and minerals
- Ensure distribution of iron and vitamins to all women in childbearing age and iron droplets to infants 6 to 12 months of age through primary health care networks and guarantee that the needs of all women and newborns are fulfilled, including those who seek private medical consultation.
- Set a national plan to encourage breast-feeding for children till the age of six months and gradual introduction of nutritious foods and iron droplets to ensure a balanced diet. The plan, in accordance to international strategy, also aims at combating malnutrition and reducing infant disability and mortality rates.
- Educate people, especially the poor families, in the field of nutrition and proper eating habits.

The most important steps to take in order to achieve the set plan are to:

1- Establish a coordination committee that brings together Ministry of Health, Ministry of Economy, mill owners, union of bakery owners, scientific

associations specialized in children's health and blood diseases, World Health Organization and UNICEF.

2- Prepare a technical report that explains all aspects of the project.

As for the costing of this intervention, it should be noted that the figures adopted are based on 2003 report of the national plan of fortifying flour with iron and folic acid that has been approved by the MOPH, in collaboration with World Health Organization and UNICEF.

This intervention is in fact made up of two parts. The first pertains to flour fortification and the second to encouraging breast-feeding. Costs concerning flour fortification have many components, the most significant of which is the yearly US$ 300,000 for providing mills with vitamins and minerals. In addition, mills and laboratories are to be adequately equipped; this will be done twice, in 2006 and 2011, as the equipment fully depreciates in five years, thus requiring replacement. Three evaluation projects will take place over the course of 10 years, in 2006, 2009 and 2014. The first would examine the current needs of children for iron (discussed earlier) and the following ones would assess the degree of improvement in the conditions pertaining to the same point, as well as project effectiveness.

As for encouraging breast-feeding, three different measures are required: modifying legislations, which comes without a material cost, producing training material and training hospital teams.

4.6.3. Estimated Costs

Table 34: Flour Fortification and Breast-Feeding Cost (in US$)

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1- Fortifying flour with iron and folic acid										
Study on children's need for iron	120,000									
Equip mills & laboratories	250,000					250,000				
Provide mills with vitamins & minerals	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000
Provide Potassium Iodide	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
Follow-up & assessment	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000
Evaluation after 3 years of project				120,000						
Evaluation Study in 2014									120,000	
National campaign to market the project	45,000									
2-Encourage breast-feeding and child nourishment										
Modify Legislations										
Produce training material	75,000	10,000	10,000	10,000	10,000	75,000	10,000	10,000	10,000	10,000
Train hospital teams	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000
TOTAL	**850,000**	**370,000**	**370,000**	**490,000**	**370,000**	**685,000**	**370,000**	**370,000**	**490,000**	**370,000**

4.7. Intervention Brief # 4: Combat AIDS

i- Educate people
ii- Promote precautionary methods

4.7.1. Background and Rationale

The National AIDS Control Program (NAP), with the collaboration of UN Theme Group on HIV/AIDS and all concerned sectors, has developed a national strategic plan to combat the acquired immune deficiency syndrome for the period extending from 2004 to 2009. This was then followed by establishing a National Operational Plan on HIV/AIDS for the same period. NAP and UN Theme Group on HIV/AIDS are currently working on estimating the costs for implementing the above plan.

4.7.2. Description

Following are the main aspect and objectives of the plan.

1- Reduce stigma and discrimination
   - Educate the populace about HIV: increase awareness of the mass media about this disease and enhance partnerships with women's NGO's on HIV integrated programs
   - Broaden responsibility for the prevention of HIV to all sectors of government and civil society: mobilize resources through commercials and Ad agencies to have them invest in HIV educational programs
   - Increase public awareness through multi-sectoral efforts to protect human rights, and to reduce stigmatization: use innovative approaches (public figures and TV programs) and encourage stigmatized victims to come forward
   - Increase acceptability and integration of person living with HIV/AIDS (PLWHA) in the community: knowledge sharing experience of PLWHA and empowerment of PLWHA for better integration of HIV patients in society
   - Improve coverage of HIV/AIDS issues in the media: create media advocates to adopt plans of action addressing HIV/AIDS issues

2- Promote safe and healthy sexual behavior among general population
   - Improve educational campaigns to focus on socio-behavioral changes: advocate for sexual health, strengthen the role of media in preventive education, promote parental and marital reproductive health education including sex education

- Improve access to and use of male condoms: ensure the availability of good quality condoms and advocate for the importance of condom use in preventing HIV/AIDS among sexually active population

3- Increase awareness on sexually transmitted diseases (STD), especially HIV, among youth, in and outside schools

4- Reduce the vulnerability of specific sub-populations such migrants, as well as prisoners

5- Prevent HIV/STD transmissions among high-risk behavior groups
   - Promote voluntary counseling and testing (VCT) among high-risk groups: upgrade user-friendly clinics staffed by members of the high-risk groups and promote counseling services
   - Prevent HIV/STD transmission among sex workers, homosexuals (MSM), and intravenous drug users (IVDU).

6- Maintain and decrease the low level of some specific HIV transmission
   - Maintain a safe blood transfusion service: maintain the screening of donors, use guidelines for blood transfusion, establish a blood bank and encourage auto-transfusion
   - Reinforce universal precautions and safe waste management in the delivery of health services: reduce exposure to sharps, sensitize legislation for infection control program in all health care facilities, promote dissemination of universal precaution to health care, and advocate for a policy on appropriate hospital waste disposal
   - Maintain the low level of mother to child transmission (MTCT): promote antenatal screening, provide counseling of HIV positive parents, and raise awareness on effective contraception

7- Improve the management and control of STD's
   - Ensure effective management of STD's in both the private and public sectors: establish national management for management of STD and develop laboratory facilities for diagnosis
   - Increase access to friendly reproductive health services, including STD management and VCT: strengthen available free of charge (or semi-free) clinics, increase capacity of health professionals and counselors on HIV/AIDS issues, and establish VCT centers and improve the support to established centers

4.8. Intervention Brief # 5: Eliminate Tuberculosis

i- Educate people
ii- Promote precautionary methods

4.8.1. Background and Rationale

MOPH, in collaboration with the World Health Organization, UNICEF and UNRWA, has launched in 1990 the national program to combat Tuberculosis, which aimed at defining national protocols for treatment of this disease. It has created a special technique for x-ray and laboratory diagnosis in all Governorates and a follow-up system in all Cazas. It has also provided medications for free to all patients, including those who seek private medical consultation.

The above project has proved efficient as the number of severe cases dropped from 983 in 1985 to 516 in 2001, 380 in 2003 and 393 in 2004[34]. Thanks to DOTS, the contagion rate has dropped. Despite the success realized, there are still three challenges:

1- Increase in the number of infection cases among foreign workers from 13% in 1995 to 27% in 2004 of total Smear+ cases.
2- Occurrence of Tuberculosis cases among AIDS patients (3 cases in 2003 and 5 in 2004).
3- Increase in the number of patients who do not respond to medication, and thus need special medical care (0.66% of total Smear+ cases in 2004).

4.8.2. Description

The program provides all its services, including hospitalization and medicines, for free for all residents in the whole of Lebanon, without any discrimination. Medicines prescribed are bought through the World Health Organization and UNICEF, which ensures low prices and good qualities. World Health Organization provides technical support to the program.

The program aims at eliminating Tuberculosis by 2015, more specifically it looks forward to:

1- Decreasing the number of Smear+ cases from the current 3.9 for every 100,000 (2005) to less than one for every 100,000 in 2015.
2- Regulating the entry of foreign workers and require them to undergo particular tests through hiring agencies.
3- Developing the Directly Observed Treatment Short (DOTS), especially in remote areas, to record non-responsive cases and take special measures including the improvement of laboratory diagnosis system.

[34] As for the number of Smear+ cases, which is the main source of the spread of Tuberculosis symptoms, it has dropped from 258 in 1999 to 153 in 2004. It should be noted that a high percentage of these cases is found among workers coming mainly from countries that have high disease rate and weak medical care.

4- Developing DOTS+ to spot multi drug resistance (MDR) cases.
5- Improving the coordination between HIV Aids and Tuberculosis programs

To work out the costs associated with the above objectives, MOPH figures pertaining to the number of tuberculosis cases and associated costs were used as a base, from which per-case costs were determined. These per-case costs, in turn, relate to four different categories: medicines, DOTS, awareness programs and hospital treatment.

A projection model of the number of tuberculosis cases was then developed. Taking the main objective of decreasing the number of Smear+ cases to less than one per 100,000 in 2015, the model assumes a decreasing trend of tuberculosis cases.

The costs of each of the treatment stages are detailed in the following table.

4.8.3. Estimated Costs

Table 35: Tuberculosis elimination Cost (in US$)

Item	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Medicines	65,584	57,350	50,150	43,854	38,348	33,534	29,324	25,642	22,423	19,608
Dots	65,584	57,350	50,150	43,854	38,348	33,534	29,324	25,642	22,423	19,608
Awareness	21,861	19,117	16,717	14,618	12,783	11,178	9,775	8,547	7,474	6,536
Hospital treatment	568,395	497,035	434,634	380,068	332,351	290,626	254,139	222,233	194,332	169,935
Total	**721,424**	**630,852**	**551,651**	**482,393**	**421,831**	**368,871**	**322,561**	**282,065**	**246,653**	**215,686**

4.9. Consolidated Cost

Table 36: Total Consolidated Cost of MDG 3, 4 and 5 (in '000 US$)

Item	Total	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Health Care Centers	**53,327**	5,821	4,264	4,607	4,607	4,983	4,983	6,955	5,398	5,854	5,854
Vaccination	**26,977**	2,529	2,084	2,365	2,685	2,707	3,724	2,718	2,718	2,724	2,724
Pregnancy & Perinatal Health Care	**8,984**	1,463	809	821	831	842	843	837	842	846	850
Hospitals	**12,000**	6,000	6,000	-	-	-	-	-	-	-	-
Vitamins & Minerals	**4,735**	850	370	370	490	370	685	370	370	490	370
Tuberculosis	**4,244**	721	631	552	482	422	369	323	282	247	216
Total	**110,267**	**17,384**	**14,157**	**8,714**	**9,096**	**9,324**	**10,605**	**11,204**	**9,609**	**10,160**	**10,013**

4.10. Impact of Proposed Interventions

Impact of proposed Health interventions:

Impact of proposed Health interventions:

It is worth noting that it is very difficult to dissociate interventions that reduce maternal mortality form infant mortality. Mother and child constitute dyad and the health interventions address mother and child mortality and morbidity.

1- The first proposed intervention, **Strengthen Primary Health care Services and reproductive health**, and the second one, **Reduce Perinatal Mortality**, will have multiple effect on the MDG goals, first it will help in reducing the Mother, infant and child mortality via the expansion of the number of Health care centers and equipping the public hospitals and then the care services that the pregnant will get before, during and after the pregnancy, second will improve the health status of mother and child.
2- Combating and preventing malnutrition and minerals deficiency will have a duel positive impact on mother and child mortalities, and on the prevention of physical and mental disabilities.
3- Combating *HIV/AIDS* will be realized through the third intervention that will focus on the development of people (youth and adults) education and awareness towards AIDS in order to reduce the number of HIV cases in Lebanon.
4- Since there's no malaria cases in Lebanon, intervention number five concentrated on the elimination of tuberculosis and suggested a detailed plan that will reduce the number of Smear+ to less than one for every 100,000 in 2015.

Impact of proposed Health interventions on other MDG goals:

The selected health interventions are not supposed to cover only the health needs in Lebanon and fulfill MDG- health goals, but it should also impact the other MDG goals in a positive way. This positive impact can be detected directly and/or transversally. The main effects of improving health conditions will be reflected on the amelioration of living conditions of the poor population which is targeted by the first MDG goal **"Eradicate extreme poverty and Hunger"**. In addition, will affect the enrollment of students in schools and it will help them for a better performance especially when they will be better nourished and diseases free. This improvement in school performance and attendance will reduce the illiteracy.

Chapter 5: Environment

"Goal 7: Environmental Sustainability"

5.1. Background on Goal 7

The Lebanon Millennium Development Goals (MDG) report prepared in September 2003 lists several progress areas related to environmental sustainability including biodiversity, greenhouse gases, ozone-depleting substances, wastewater and solid waste. It also highlights outstanding challenges including financial resources to sustain environmental protection, wasteful power generation and transmission, faulty agricultural policies, deficient air and water quality monitoring systems, enforcement, etc. Lebanon's strengths include the ratification of several milestone conventions; the promulgation of the Environment Framework Law as well as the formulation of key legislation related to environmental impact assessments and protected areas; increased environmental awareness; technical and financial commitment by international organizations and resource groups; and growing media coverage of environmental issues.

To achieve environmental sustainability, MD Goal 7 presents three targets:

Target 9:	*Integrate the principles of sustainable development into country policies and programs and reverse the loss of environmental resources*
Target 10:	*By 2015, to halve the proportion of people without **sustainable** access to safe drinking water **and sanitation***
Target 11:	*By 2020, to have achieved a significant improvement in the lives of at least **100** million slum dwellers*

During MDG costing, the authors[35] of this report detected several discrepancies in the wording of the targets, between the Lebanon Report and the MDG website.[36] In particular, the words "sustainable" and "sanitation" were omitted from Target 10 in the Lebanon Report, as well as "100" from Target 11 (see bold text above). These omissions we believe were too significant to ignore, we therefore decided to reproduce the original wording *as-is* and formulate the interventions accordingly.

To achieve the above targets, the UN Country Team identified a number of plausible indicators. These indicators however were based on data availability, rather than data requirements, lack a common base year as well as future target values. The authors of this report and UNDP therefore agreed to address Target 9, 10 and 11 on environmental sustainability in a manner that is more inclusive and less restrictive.

[35] Consultation and Research Institute and ECODIT Liban (Goal 7 only)
[36] http://millenniumindicators.un.org/unsd/mi/mi_goals.asp

Furthermore, the Lebanon Report does not define a number of difficult/ambiguous terms which can create confusion. For example:

- Regarding Target 10, *safe* drinking water may or may not be an achievable target depending on the meaning of "safe." To estimate the cost of halving the proportion of people without access to safe drinking water, we decided to examine the cost of enhancing and enforcing water quality monitoring systems to detect potential risk areas. Such a system would provide first-hand and continuous data on water quality and safety to guide repair and upgrade works in the water sector.

- Regarding Target 11, a *slum* may be defined as "a heavily populated urban area of dilapidated buildings characterized by poverty and filth."[37] Strictly speaking, there are no slums in Lebanon but a number of poverty belts and deprived semi-urbanized areas warrant attention, as well as thousands of improvised buildings most of which are structurally unstable and lack permanency. To estimate the cost of achieving a significant improvement in the lives of (potential) slum dwellers in Lebanon, we considered three approaches: "very high priority" poverty areas; overcrowded dwellings; and improvised buildings.[38] In the end, we decided to use improvised buildings because this approach conforms more closely to the UN definition of "slum" (see full explanation and justification later in the report).

5.2. Rationale for Interventions Selection

Environmental sustainability is a very large and utopian goal. To move from the *current* state of the environment in Lebanon *towards* environmental sustainability, we propose a number of target-specific interventions. To minimize the range of interventions required to achieve environmental sustainability, we have aggregated groups of related activities under one intervention. An *intervention* therefore will consist of a combination of connected and/or complementary activities. Interventions may include physical investments (e.g., reforestation, water supply) as well as legal and institutional reforms (e.g., promulgation of draft decrees, enforcement, public awareness). The proposed interventions, while not exhaustive, provides a solid platform for achieving significant progress towards environmental sustainability.

[37] New Webster's Dictionary and Thesaurus, 1995
[38] Economic and Social Fund for Development Lebanon: EC-Project No. LBN/B7-4100/99/0225

5.3. Intervention List

We propose the following interventions to meet Targets 9, 10 and 11:

Target 9: Integrate the principles of sustainable development into country policies and programs and reverse the loss of environmental resources
1. Begin to implement the provisions of the Environment Framework Law 2. Build an Environmental Information System to support decision making 3. Launch and sustain projects to reverse the loss of environmental resources
Target 10: Halve, by 2015, the proportion of people without sustainable access to safe drinking water and sanitation
4. Enforce water quality monitoring systems and promote water awareness 5. Setup Sector Implementation Unit to Accelerate Construction of Wastewater Networks and Treatment Plants
Target 11: By 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers
6. Relocate illegal/improvised/temporary dwellers to fully equipped dwellings

Each intervention, including justification, activities and cost estimates are presented next.

5.4. Intervention Brief #1: Begin to implement the provisions of the Environmental Framework Law (EFL)

5.4.1 Background and Rationale

The Environmental Framework Law was passed in 2002 (Law No. 444 dated July 29, 2002). It is the most comprehensive attempt so far to consolidate environmental laws under one framework law. To implement Law 444, Lebanon needs to develop and endorse 32 application degrees (e.g., environmental council, national environmental fund, environmental quality limit values, environmental information system, environmental education curricula, tax exemptions on pollution friendly technologies), of which only two have been drafted so far. Arguably the most critical decrees are the National Environmental Action Plan (Article 5), the Strategic Environmental Assessment and the Environmental Impact Assessment (Article 23). Collectively, these decrees (and relevant follow-up mechanisms) could help safeguard the environment by preventing and/or remedying many environmental ills.

To begin implementing the provisions of the EFL, we propose the following activities:

- Launch/publicize the National Environmental Action Plan (NEAP)
- Sensitize target groups on Strategic Environment Assessment procedures (SEA)
- Enhance the Environmental Impact Assessment system at MOE (EIA)

5.4.2. Description

1. Launch/publicize the National Environmental Action Plan

Under the EU-funded Investment Planning Program, MOE is preparing Lebanon's National Environmental Framework Plan (NEAP) and plans to submit it to the Council of Ministers for endorsement later this year (in theory, after the national environmental council has been created). In principle, this action plan will define priority actions, set targets and formulate a clear implementation strategy. This activity would seek to (i) facilitate the speedy endorsement of the NEAP; (ii) publicize it to instill ownership and promote local buy-in of the proposed actions and, (iii) support MOE in drafting up to 10 -- priority -- applications decrees out of the 32 decrees stipulated in Law 444.

2. Sensitize target groups on Strategic Environmental Assessment procedures

With grant funding from EC-Life Third Countries, MOE is implementing a project to launch strategic environmental assessment (SEA) procedures in Lebanon. A draft SEA decree has been produced and will be submitted to the Council of Ministers for endorsement later this year. This activity would aim to publicize the principles and benefits of SEA above and beyond the public outreach component embedded in the EC-

Life project per se. This will require resources to produce and disseminate public outreach materials, organize high-visibility seminars across relevant public and private stakeholder groups including case studies, and provide targeted training to relevant public service employees.

3. Enhance the Environmental Impact Assessment system at MOE

The Ministry of Environment drafted an Environmental Impact Assessment (EIA) decree in 1999; the draft decree has been shared and debated at length (13 versions so far) but awaits endorsement by the Council of Ministers. Meanwhile, MOE has been receiving and reviewing EIA studies since 2000 (87 studies so far) submitted by project proponents (private-sector and NGO) based on the EIA procedures stipulated in the draft decree. Each EIA review requires an evaluation committee of three staff with relevant qualifications. The number of EIAs submitted to MOE for review is expected to increase if/when the draft decree is passed. Unless MOE is able to effectively handle the incremental number of studies submitted for review, the EIA system in Lebanon will hamper projects and slow down to a halt. Clearly, MOE will require more people to review the studies and inspect the environmental management plans (EMPs) emanating from them. This can be achieved by hiring additional staff, hiring consultants and/or subcontracting EIA services (review and/or EMP inspection) to private sector. This therefore activity aims to strengthen the EIA unit at the ministry.

5.4.3. Estimated Costs

Table 37: Estimated cost to begin to implement the provisions of the EFL (in US$)

Item	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Launch/publicize the NEAP										
Draft outstanding application decrees	80,000	80,000	80,000	80,000	80,000	0	0	0	0	0
Design and produce outreach materials	20,000	20,000	20,000	10,000	10,000		0	0	0	0
Conduct sustained outreach program	50,000	50,000	50,000	30,000	30,000	30,000	20,000	20,000	20,000	20,000
SubTotal	*150,000*	*150,000*	*150,000*	*120,000*	*120,000*	*30,000*	*20,000*	*20,000*	*20,000*	*20,000*
Sensitize target groups on SEA										
Design and produce outreach materials	20,000	20,000	20,000	10,000	10,000					
Train target groups on SEA procedures	20,000	20,000	15,000	10,000	10,000	0	0	0	0	0
SubTotal	*40,000*	*40,000*	*35,000*	*20,000*	*20,000*	*0*	*0*	*0*	*0*	*0*
Enhance the EIA unit at MOE										
Cost of EIA review (moe staff and/or consultants)	54,000	108,000	108,000	108,000	108,000	108,000	108,000	108,000	108,000	108,000
Cost of EIA inspection (e.g., site visits, testing)	108,000	108,000	216,000	216,000	216,000	216,000	216,000	216,000	216,000	216,000
SubTotal	*162,000*	*216,000*	*324,000*	*324,000*	*324,000*	*324,000*	*324,000*	*324,000*	*324,000*	*324,000*
TOTAL COST	**352,000**	**406,000**	**509,000**	**464,000**	**464,000**	**354,000**	**344,000**	**344,000**	**344,000**	**344,000**

Assumptions:

Activity 1 regarding NEAP

- MOE will draft up to 10 priority application decrees over the coming five years
- Each application decree requires up to 4 man-months to research, draft and review
- Technical assistance (e.g., legal, institutional & technical experts) cost $10,000/month
- Outreach program will require 1 staff, full time, @ $3000/mo, plus expenses during the first three year (up to 2008), then part-time.
- Outreach materials includes brochures and posters on NEAP, in English & Arabic

Activity 2 regarding SEA

- Activity extends five years, until 2010
- Training expenses include fees plus expenses

Activity 3 regarding EIA

- MOE receives on average 36 EIAs per year (3 per month) under *status quo*
- The Number of EIAs will double to 72/year when the EIA decree is endorsed
- The EIA decree will be endorsed by the Council of Ministers in 2006
- The cost of preparing an EIA study is on average $15,000/study (borne by the project proponent)
- That (i) review and (ii) follow-up costs (e.g., site visits, transportation, sampling & analysis, reporting) represent 10 and 20 percent of the cost of the study, respectively. Review and inspection could be conducted by ministry staff alone or by ministry staff plus external consultants hired by the ministry on an as-needed-basis.

5.5. Intervention Brief #2: Build an Environmental Information System to support decision making

5.5.1. Background and Rationale

Lebanon needs to improve its environmental databases and information systems to support decision making. While environmental data have increased in quantity and quality in recent years, the databases remain fragmented and the frequency of updating inadequate. Article 14 of Law 444 calls for the establishment of an environmental information system (EIS). Such a system would streamline/consolidate data on the state of environment in the country and thereby strengthen policy making across many vital sectors including agriculture, industry, transport, tourism and energy.

To achieve this, we propose the following four activities:

- Establish a national environment & development observatory
- Establish environment & development observatories at the Mohafaza-level
- Enhance/consolidate air and water monitoring systems
- Institutionalize environmental reporting

5.5.2. Description

1. Establish a national environment and development observatory

With grant funding from the EU, the Ministry of Environment established in 1999 the Lebanon Environment and Development Observatory (LEDO). The observatory operated three years before closing in 2002 when funding ended. The observatory would have continued to operate had a proposal to integrate it into the MOE organization been implemented. Therefore, Lebanon must take important steps to institutionalize the future observatory by approving the proposed reorganization of the ministry; this will give the observatory a legal mandate and ensure a sustained line of credit to run it. The national observatory would act as an umbrella agency responsible for (a) consolidating data and information from similar observatories at the Mohafaza level, including the existing Tripoli Environment and Development Observatory, and (b) disseminating the information in the form of sector-specific bulletins (biannual) and national reports (every four years). We have assumed an 8-member strong team to run the Beirut-based observatory.

2. Establish environment and development observatories at the Mohafaza level

To ensure a continuous flow of primary data to support national databases, Lebanon should set up environment and development observatories at the Mohafaza level, equipped with basic monitoring capabilities. These observatories would collect primary data and share these data with the national observatory hosted at the Ministry of Environment, for consolidation and dissemination. We have assumed that the observatory would require a 4-member strong staff including an environmental/civil engineer, IT programmer/GIS specialist, and two surveyors. Capital costs include computers, accessories, plotter and other ancillary equipment. Operational costs include rent (or equivalent expenses), services (water, electricity), office supplies and consumables.

3. Enhance/consolidate air and water monitoring systems

Lebanon lacks continuous monitoring capabilities. Air and water quality data are sporadic and unrepresentative of temporal and spatial variations. Attempts to coordinate the work of public and private labs to provide better coverage have so far failed. Lebanon needs to develop a national monitoring system to measure environmental changes and determine environmental trends. This intervention requires a mix of investments such as training, certification as well as new labs and/or equipment upgrade. In particular, it seeks to build, equip and operate air quality labs in the country's largest urban poles including (in order of decreasing population size): Beirut, Tripoli, Saida, Nabatiyeh, Baalbeck, Tyre, Zahle, Jbail, Jounieh and Chekka (heavily industrialized zone). These labs could be similar to the air quality laboratory in North Lebanon[39] and equipped with the following:

<u>Laboratory measurements</u>

- Electronic balance
- Reflectometer
- Spectrophotometer
- Gas chromatograph
- Water purificator
- Centrifugator
- Glassware material
- Ion chromatograph

[39] Tripoli Air Quality Lab is managed by the Federation of Municipalities of Al Fayhaa (major sources of funding include METAP and SMAP). Capital costs were about $175,000.

Street Measurements

- Portable combustion gas analyzer
- Diesel car Exhaust gas analyzer
- High volume particulate sampler
- Opacity measurement
- Small volume sampler
- Car Petrol Exhaust gas analyzer

4. Institutionalize environmental reporting

Lebanon has produced two State of Environment Reports (SOER) so far; in 1995 and 2002. These are the most comprehensive references on the environment in the country to date. Both reports were produced by environmental consultancy firms (under contract with MOE and/or the funding organization). Although the 2002 SOER was produced with MOE, the ministry continues to lack the human and technical resources to update the SOER or to produce shorter, more targeted, interim, assessment reports. To ensure regular and systematic environmental reporting, the ministry should decide how it wants to research and produce future assessments - i.e., in-house, by sub-contracting to the private sector, or a combination – and mobilize the necessary resources to follow-through.

5.5.3. Estimated Costs

Table 38: Estimated cost to build an EIS to support decision making (in US$)

Item	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Establish a national E&D observatory										
- Set up and equip national observatory	35,000	35,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
- Human resources	288,000	288,000	288,000	288,000	288,000	288,000	288,000	288,000	288,000	288,000
- Supplies & consumables	36,000	36,000	36,000	36,000	36,000	36,000	36,000	36,000	36,000	36,000
- Production, dissemination and outreach	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
SubTotal	*323,000*	*323,000*	*298,000*	*298,000*	*298,000*	*298,000*	*298,000*	*298,000*	*298,000*	*298,000*
Establish five E&D observatories (Mohafaza)										
- Setup and equip observatories in 5 Mohafazat	100,000	100,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000
- Human resources	480,000	480,000	480,000	480,000	480,000	480,000	480,000	480,000	480,000	480,000
- Supplies & consumables	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000
- Production, dissemination and outreach	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000
SubTotal	*665,000*	*665,000*	*595,000*	*595,000*	*595,000*	*595,000*	*595,000*	*595,000*	*595,000*	*595,000*
Enhance air quality monitoring										
- Establish & equip mobile air quality labs	500,000	500,000	500,000	500,000	500,000	0	0	0	0	0
- Run air quality labs (staff, supplies)	75,000	150,000	225,000	300,000	375,000	375,000	375,000	375,000	375,000	375,000
- Training (equipment, QA/QC, data logging)	15,000	15,000	15,000	15,000	0	0	0	0	0	0
SubTotal	*590,000*	*665,000*	*740,000*	*815,000*	*875,000*	*375,000*	*375,000*	*375,000*	*375,000*	*375,000*
Institutionalize environmental reporting										
- Human resources (O&M)	0	0	0	0	0	0	0	0	0	0
- Technical assistance (bulletin + report)	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
- Production of reports/bulletins & dissemination	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
SubTotal	*120,000*	*120,000*	*120,000*	*120,000*	*120,000*	*120,000*	*120,000*	*120,000*	*120,000*	*120,000*
TOTAL COST	**1,698,000**	**1,773,000**	**1,753,000**	**1,828,000**	**1,888,000**	**1,388,000**	**1,388,000**	**1,388,000**	**1,388,000**	**1,388,000**

Assumptions:

Activity 1 on national observatory

- Equipment cost is $50,000 incurred over two years (2006-07)
- Rent is $10,000/year
- Observatory is run by an 8-member strong team @ the average rate of $3,000/staff/month incl. benefits

Activity 2 on observatories at Mohafaza level

- Total number of observatories is five (5); one observatory in each mohafaza
- Equipment cost is $30,000 incurred over two years (2006-07); less sophisticated than national laboratory in Beirut
- Rent is $6000/year
- Each observatory is run by a 4-member strong team @ the average rate of $2,000/staff/month incl. benefits

Activity 3 on air quality monitoring

- Total number of air quality labs is 10 (Beirut, Tripoli, Saida, Nabatiyeh, Baalbeck, Tyre, Zahle, Jbail, Jounieh and Chekka) -- at the rate of two labs per year, all 10 mobile labs should be up and running by 2010
- Unit cost per air quality lab is $250,000 incl. costs of portal system for data logging and real-time data transfer to national laboratory
- O&M costs (incl. depreciation) is equal to 15 percent of capital costs
- Mobile air quality labs would be operated by the nearest observatory

Activity 4 on environmental monitoring

- National observatory will provide the human resources
- At least one output (report, bulleting) per Qtr
- Technical assistance per output is $25,000

5.6. Intervention Brief #3: Launch and sustain projects to reverse the loss of environmental resources

5.6.1. Background and Rationale

Unsustainable practices have been eroding Lebanon's natural resource base for many years. The rate of resource erosion has arguably increased dramatically since the end of the civil war in 1990. The most significant threat to Lebanon's environmental resources is urban sprawl and encroachment on natural ecosystems, road construction projects, quarrying, intentional forest fires and the reckless discharge of raw sewage in water bodies polluting rivers and the sea. In practice, it is probably impossible to *reverse* the loss of environmental resources if the resource has been eroded (soil cover removed) or degraded beyond repair (mountains ravaged by prolonged and uncontrolled quarrying). The following activities therefore aim to *prevent* further loss of environmental resources and/or *rehabilitate* degraded resources.

5.6.2. Description

To achieve this, we propose the following activities:

- Rehabilitate inactive quarries
- Expand and intensify large-scale reforestation efforts
- Rehabilitate mountain terraces to prevent soil erosion and sustain livelihood
- Manage Lebanon's protected areas to maintain biological diversity

Rehabilitate Inactive Quarries

According to a 1996 survey, there are more than 700 quarries in Lebanon. Most of these quarries have been closed and remained inactive since. Although relevant legislation require quarry operators to rehabilitate the site before the permit expire, most of these quarries have never been rehabilitated and represent enduring eye-soars. The EU Third Life Countries Program has recently approved a project by MOE to develop a national quarry rehabilitation plan, including cost estimates. This activity aims to pilot cost-effective rehabilitation techniques on a selection of abandoned sand and rock quarries. Because the costs of quarry rehabilitation are difficult to estimate, we have allocated a ballpark figure to cover rehabilitation works; this allocation would be used to pilot several different rehabilitation techniques of both rock and sand quarries in several parts of the region to serve as demonstration sites.

Expand and Intensify Large-Scale Reforestation Efforts

The Government of Lebanon has allocated LBP5 billion annually to MOE over a 5-year period for reforestation (total LBP25 billion). This budget was historically allocated to the Ministry of Agriculture. Three years since the allocation began, MOE has not been able to utilize the full extent of the allocated budget for two main reasons: (1) the government has been delaying the actual transfer of funds in the face of other 'priority' expenses and (2) MOE has no forest service per se. Instead, MOE is tendering reforestation schemes to the private sector at the rate of about 300 hectares per year, worth about LBP2 billion ($1.3 million). These small-scale forest entrepreneurs collect the seeds, produce and plant the saplings in designated sites (about 700-800 saplings per hectare) and provide 3-year maintenance. So far, the average cost per sapling including production, planting and maintenance is approximately LBP9,000/sapling ($6), or LBP6,750,000/hectare ($4,500). The on-going reforestation program is managed by a four-member team at the Service of Nature Conservation at MOE.

This activity aims to enhance MOE's capabilities to manage, mobilize and utilize the allocated funds more effectively. In particular, the activity will seek to (i) increase the surface areas reforested annually from 300 to 1000 hectares, (ii) equip regional environmental divisions under the umbrella of the ministry of environment (consistent with the draft MOE law) and (iii) develop a national forest management plan.

Rehabilitate Mountain Terraces

Almost 75 percent of Lebanon's surface area is mountainous. Mountain agriculture is widespread and largely dependent on stone-walled bench terraces, some more than 2,500 years old. Maintaining such terraces is labor intensive and requires communal effort when carried out on a large scale. Post-war demographic changes and new economic realities have triggered significant rural-urban migration. The consequent abandonment and neglect of the terraced lands is rapidly leading to land degradation, soil erosion and a significant reduction in agricultural productivity. An estimated 40,000-60,000 hectares of terraces are in need of rehabilitation and would cost $3,000-10,000/ha.[40] Unless extensive rehabilitation is undertaken, Lebanon's terraced heritage will gradually disappear and with it the opportunities for sustained rural income through agricultural activity. This intervention therefore aims to rehabilitate degraded terraces in regions where agricultural activity is significant and an important source of income/employment. Rehabilitation should prioritize large/wide terraces on gentle slopes that are accessible to machinery.

[40] *Cost of Environmental Degradation – The Case of Lebanon and Tunisia.* Word Bank Paper no. 97

Manage Protected Areas

Lebanon's seven nature reserves (Arz Al Shouf, Horsh Ehden, Tannourine, Palm Islands, Bentaël, Yammouneh and Tyre Coast) cover about 2 percent of the territory. These reserves harbor tremendous biodiversity and enjoy different levels of protection. They were proclaimed legal reserves by law during the 1990s. Funding to run these nature reserves (i.e., visitors, research, protection) come from different sources including national (Ministry of Environment, NGOs) and international (Global Environment Facility, Fond Français pour l'Environnement Mondiale) organizations. The government has pledged increasingly larger budgets to support the management of nature reserves but disbursements are irregular and park management teams therefore must secure other sources of funding. For example, the annual budget allocated to the Al Shouf Cedars reserve, Lebanon's largest reserve, increased from LBP50 million in 1997 ($33,000) to LBP130 million in 2003 ($86,000) – this amount was pledged but has yet to be disbursed. Government support, while on the increase, represents only a fraction of actual expenditures. Annual O&M costs to run the Shouf Cedars Nature Reserve are about LBP300-400 million ($200,000-$266,000) including:

- Salaries for management staff (10 in winter, 16 in summer) incl. social benefits
- Forest rehabilitation works (e.g., labor, rental of machinery)
- Miscellaneous park investments (e.g., gates, benches, signage, facility)
- Vehicle maintenance and fuel
- Office maintenance (e.g., rent, audio-visual equipment, computers)
- Office supplies and consumables
- Communication and outreach (e.g., media, educational materials, travel, seminars)

The aim of this activity is to expand and sustain government funding to run Lebanon's nature reserves as a means to restore and protect environmental resources in ecologically sensitive areas. Park management will create local jobs, promote environmental awareness and help monitor and safeguard biodiversity.

5.6.3. Estimated Costs

Table 39: Estimated cost to reverse the loss of environmental resources (in US$)

Item	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Rehabilitate inactive quarries										
Rehabilitation works in up to 5 sand quarries	25,000	50,000	50,000	0	0	0	0	0	0	0
Rehabilitation works in up to 5 rock quarries	0	100,000	200,000	200,000	0	0	0	0	0	0
Disseminate good practices	0	0	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
SubTotal	*25,000*	*150,000*	*260,000*	*210,000*	*10,000*	*10,000*	*10,000*	*10,000*	*10,000*	*10,000*
Expand and intensify large-scale reforestation efforts										
Expand reforestation efforts	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000
Equip regional environmental divisions	250,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000
Develop national forest management plan	50,000	50,000	50,000	50,000	0	0	0	0	0	0
SubTotal	*3,300,000*	*3,300,000*	*3,300,000*	*3,300,000*	*3,250,000*	*3,250,000*	*3,250,000*	*3,250,000*	*3,250,000*	*3,250,000*
Rehabilitate mountain terraces										
Rehabilitate 10% of degraded terraces in Lebanon	3,500,000	3,500,000	3,500,000	3,500,000	3,500,000	3,500,000	3,500,000	3,500,000	3,500,000	3,500,000
SubTotal	*3,500,000*	*3,500,000*	*3,500,000*	*3,500,000*	*3,500,000*	*3,500,000*	*3,500,000*	*3,500,000*	*3,500,000*	*3,500,000*
Manage protected areas										
Cost of managing Lebanon's 7 protected areas	700,000	700,000	700,000	700,000	700,000	700,000	700,000	700,000	700,000	700,000
SubTotal	*700,000*	*700,000*	*700,000*	*700,000*	*700,000*	*700,000*	*700,000*	*700,000*	*700,000*	*700,000*
TOTAL COST	**7,525,000**	**7,650,000**	**7,760,000**	**7,710,000**	**7,460,000**	**7,460,000**	**7,460,000**	**7,460,000**	**7,460,000**	**7,460,000**

Assumptions:

Activity 1 on quarry rehabilitation

- Unit cost of rehabilitating one sand quarry is $25,000/site
- Unit cost of rehabilitating one rock quarry is $100,000/site

Activity 2 on forest management

- Government allocation equal LBP 5 billion annually (i.e. 3 million US$)
- Equip regional environment division: Lump sum US$ 250,000/year
- Develop national forest management plan: strategy, workshops…etc – Lump sum US$ 50,000/year

Activity 3 on mountain terraces

- Number of hectares estimated to be in need of rehabilitation: 50,000 ha
- Number of hectares targeted by this intervention under MDG: 5,000 ha. (10%)
- Unit cost of rehabilitation: $7,000/ha

The highest priority terraces requiring immediate rehabilitation should be selected on land use and socio-economic indices. Ideally, rural/deprived areas where agriculture continues to employ a large proportion of the workforce should receive immediate attention. No efforts should be dispensed on narrow and/or abandoned terraces. According to the agricultural census, the agricultural sector employs more than 20 percent of the total workforce in seven cazas as follows:

Caza	Percent of Workforce in Agriculture	Workers/Farmers
Bekaa Al Gharbi	24.2%	4,500
Hermel	33.1%	3,500
Rachaya	20.0%	1,900
Sour	23.1%	13,800
Bent Jbayl	25.3%	4,700
Marjaayoun	32.0%	5,000
Hasbaya	22.0%	2,200
Total		**35,600**

Terraces in these cazas, as well as mountain orchards in other cazas, should be targeted under this intervention.

Activity 4 on protected areas

Although the Shouf Cedars Nature Reserve represents 75 percent of the total land area protected by law to maintain biological diversity, the smaller reserves also require management teams and basic park management services including visitor facilities, outreach materials, vehicles, monitoring equipment, office space and equipment, signage, etc. We have therefore assumed that each nature reserve in Lebanon (currently seven) will, on average, require LBP150 million ($100,000) annually in management and operation costs.

5.7. Intervention Brief #4: Enforce Water Quality Monitoring Systems and Promote Water Awareness

5.7.1. Background and Rationale

Between 1992 and 2003, the Government of Lebanon has awarded contracts (design and construction) in the water supply sector worth $520 million. The objectives of the water plan were two-folds: (1) expand and rehabilitate existing potable water supply systems and (2) expand and develop water resources to meet expected shortages. Despite noteworthy strides in water supply projects, a lot more remains to be done to expand network coverage and increase service quality. According to a recent consumer survey on water supply:[41]

- 85 percent of households are connected to the public water supply system;
- Only 14 percent of households receive water under pressure and round-the-clock (24/24 hours);
- Only 25 percent rely wholly on the public water supply system (50 percent rely on two sources and 25 percent rely on three sources such as private wells, water delivered by cisterns, bottled water and water harvesting, springs and/or water fountains); and
- 53 percent of the respondents are inadequately informed on water quality issues.

5.7.2. Description

While water leaving treatment/chlorination plants is considered safe for drinking, water reaching households may be contaminated due to faulty delivery systems. In light of the government's current plans in the water supply sector and anticipated spending (more than $203 million of contracts in preparation covering design and construction works), this project intervention cannot and will not propose further infrastructure works. Instead, we propose to build and enforce water quality monitoring systems across the country to monitor drinking water quality in the supply system (from source to sink) and guide spot intervention in case of non-compliance or potential risk to public health. This intervention would also aim to inform end–users on water quality issues and eventually help restore consumer trust in the public water supply system and relax reliance on non-sustainable water sources including bottled water and water from private wells. Consumer awareness would be achieved by producing and distributing a "water fact sheet" every two years to each household/dwelling unit in Lebanon. Fact sheet would contain information on the water source, water quality, statistics, pricing, and tips on how to conserve water.

[41] Projet D'appui A La Reforme Institutionnelle Du Secteur De L'eau Au Liban. Rapport N°2 : Analyse Des Resultats des Enquetes Socio-Economiques - Provisoire – Avril 2004

5.7.3. Estimated Costs

Table 40: Estimated cost to enforce water quality monitoring systems (in US$)

Item	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Enforce Water Quality Monitoring Systems										
Upgrade water quality labs	250,000	250,000	250,000	250,000	0	0	0	0	0	0
Training (equipment, QA/QC, etc.)	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000
Laboratory Accreditation	20,000	20,000	20,000	20,000	10,000	10,000	10,000	10,000	10,000	10,000
SubTotal	*300,000*	*300,000*	*300,000*	*300,000*	*40,000*	*40,000*	*40,000*	*40,000*	*40,000*	*40,000*
Promote Water Awareness										
Consolidate water quality data	0	0	0	0	0	0	0	0	0	0
Produce awareness materials for consumers	300,000	0	300,000	0	300,000	0	300,000	0	300,000	0
Disseminate awareness materials to consumers	200,000	0	200,000	0	200,000	0	200,000	0	200,000	0
Organize seminars	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000
SubTotal	*512,000*	*12,000*	*512,000*	*12,000*	*512,000*	*12,000*	*512,000*	*12,000*	*512,000*	*12,000*
TOTAL COST	**812,000**	**312,000**	**812,000**	**312,000**	**552,000**	**52,000**	**552,000**	**52,000**	**552,000**	**52,000**

Assumptions:

Activity 1 on water quality monitoring

- Some (not all) Mohafazat already have water quality labs but need to be upgraded
- Water quality labs may fall under the umbrella of the Ministry of Public Health (as part of their water quality testing programs) or the Ministry of Energy and Water (Water Establishments)
- Laboratory accreditation is usually based on the number of fields: at minimum, the labs should be accredited to conduct organics and inorganics tests on drinking water
- Accreditation fee is approximately $10,000/lab for two fields including fees and travel expenses for overseas assessment team

Activity 2 on water awareness

- Water quality data will be consolidated by the regional observatories (see Intervention 2, Activity 2) – i.e., zero additional costs
- Number of dwelling units in Lebanon (residential and non-residential) is approximately 1.5 million (based on national census of buildings and households) of which we have assumed that approximately 1 million are subscribed to the public water service
- Awareness material consists of an "water fact sheet" to be distributed to all dwellings subscribed to the public water supply service, every two years
- Cost of researching, designing and producing the leaflet is equal to $0.3/copy
- Cost of door-to-door distribution to 1 million dwellings is equal to $0.2/copy

5.8. Intervention Brief #5: Setup Sector Implementation Unit to Accelerate Construction of Wastewater Networks and Treatment Plants

5.8.1. Background and Rationale

Between 1992 and 2003, the Government of Lebanon has awarded contracts (design and construction) in the wastewater sector worth $382 million.[42] The number of households that are connected to a public sewage network has significantly increased since the end of the war. The actual number varies depending on the data source and period. For example, according to the:

- Census of buildings and households (CAS), 37 percent of buildings had access to wastewater networks in 1996-97;
- Survey on living conditions (CAS), 58.5 percent of dwellings had access to wastewater networks in 1997; and
- Results of the vast socio-economic survey of the water sector (IPSOS), 45 percent of respondents (about 1020) said they hoped to be connected to a public wastewater network.

Despite significant accomplishments in wastewater networks, wastewater treatment continues to face mounting obstacles including design, location and funding. Achievements to date include the upgrade of the Ghadir wastewater treatment plant (WWTP) and associated sea outfall south of Beirut and the completion of the Baalbeck WWTP in 2000 to serve 88,000 people-equivalent - the plant has remained idle since because the associated network is still under construction. At least seven WWTPs are reportedly under construction or being tendered in Tripoli, Chekka, Batroun, Jbail, Saida, Nabatiyeh and Chouf coastal areas. Other WWTPs are planned in at least 30 other sites and agglomerations. The timetable for implementation remains unclear.

5.8.2. Description

In light of the government's on-going wastewater plans ($16.5 million worth of contracts awarded in 2003 and about $737 million worth of contracts under preparation covering design and construction works), this intervention cannot and will not propose further infrastructure works. Instead, we propose to form a sector implementation unit (SIU) to follow and accelerate planned wastewater projects in the country.

[42] Council for Development and Reconstruction, Progress Report July 2004.

5.8.3. Estimated Costs

Table 41: Estimated cost to accelerate construction of WWNTP (in US$)

Item	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Setup Sector Implementation Unit	750000	750000	750000	750000	750000	750000	750000	750000	750000	750000
SubTotal	*750000*	*750000*	*750000*	*750000*	*750000*	*750000*	*750000*	*750000*	*750000*	*750000*
TOTAL COST	**750000**	**750000**	**750000**	**750000**	**750000**	**750000**	**750000**	**750000**	**750000**	**750000**

We have assumed that the cost of setting up and running the SIU effectively will equal one percent (1%) of the total contract value (about $750 million), spread over 10 years.

5.9. Intervention Brief #6: Relocate People Living in Improvised Dwelling Units and Provide Basic Services

5.9.1. Background and Rationale:

According to the millennium development definitions, slum dwellers are based on the notion of "secure tenure" which is the concept of "protection from involuntary removal from land or residence except through due legal process." It is widely recognized that households with secure tenure are more likely to have access to decent water supply, adequate sanitation facilities, have sufficient living area (not overcrowded) and decent structural quality. Conversely, slum dwellings would tend to be illegal, overcrowded, have inadequate access to safe water and sanitation and show poor structural stability. Efforts are therefore underway by UN-Habitat to develop a slum index based on the following five characteristics:

1. Residential status
2. Access to safe water
3. Access to sanitation and other infrastructure
4. Structural quality of housing
5. Overcrowding

Determining the number or slum dwellers in Lebanon is a convoluted exercise and beyond the scope of MDG costing. However, we have considered the following three approaches to determine the extent of slum dwellings notionally based on the characteristics listed above.

Improvised buildings

According to the CAS census on buildings and households, there were 21,621 improvised buildings in 1996-1997. Such improvised buildings are typically illegal, lack structurally stability and permanency (component #1 and #4 above). They were distributed as follows: [43]

Table 42: Distribution of improvised buildings per Mohafazat

• North	4911
• Beirut	622
• Mount Lebanon	10309
• Bekaa	3732
• South	1603
• Nabatiyeh	444

[43] Central Administration of Statistics. *Census of Buildings and Households in 1996-97.*

Overcrowded dwellings

According to the 1997 census on living conditions, 34.1 percent of the Lebanese population (4 million in 2000) live in overcrowded dwellings; this represents 24.1% of the total number of dwellings in use. CAS has considered *overcrowded* dwellings those dwellings where more than three people live in a room or more than eight people live in less than 4 rooms. This is equivalent to 1.37 million, distributed as follows (to the nearest 500):[44]

- Beirut 115,000 (28.5% of population)
- Beirut suburbs 322,000 (35.8%)
- Rest of Mount Lebanon 104,000 (17.1%)
- North Lebanon 352,000 (43.6%)
- South Lebanon 202,500 (42.9%)
- Nabatiyeh 104,500 (37.9%)
- Bekaa 172,000 (31.9%)

According to the UN Statistics Division (Millennium Indicators Development), the slum population in urban areas in Lebanon increased from 1.14 million in 1990 to 1.6 million in 2001.[45] While the source does not explain how these numbers were produced, one explanation is that overcrowded dwellings were used in the estimation.

Poor areas

According to the national poverty rating prepared under the project "Economic and Social Fund for Development,[46] four districts (cazas) representing a combined population of 473,899 received a "very high priority" rating, as follows:

- Minyeh, population 118,681
- Akkar, population 252,917
- Bint-Jbail, population 66,119
- Hermel, population 36,182

These districts (caza) show a very high degree of deprivation in terms of the number of the poor, poverty gap, etc. Unfortunately, these data are not available in a disaggregated form that would enable a well defined intervention.

[44] Central Administration of Statistics. Study No. 9, 1998. *Survey of Living Conditions in 1997*.
[45] http://millenniumindicators.un.org/unsd/mi
[46] EC-Project No. LBN/B7-4100/99/0225

5.9.2. Description

Based on the three approaches detailed above, we decided to consider only the first approach on improvised buildings for the following reasons: (a) improvised buildings reflect best the notion of legality and permanency; (b) overcrowded dwellings in Lebanon are too widespread to be considered slum dwellings and could not all be relocated/upgraded even if they were considered so; (c) poor areas are addressed more extensively under MD Goal 1 to eradicate extreme poverty and hunger. The intervention therefore seeks to relocate a part of the populations living in Lebanon's 21,621 improvised buildings to new, legal, permanent and structurally stable dwellings fully equipped with electricity, water and sanitation. Priority, for the period 2006-2015, is set to improvised buildings located in the periphery of the capital Beirut. In fact, the definition of "slum dwellers" can be applied mostly to that region ("poverty belt"): urban area, high density of population, overcrowding, limited or no access at all to safe water, sanitation and other infrastructures.

The "Census of Buildings and Households" shows that in the suburbs of Beirut, there are around 3'085 improvised building. The objective of this intervention would be to relocate these households in new dwellings build for that purpose. The average cost per unit is estimated to be 30'000US$.

5.9.3. Estimated Costs

Table 43: Estimated Cost to relocate people living in improvised dwelling units (in US$)

Item	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Relocate people living in improvised buildings	9,255,000	9,255,000	9,255,000	9,255,000	9,255,000	9,255,000	9,255,000	9,255,000	9,255,000	9,255,000
TOTAL COST	**9,255,000**	**9,255,000**	**9,255,000**	**9,255,000**	**9,255,000**	**9,255,000**	**9,255,000**	**9,255,000**	**9,255,000**	**9,255,000**

Assumptions

- We have assumed the unit cost of one dwelling with basic services to be $30,000, not including the price of property
- The relocation program will take 10 years

5.10. Consolidated Cost

Table 44: Total Consolidated Cost of MDG 7 (in '000 US$)

Item	Total	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Environment Framework Law	3,925	352	406	509	464	464	354	344	344	344	344
Environmental Information System	15,880	1,698	1,773	1,753	1,828	1,888	1,388	1,388	1,388	1,388	1,388
Reverse loss of environmental resources	40,405	4,025	4,150	4,260	4,210	3,960	3,960	3,960	3,960	3,960	3,960
Water quality monitoring system	4,060	812	312	812	312	552	52	552	52	552	52
Waste water network and treatment plants	7,500	750	750	750	750	750	750	750	750	750	750
Relocate people living in improvised buildings	92,550	9,255	9,255	9,255	9,255	9,255	9,255	9,255	9,255	9,255	9,255
TOTAL COST	**164,320**	**16,892**	**16,646**	**17,339**	**16,819**	**16,869**	**15,759**	**16,249**	**15,749**	**16,249**	**15,749**

5.11. Impact of Proposed Interventions:

Collectively, the proposed interventions will bring Lebanon closer to achieving environmental sustainability. For a start, the intervention to setup an environmental information system (Target 9) will generate continuous and reliable data on the state of the environment from all regions of the country. Improved data will guide and support decision making and constitute a platform for monitoring change. The intervention regarding the environmental framework law (Target 9) will lead to the dissemination of the national environmental action plan and an improved understanding of the strategic environmental assessment, as well as strengthen the ministry of environment's capacity to review environmental impact assessments and carry out follow-up inspections. The proposed intervention to reverse the loss of environmental resources (Target 9), while it does not and cannot provide a comprehensive solution to natural resources management, it will however demonstrate and disseminate cost-effective techniques for rehabilitating quarries, expand national reforestation efforts and develop the first national plan for sustainable forest management, rehabilitate stone-walled mountain terraces in priority agricultural areas and enhance the management of the country's protected areas. The intervention on access to safe drinking water (Target 10) will provide a national drinking water quality system to guide spot intervention in case of non-compliance with relevant drinking water standards. The proposed "water fact sheet" and water seminars will also promote water awareness, rebuild consumer trust in municipal water supply and mobilize them to conserve water and protect their water sources. The proposed intervention to setup a sector implementation unit to accelerate wastewater construction works will markedly reduce the number of people without access to sanitation and also eliminate the disposal of raw sewage on land and in the sea. Finally, the proposed intervention to relocate people living in an estimated 3,085 improvised buildings to new dwellings that are legal, structurally safe and permanent, will significantly reduce the number of slum population in the country (Target 11). This intervention however will not resolve the problem of overcrowding.

List of Studies and Document

1- "Schools Guide in Lebanon 2003-2004", CERD
2- Statistical yearly bulletin on education in Lebanon 2003-2004,CERD
3- "National Work Plan of Education for All 2005-2015" -2004, Ministry of Education and Higher Education
4- Data From CERD Database-2004, CERD
5- "Regional Assessment of current public Schools" 2002-2003,CERD
6- "Population Growth 2005-2015" from "National Land Use Master Plan", Prepared by dar Al Handassah/ IAURIF for the Council of Development and Reconstruction
7- MDG Lebanon Report- 2003, Lebanese Republic
8- "AIDS/HIV National Strategic Plan 2004-2009" -2003, Ministry of Public Health
9- "National Perinatal Survey" 1999-2000, Ministry of Public Health & UNICEF
10- "Tuberculosis elimination program in Lebanon"-2004, Ministry of Public Health & WHO
11- "Flour Fortification Report" 2003, UNICEF
12- Cooperation contract between Ministry of Public Health and Makassed hospital on Health care in Wadi-khaled village in Akkar- Northern Lebanon
13- "Primary Health care in Lebanon: Ten years Later "-2004, Nabil M Kronfol MD, DrPH
14- Renewed National Immunization Schedule- 2004, Ministry of Public Health
15- Database of Households and Housings survey-1996, Ministry of Social Affair
16- Living Conditions in Lebanon-1997, Central Administration for Statistics CAS
17- "Poverty Targeting System"-2001 by CRI for Economic and Social Fund-EU Mission
18- "L'entrée des jeunes libanais dans la vie active et l'émigration"-2001, Saint-Joseph university
19- "South Bekaa Irrigation Project" 2000-2001, CRI
20- "Workshop On Millennium Development Goals: Poverty alleviation"- 14 April 2004, UNDP
21- National Land Use Master Plan, Final Report. Prepared by Dar Al Handasah/IAURIF for the Council of Development and Reconstruction
22- Progress Report, June 2004. Council for Development and Reconstruction, Government of Lebanon.
23- Lebanon State of the Environment Report 2001. Prepared by ECODIT Liban for the Ministry of Environment.
24- National Environmental Action Plan, draft outline dated December 2004. Prepared by MSC-IPP Environment for the Ministry of Environment.
25- M. Sarraf, B. Larsen, M. Owaygen. Cost of Environmental Degradation – The Case of Lebanon and Tunisia. June 2004. Environmental Economic Series, Paper No. 97, The World Bank.
26- Projet D'appui A La Reforme Institutionnelle Du Secteur De L'eau Au Liban. Rapport N°2 : Analyse Des Resultats Des Enquetes Socio-Economiques - Provisoire – Avril 2004
27- R. Zuryak, *Rehabilitating the Ancient Terraced Lands of Lebanon*. Journal of Soil and Water Conservation, March-April 1994.