National Health Statistics Report in Lebanon

in collaboration with

World Health Organisation

MINISTRY OF PUBLIC HEALTH

GSPS

2012 Edition

NATIONAL HEALTH STATISTICS REPORT IN LEBANON

ACKNOWLEDGMENT

The Institute of Health Management and Social Protection (IGSPS) wishes to thank

The team of the Ministry of Public Health managed by Dr. Walid Ammar,

The team of the World Health Organization (WHO) in Lebanon,

The Research Council of Saint Joseph University (USJ) of Beirut,

All the Ministries, universities, Non-Governmental Organizations (NGOs) and individuals who shared their information with us, and without whom this report would not have been possible.

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This document was prepared by the Institute of Health Management and Social Protection (IGSPS) at Saint-Joseph University and coordinated by Dr. Michèle Kosremelli Asmar with the technical support of the WHO office in Beirut and the Lebanese Ministry of Public Health and the financial assistance of the WHO office in Beirut.

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FORWARD BY THE IGSPS DIRECTOR

This second edition of the "National Health Statistics Report in Lebanon" addresses the general public with an interest in the Lebanese health system and is also intended as a reference for researchers and specialists in the health sector both in Lebanon and the region.

It is published by the Institute of Health Management and Social Protection (IGSPS) at Saint-Joseph University in collaboration with the World Health Organization and the Ministry of Public Health.

This report, which was based on the "WHO guidelines for the communication of indicators", is a compilation of data that is available from different public and private health agencies in Lebanon.

The increasing need for information leads us to believe that in the future, this compilation of data will not only be a source of information on public health in Lebanon, but may ultimately be the cornerstone of a project of broader scope that requires sustained effort, and allows for the development of a comprehensive and computerized national data base useful for good governance and management.

This document is the result of a meticulous, reliable and controlled compilation of data, and has the advantage of facilitating research by presenting results and indicators related to the health field in one document. I urge you to go through this it and draw on the relevant data that might be of use to you in your practice.

I wish to thank all those who have contributed to the development of this document, directly or indirectly, especially the IGSPS team members for their continuous efforts in validating the data and maintaining transparency.

I renew my desire to improve and institutionalize this effort in the near future so that it can contribute to the development of national supervisory structures, provide technical support to national actions and serve as a support for health policy decision-making.

Dr Walid El Khoury
Director, Health Management and Social Protection Institute

FORWARD BY THE MINISTRY OF PUBLIC HEALTH

The Ministry of Public Health (MOPH) undertook more than 15 years ago a health reform whose aim was to improve the performance of the health system and by doing so the health of the Lebanese population. Consequently, the MOPH developed a national strategy based on data from research studies that identified problems and malfunctioning within the health system. This strategy was reevaluated by repeating the studies and reproducing statistical data that provide evidence of the success of the reform at various levels. Hence, the World Health Organization (WHO) report on the Health of the world which was published in 2010 recognized the achievements of this reform under "Lebanon's reforms: improving health system efficiency, increasing coverage and lowering out-of-pocket spending".

With this in mind, it was essential to compile information on health issues to allow professionals, as well as policy makers to have access to national data. The USJ took the initiative in 2004 and developed the first National Health Statistics Report. In 2012, USJ once again repeats the endeavor and publishes a second National Health Statistics Report developed by IGSPS, with the support of the WHO and the on-going collaboration of the WHO and the MOPH.

This 2nd edition which has improved in terms of organization and diversity of content constitutes a rich resource of health-related data made available to all individuals concerned with health issues.

I would finally like to congratulate the IGSPS team for this fruitful and comprehensive project, in the hope of producing in the near future a 3rd edition.

Dr. Walid Ammar
Director General
Ministry of Public Health in Lebanon

FORWARD BY THE WHO REPRESENTATIVE IN BEIRUT

The efforts deployed by the Ministry of Public Health (MOPH) in reinforcing the health system to improve its performance were successful in many aspects and are reflected in the health indicators of the population.

However, in spite of the abundance of health-related information and the presence of a multitude of scientific research, access to health information in the absence of a well-established national health information system remains an important challenge.

The USJ, namely IGSPS, has for the second time in less than 10 years taken the initiative to develop a National Health Statistics Report that includes the maximum amount of available health data, presented in a systematic and standardized way.

The World Health Organization (WHO), with the collaboration of the MOPH wanted to support such an initiative given its importance and usefulness to health professionals, as well as health policy decision makers. Our office in Beirut got involved with this project at the end of 2011, under the mandate of the former WHO representative in Lebanon, Dr. Sameen Siddiqi. It is because of the team's effort and efficient work in editing and finalizing this document, that I can today, as current representative of the WHO in Lebanon, launch this report.

I would like to reiterate that the WHO will always encourage such partnerships between the academic and governmental sectors, for the benefit of public health.

Dr. Hassan El Bushra
Acting WHO Representative in Lebanon

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ABBREVIATION LIST

ACAL	Association des Compagnies d'Assurance au Liban
ADHD	Attention Deficit and Hyperactivity Disorder
AIDS	Acquired Immuno Deficiency Syndrome
ARV	Antiretroviral
AUB	American University of Beirut
AUBMC	American University of Beirut Medical Center
AUST	American University of Science and Technology
AUT	American University of Technology
BA	Bachelor of Arts
BAU	Beirut Arab University
BMI	Body Mass Index
BS	Bachelor of Science
BT	Technical Baccalaureat
CAS	Central Administration of Statistics
CCC	Chronic Care Center
CI	Confidence Interval
CO	Carbon Monoxyde
CSC	Civil Servant Cooperative
CT scan	Tomodensitometry
DOT	Directly Observed Treatment
DPT	Diphteria, Pertussis and Tetanos
DSC	Donner Sang Compter
EB	Exclusive breastfeeding
ECTS	European Credit Transfer System
EMRO	Eastern Mediterranean Regional Office
EPI	Expanded Programme on Immunization
ESU	Epidemiological Surveillance Unit
EWARS	Emergency Warning and Response System
FHT	Family Health Team
GCC	Gulf Cooperation Council
GDP	Gross Domestic Product
GSF	General Security Forces
GSHS	Global School Health Survey
GU	Global University
HCW	Healthcare Waste
HDF	Hôtel-Dieu de France
HIV	Human Immuno deficiency Virus
ICD	International Classification of Diseases
IDRAAC	Institute for Development, Research, Advocacy and Applied care
IGSPS	Institute of Health Management and Social Protection
IHCW	Infectious Healthcare Waste
IMC	International Medical corps
IRC	International Red Cross
ISF	Internal Security Forces
IUL	Islamic University of Lebanon
JAD	Jeunesse Anti-Drogue
JCD	Jeunesse Contre la Drogue
JU	Jinan University

KABP	Knowledge, Attitude, Belief and Practice
LAU	Lebanese American University
LDC	Least Developed Countries
LDH	Lactate Dehydrogenase
LGU	Lebanese German University
LIU	Lebanese International University
LRC	Lebanese Red Cross
LU	Lebanese University
MDG	Millennium Development Goals
MEHE	Ministry of Education and Higher Education
METAP	Mediterranean Environmental Technical Assistance Program
MGU	Medical Genetic Unit
MMR	Measles, Mumps and Rubella
MOPH	Ministry of Public Health
MOSA	Ministry of Social Affairs
MPH	Master of Public Health
MRI	Magnetic Resonance Imaging
MS	Master of Science
MSW	Municipal Solid Waste
MU	Makassed University
NAP	National Aids Program
NCDP	Non communicable Disease Program
NDLH	Notre Dame du Liban Hospital
NDS	Notre Dame du Secours
NDU	Notre Dame University
NGO	Non-Governmental Organization
NHHEUS	National Household Expenditures and Utilization Survey
NOOTDT	National Organization for Organ and Tissues Donation and Transplantation
NSSF	National Social Security Fund
NTP	National Tuberculosis Program
OMSAR	Office of the Minister of State for Administrative Reform
PAPFAM	Pan Arab Project for Family Health
PET scan	Positron Emission Tomography scan
PHC	Primary Health Care
PHCP	Primary Health Care Program
PLoS	Public Library of Science
PM	Particulate Matter
PPP	Purchasing Power Parity
PRCS	Palestinian Red Crescent Society
RAMOS	Reproductive Age Mortality Survey
SHP	School Health Program
SIDC	Service Infirmier et Développement Communautaire
SSF	Special Security Forces
SWM	Solid Waste Management
TB	Tuberculosis
TS	Technique Supérieur
UAE	United Arab Emirates
UD	University Diploma
UHC	University Hospital Center
UNDP	United Nations Development Program
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFPA	United Nation Population Fund
UNHCR	United Nations High Commissioner for Refugees

UNICEF	United Nations Children's Fund
UNRWA	United Nations Relief and Works Agency
UPA	Antonine University
USEK	Université Saint Esprit Kaslik
USJ	Université Saint-Joseph
VCT	Voluntary Counseling and Testing
VHP	Viral Hepatitis Program
WHO	World Health Organisation
YASA	Youth Association for Social Awareness
YMCA	Young Men's Christian Association

INTRODUCTION

The ratification by Lebanon of the Millennium Declaration in 2000 underlined that one of the main challenges in reaching the eight defined goals consisted in the availability of valid and precise updated data and statistics.
Given the absence of any recent census in Lebanon, it is common belief that data is rare in this country. This however, is a misconception as we consider that the problem in Lebanon arises more from a lack of dissemination, difficulty of access and the absence of uniformity, rather than from a paucity of data.

In fact, many governmental organizations, such as the Central Administration of Statistics (CAS), various ministries, academic institutions, and a multitude of Non-Governmental Organizations (NGOs), collect and analyze data pertaining to the health of the Lebanese population or to one of the sectors affecting it. Recently, several of these institutions and organizations have sought to diffuse and make available to the general public the information they have in an attempt to increase awareness and knowledge. The Ministry of Public Health, the Ministry of Social Affairs, the Asthma Center, various NGOs such as Oum el Nour, Kunhadi, SIDC, and the Young Men Christian Association (YMCA), are but some examples.

Unfortunately and due to the lack of coordination between the different stakeholders, the numerous efforts carried out do not allow us to reach tangible and concrete results. The information is often incomplete and presents a redundant character. This is clearly mentioned in the Millennium Development Goal (MDG) Report (p.8, UN, 2008):

> "[…] the lack of coordination among different stakeholders, including public, private, civil society organizations, as well as UN donor agencies is leading to fragmentation and waste of scarce resources. One main concern remains the lack of a monitoring system to evaluate the implementation of the MDGs in the country".

In 2004, a first attempt was made by the Institute of Health Management and Social Protection (IGSPS) at Saint-Joseph University (USJ) with the collaboration of the Italian Embassy and the Ministry of Public Health (MOPH). The aim of this endeavor was to compile and organize health-related information as well as make it accessible to the public. The outcome of this experience was the publication of the first "Health Statistics Report in Lebanon". This report was well received and obtained favorable feedback from the stakeholders. In fact, it helped identify numerous sources of health-related data in Lebanon. This report confirmed the existence of multiple databases in Lebanon and the need to put together a mechanism that allows for the compilation, synthesis and diffusion of this information.

Today, eight years later, the second edition of this report completes and updates its first edition. This 2nd edition is the fruit of efforts carried out by IGSPS with the technical and scientific assistance and expertise of the WHO office in Lebanon. The data presented will cover the time span from 2004 to 2011 whenever available. The goal is to describe the current conditions and trends in the health sector. Using a methodology similar to that of the first edition, the second one will compile, organize and make accessible to the general public data available within the different health organizations in Lebanon.
This new version is based on the "WHO guidelines for the communication of indicators". This second edition incorporates the recommendations and suggestions that followed the publication of the first edition. Moreover, the content of this edition was modified to cover all health aspects, including whenever possible the MDGs for Lebanon.

This volume is divided into 5 parts namely:

I- Objectives and method of the report
II- Background on Lebanon
III- Health situation and health system indicators
IV- Health determinants
V- Main health partners

I- Objectives and Method of the Report

I.1 – OBJECTIVE OF THE REPORT

The objectives of this Report are threefold:

- Ensuring transparency
- Increasing accessibility to information
- Avoiding duplication.

Efforts to date have mainly concentrated on the publication of two reports within an 8 year period. These two publications and the evaluation of both experiences, indicate that in spite of the great progress achieved on various levels, there is still a considerable amount to be done in order to improve the health indicators and develop adequate health policies in Lebanon.

This report is meant as a decision-making tool. It is thus of great importance for planners, decision makers, administrators, media, students and any individual or institution working in the health field. Accordingly, all our efforts will be directed towards the validation of data and their unification whenever possible. Even though we tried to limit ourselves to national data, the report will include data from more targeted studies that were conducted in Lebanon between 2004 and 2012.

We hope that this document will constitute the corner-stone of a larger scale project that requires continuous efforts and results in the development of a universal, computerized information system.

I.2 – METHOD

In order to achieve the projected goal, the working team has followed a structured methodology consisting of the following 5 stages:

1. Preparation
2. Data compilation
3. Table and graph development
4. Chapter writing
5. Technical and scientific review of WHO

The preparation stage consisted of building on the experience of the first report. In fact, the latter was the starting point for the second report as an analysis of the recommendations and suggestions received after the 1st report, resulted in a new presentation that served the needs of the readers better.

A meeting was planned with the Ministry of Public Health (MOPH) to get their approval and support. This resulted in an endorsement letter provided by the MOPH that formalized the procedure and facilitated access to different sources of data (Appendix 1). Next, the list of contacts was revised and updated and contact was established with the different stakeholders. Initial contacts were followed-up by letters or faxes, phone calls, emails, and/or interviews. We also made use of local and international websites.

Data compilation was carried out over a period of 10 months, with updates along the way. This stage consisted of gathering information relative to the health field according to selected themes. A data retrieval form was developed and sent to key individuals within chosen organizations. These forms were then collected and data from different sources was compiled and unified whenever possible. Most of the data was sent to us in its raw structure and varied in the presentation, definitions and/or categories. Consequently, a meticulous validation task was necessary in order to standardize the data to allow for its exploitation and comparison. The data was then entered in such a way as to be useful for the elaboration of this report. It is worth mentioning here that we faced several problems during this stage, due to the different definitions and practices that are applied in different institutions regarding the way data is collected, presented and analyzed. The main obstacle was the consolidation and comparison of similar data stemming from various sources.

Table and graph development was based on the previous stage. Data, for each chapter, was compiled in tables and graphs in order to facilitate understanding and utilization. Complementary data that seemed useful was added in the text. Our main concern at this stage was to ensure the validity, reliability and compatibility of data, while minimizing interpretation difficulties. We also tried to use the graphs to identify possible trends over time.

Chapter Writing consisted of describing each theme first within its general context and then more specifically within the Lebanese one. This was followed with by an interpretation of all the tables and graphs.

The technical and scientific review of WHO was obtained for all the tables and graphs, as well as the chapter content.

II- Background on Lebanon

II.1 – LEBANON

The Republic of Lebanon is a democratic, parliamentary state located in the Near East. It is a country of 10452 sq. km. on the Mediterranean Sea, located at the crossroads of three continents: Europe, Asia and Africa. It is composed of six administrative provinces (or Mohafaza) divided into twenty-six districts (or Qada), including the district of Beirut. A central administrative authority is granted to the governor of each province.

The Lebanese population is estimated at approximately 3 961820 inhabitants[1] (379 individuals per 1 sq. km) with the majority (85%) living in urban regions, 38% of whom are found in Mount Lebanon. There is a strong transition at the demographic level, with 25% of the population below the age of 15 and 10% older than 65, indicating that almost half of the population is active

[1] The last census dates back to 1932. Currently available data are only estimates. The figure of 4 million is estimated by various international sources and has been used in numerous researches.

with a dependency rate of 52%. Moreover the fertility rate of 1.9 is relatively low. Life expectancy is 74 years, ranging between 71 years for men and 77 years for women (WHO, 2010); and the national growth rate is 1.8%.

The Lebanese population is characterized by the presence of numerous religious communities living side by side. The Civil War of 1975-1991 strongly affected the Lebanese economy, which was booming at the time due to its position in the Arab region which absorbed 85% of Lebanese exports. During the war, Lebanon lost its regional intermediate role and had to face inflation and the degradation of public services in the social field. The illiteracy rate is around 10.3% with a labor force participation rate of 39% for those above 15 years. Illiteracy rates remain higher for women with a rate of 13.7% for women above the age of 15 compared to that of 6.6% for men above that age. Similarly, the labor force participation rate for women over 15 years of age is 18.5%, substantially lower than that of men, which is 60%.

Table 1

Demographic indicators (2010)

Indicators	n	%
Area (sq. km)	10,452	
Total population	3,961,820[2]	
Mount-Lebanon	1,508,658	38.1
North Lebanon	816 739	20.6
Bekaa	533,305	13.5
South Lebanon	446,969	11.3
Beirut	378,464	9.6
Nabatiyeh	277,686	7.0
Urban population		85[3]
Men	1,957,535	49.4
Women	2,004,285	50.6
0-14 years	974,608	24.6
65+ years	384,297	9.7
Dependency rate		52
Crude birth rate (‰)	91,795	23.2
Crude mortality rate (‰)	21,441	5.4
Total growth rate		1.8
Total fertility rate (per woman)	1.9	

Source: MOPH, 2010, Statistics Bulletin

[2] Lebanese population without the 260000 to 280000 Palestinian refugees residing in Lebanon according to the last UNRWA statistics, 2011 (www.unrwa.org).

[3] Reference year: 2006 (www.emro.who.int/lebanon/).

Table 2

Social Indicators (2007)

Indicators[4]	Total (%)	Men (%)	Women (%)
Illiteracy rate (≥15 years)	10.3	6.6	13.7
Labor force participation rate (≥15 years)	39	60.6	18.5
Current education level of enrolled individuals (≥3 years)			
Preschool	12.4	12.9	12.0
Elementary	36.0	36.7	35.4
Intermediary	18.8	18.6	19.1
Secondary	15.1	14.6	15.6
University	16.9	16.7	17.2

Source: MSA, 2007 - The National Survey of Household Living Conditions

Table 3

Economic indicators (2009)

Indicators	Value
GDP (millions L.P.)	52,650
GDP annual growth (%)	8.5
Annual inflation rate (%)	1.2
Unemployment rate (%)[5]	9.2

Source: Lebanese Republic, President of the Council of Ministers, October 2010, Economic Accounts.

[4] Total population: 3,759,136 5 (CAS & MAS, NHHEUS, 2007).

[5] CAS annual report 2007.

II.2 – THE LEBANESE HEALTH SYSTEM

The Lebanese[6] health system evolved through 4 phases which are briefly described below:

Phase 1: The Pre-independence phase (1864-1943)

The medical field became known in Lebanon around the middle of the 19th century. It was a characteristic of big cities and included a few qualified doctors or surgeons mostly missionaries, or members of the Ottoman Army, the governing power at that time. Missionaries played an essential role in the introduction of medical education in the country, mainly through two universities, one English-speaking and the other French-speaking. During this period, health care was carried out in medical units belonging to charitable institutions which were mostly religious. Public hospitals were small, catering essentially to poor patients that were suffering from transmissible diseases. The government's main concern was to protect the population from infectious diseases and environmental risks.

After World War I, under the French mandate, a number of institutions were established including the first Health Department which was found within the Ministry of the Interior. All the public administrations that were set up at that time were highly influenced by the French especially in terms of inspection, control and centralization. In addition, the few small private hospitals that were established also followed the French model of clinics.

Phase 2: The Independence phase (1943-1960)

Lebanon's independence was proclaimed in 1943. Health-related issues became the sole responsibility of the Ministry of Health and Social Affairs whose main role was the supervision, coordination, and legislation of these matters in addition to the protection of the environment and the surveillance of transmissible diseases. During the 1950s, this Ministry began developing a public health system thus establishing the internal structures and a network of hospitals and primary health care centers where the poor could seek care. In spite of these initiatives, a big part of the country remained deprived of these services thus limiting the accessibility of the population to healthcare. It is also worth mentioning that the majority of these institutions remained centralized. In parallel, private hospitals started to flourish and offered better quality services. Efforts were carried out to reinforce the ties between the private and public sectors.

Phase 3: Reforms (1960-1975)

Beginning in 1958, the Lebanese government undertook a series of reforms in the health field namely:

- The 1961 decree that stipulated that in addition to its regulatory role in the health field, the Ministry of Health was responsible for the public health of the population and the health of the disadvantaged. Therefore, principles of primary health care, as well as a regional private and public network were developed to ensure the healthcare of the population.

[6] Extracts Asmar, M. (2011), Inter-professional collaboration, Paediatric unit case in a university hospital in Lebanon (PhD thesis).

- The creation in 1963 of the National Social Security Fund (NSSF) by decree number 13955 and the Cooperative of Civil Servants (CSC) by virtue of the law issued by decree number 14273. The NSSF is a semi-public, autonomous, social institution with a legal personality and financial and administrative autonomy. It was based, once again, on the European model of social security. The CSC is a public organization under the authority of the Council of Ministers.

Even though these reforms were important, they did not have the desired positive impact. On the contrary, they weakened the role of the Ministry of Health in the public sector and created duplications in terms of services granted and health coverage. The result was evident in terms of:

- The appearance of new modes of reimbursement, such as fee for service which had substantial consequences including the abuse of medical consultations, laboratory tests, x-rays and medication prescriptions.
- An increase of publicly managed social insurance funds (a total of 6) leading to competition and political struggles, instead of cooperation and coordination.

Phase 4: The Civil War (1975-1992)

With the beginning of the Civil War in 1975, the services of the Ministry of Public Health (MOPH) declined and with time, the Ministry became dysfunctional. The demand for help and healthcare increased and in parallel, the public sector collapsed leaving the private hospitals as the only viable source for healthcare. The Ministry found itself under the obligation of contracting to these hospitals in order to guarantee care for war victims as well as the general population. Consequently, the MOPH became the main funder of these hospitals and its role shifted to that of a contracting agent. Health expenses increased rapidly. They represented 80% of the Ministry's budget and covered mainly secondary and tertiary healthcare services. The MOPH also had to distribute expensive medication free of charge. By the end of the war, the MOPH was taking care of the health of the population with no social coverage as the NSSF seemed incapable of covering healthcare expenses due to the rapid increase in their cost as well as the prevailing economic situation. The only remaining ray of hope lied in private insurances which unfortunately were only available to a specific socio-economic class and could not, alone, cover the needs of the entire population.

War had a negative impact and harmful consequences. Its influence was catastrophic on infrastructure, human resources and the economy of the country, in both the private and public sectors. The Lebanese health system was not spared as it totally disintegrated. The private sector however, continued to evolve.

During the short peaceful years, attempts to reform the MOPH were carried out based on the main objective that health is an undeniable right to all individuals.

At the end of the war in 1990, the Lebanese health system was at its worst. The war had destroyed the health sector, as well as many other sectors in the country. Although most of the problems of the healthcare system stemmed immediately from the war, some were inherent to the conception of the system itself (The World Bank 2000). Whatever the causes, the main outcomes are summarized below:

- *In terms of governance* the country found itself with a MOPH that was unable to play its role as a health system regulator due to weak institutional, financial and managerial capacities. The whole public hospital network had started to collapse and consequently the public hospital sector was paralyzed, and became dependent on the private hospital sector that now occupied, a predominant place in the Lebanese health field.

This sector continued to grow but in a very chaotic way leading to an increasing trend towards highly technological curative care at the expense of preventive care and primary healthcare.

- *In terms of equity and efficiency* the health coverage of the population was inadequate. There was a substantial gap between the quality and the quantity of services provided, as well as inequalities in their geographic distribution, thus reducing their accessibility.
- *In terms of human resources* qualified personnel were attracted by job opportunities elsewhere causing a massive emigration of health professionals.
- *In terms of financing regime and healthcare expenses* the existing fragmentation and compartmentalization between numerous public, semi-public and private funds (approximately 100) (Kronfol, 2006), as well as the absence of efficient controlling mechanisms led to weakened purchasing power and expensive administrative costs as well as perverse behaviors aiming at increasing income (Ammar, 2003). In addition, the continuous upsurge in costs placed the country at a level close to that of industrialized countries with a very heavy financial burden on household expenses.

As a result, the Lebanese government adopted in 1993 a Public rehabilitation strategy for the health sector, with the double objective of supporting the Ministry of Public Health in planning for health resources and services, as well as reducing health expenditure (Ammar, 2003). This project was funded by the World Bank and has been the object of several studies and surveys carried out in collaboration with the WHO and different actors in the health field.

The current health system (1993-)

The current health system is described by many authors as being fragmented and pluralistic. The public sector has been absent for a long time because of the civil war. Since then, the MOPH realized a number of achievements. The health reform that started more than 15 years ago has attained accomplishments that are recognized by worldwide experts, such as those described in the WHO 2010 World Report on Health.

"Lebanon's reforms: improving health system efficiency, increasing coverage and lowering out-of-pocket spending".

In 1998 Lebanon spent 12.4% of its GDP on health which was more than any other country in the Eastern Mediterranean Region. Out-of-pocket payments, at 60% of total health spending, were also among the highest in the region, constituting a significant obstacle for low-income people. Since then, a series of reforms has been implemented by the Ministry of Health to improve equity and efficiency.

The key components of these reforms have been: a revamping of the public-sector primary-care network; improving quality in public hospitals; and improving the rational use of medical technologies and medicines. The latter has included increasing the use of quality-assured generic medicines. The Ministry of Health has also sought to strengthen its leadership and governance functions through a national regulatory authority for health and biomedical technology, an accreditation system for all hospitals, and contracting with private hospitals for specific inpatient services at specified prices. It now has a database that it uses to monitor service provision in public and private health facilities.

Improved quality of services in the public sector, at both the primary and tertiary levels, has resulted in increased utilization, particularly among the poor. Being a more significant provider of ser-

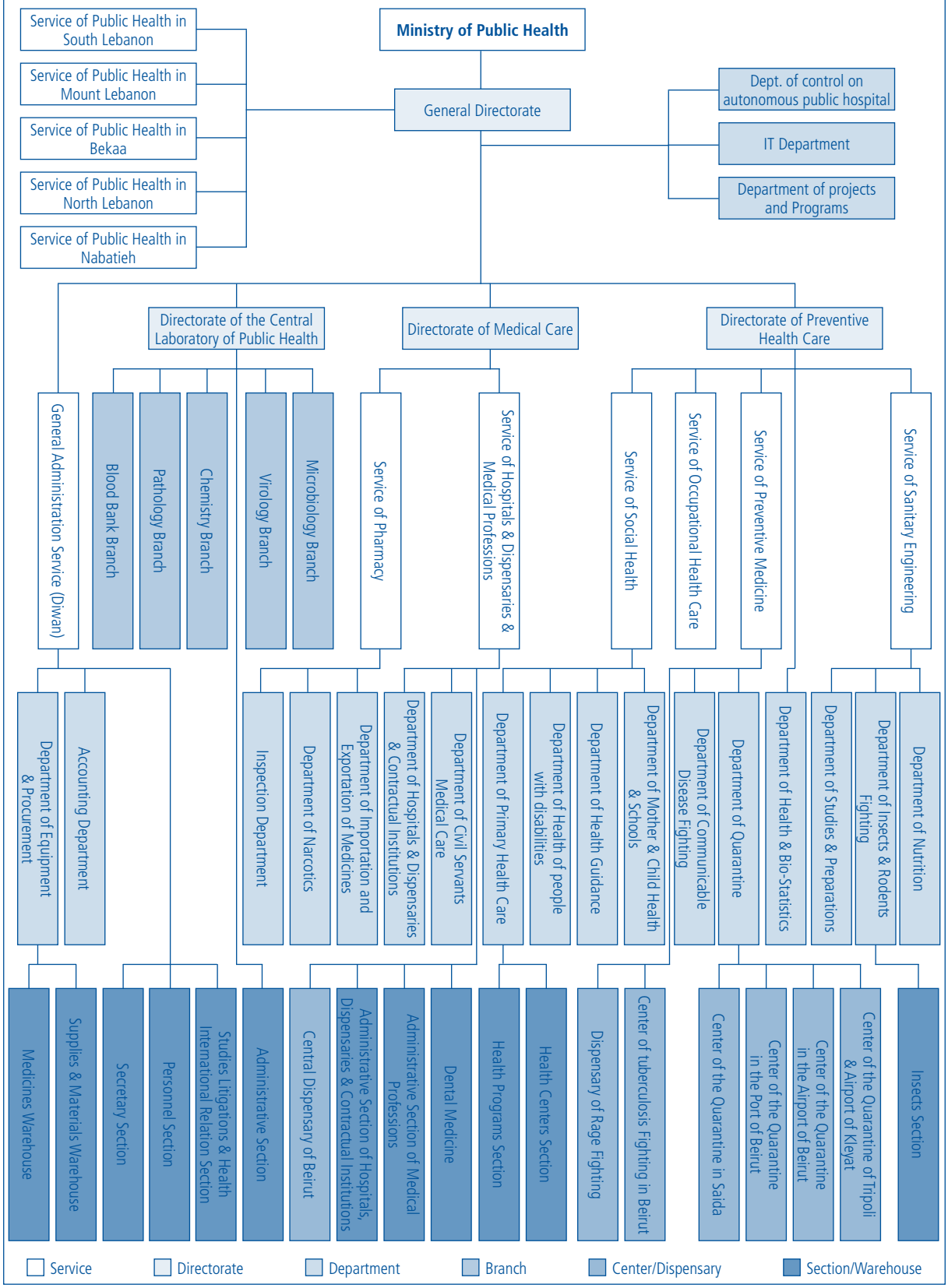
vices, the Ministry of Health is now better able to negotiate rates for the services it buys from private hospitals and can use the database to track the unit costs of various hospital services.

Utilization of preventive, promotive and curative services, particularly among the poor, has improved since 1998, as have health outcomes. Reduced spending on medicines, combined with other efficiency gains, means that health spending as a share of GDP has fallen from 12.4% to 8.4%. Out-of-pocket spending as a share of total health spending fell from 60% to 44%, increasing the levels of financial risk protection.

(Reproduced from the "World Health report 2010 on Health Care Financing" - Box 4.2)

The reform has also modified the internal organization of the MOPH, and the organizational chart is currently as follows:

Figure 1 **Organization chart of the Ministry of Public Health**



The General Directorate of Public Health: a general directorate heads the administrative hierarchy. All health divisions and departments, except those in Beirut, are under its direct responsibility. This directorate includes, in addition to 3 other directorates: medical healthcare, preventive medicine and central laboratory, the following services and departments:

a. General administrative service

- Ministry's post office
- Information desk
- Assigning standards for the bids
- Issuing buyer's certificates for drugs and equipment
- Preparing the budget
- Expense allocation
- Employee's transactions
- Legal consultations
- Communication with international organizations
- Issuing and renewing employee's contracts and other certificates

b. Department of projects and programs

- Preparing the Ministry's plan of action and Ministry's policies
- Proposing laws and decrees

c. Department of control on public hospitals:

- New hospitals and follow up of performance indicators

d. IT department

- Dissemination of information
- Information networking with other institutions

e. Public health services at the Mohafazats

- Responsible of the health services in districts

The three main directorates of the MOPH are as follows:

A- Directorate of Preventive Health care

This directorate includes 4 services in addition to the department of statistics:

a. Department of statistics

- Gathering health information from various stakeholders
- Information sharing inside and outside of the Ministry
- Gathering statistical data and preparing statistical reports

b. Service of sanitary engineering

- Setting up food and nutrition strategies for food hygiene and food born and waterborne diseases and malnutrition
- Conducting studies on children's nutritional status
- Initiating health inspection activities and water safety studies
- Insects and rodents control
- Food safety
- Classification of the production industry
- Setting water safety standards

c. Service of preventive medicine

- Gathering information on mandatory reported diseases

- Epidemiological surveillance and control
- Setting communicable disease programs
- Performing health inspection on travelers
- Vaccinating people traveling to high risk areas
- Food inspection and sanitation on airplanes
- Initiating epidemiologic surveillance and assuring primary health care
- Training medical doctors on the principles of preventive medicine

d. Service of social health

- Setting and implementing health education programs
- Initiating school health programs in collaboration with the Ministry of Education
- Training health workers in public and private sectors
- Preparing health education and promotion materials
- Managing safe motherhood and child health program
- Conducting studies and follow-up in schools
- Monitoring performance of midwives continued education
- Training of human resources for health in general
- Issuing and distributing the health file for children and reviewing its content

The department of Health of the Disabled is under the service of social health but, it is currently not an active department.

e. Service of occupational health

- Job-related diseases and risks

B- Directorate of Medical Care

It includes two services:

a. Service of hospitals, dispensaries, and medical professions

- Handling records of patients treated at the expenses of the MOPH
- Developing contracts with various health service providers
- Auditing on hospital bills
- Issuing certificates of practice for medical professions
- Issuing certificates for health facilities
- Quality control on medical facilities

b. Service of pharmacy

- Issuing certificates related to pharmacies and pharmacists' practice
- Controlling drug pricing
- Drug industry management and control
- Narcotic drugs' imports, distribution and statistics
- Pharmaceutical imports/exports
- Medicinal registration and control
- Registration of non-medicinal items
- Inspection of pharmacies
- Controlling fraud in the pharmaceutical industry

C- Directorate of the Central Laboratory of Public Health Laboratories

The activities of this directorate mainly consist of controlling the quality of drugs, food and water, as well as carrying out active epidemiological surveillances to combat intoxication and food contamination. This directorate had to stop its activities in 2006.

Some of the mentioned departments are almost dormant and numerous activities are absent either because of the lack of human resources, or the absence of motivation and adequate funding. In 1996 a decree was issued to limit employment in the public sector, which resulted in a high average age structure of human resource and the absence of some specialties.

MOPH committees:

- Medical audit committee
- Medical prosthetic committee
- Committee of control of communicable diseases
- Open heart surgery committee
- Tobacco control committee
- Drug committees
- Permanent medical committee
- Official medical committees (1 for each Mohafazat)

The Joint Program at the MOPH

Currently, there are 6 joint programs between MOPH and WHO; these are:

- National AIDS program (NAP)
- Tuberculosis program (TB)
- Non-communicable disease program – NCDP (among which the National Program on controlling Diabetes)
- National program on controlling Viral Hepatitis
- Injuries and accidents program
- Drug registration and control program

In addition, our program is established jointly between MOPH and YMCA. A contract was signed with the YMCA for the purchase and distribution of drugs for chronic diseases delivered by the MOPH through the network of Public Health Centers all over Lebanon.

The majority of health services granted by suppliers are from the private sector.

The health system which includes both private and public ambulatory and hospital care, the pharmaceutical, human resources and financial sectors are detailed in different chapters of this report. An analysis of the health system and associated resources will facilitate the identification and understanding of the different types of organizations, their relationships, their functioning mode and their performance.

Assessment of the health system

Since the 1940s, the evolution of the health system in Lebanon was marked by the liberal economy view, as well as by the political and administrative difficulties prevailing in the country. The health system in Lebanon does not correspond to any of the modern categorizations of global health concepts making it hard to label it. It displays a hybrid aspect at all levels including the organizational and managerial levels of health as well as at the costs and financing levels. Widely dominated by the private sector, the Lebanese health system is subject to the influence and interventions of the State, in spite of very limited control structures.

The Lebanese health system shows multiple, sometimes contradictory, characteristics that are found at many levels including:

- *Social coverage:* we find both collective solidarity and private insurance schemes. This seems insufficient, knowing that a big number of the population remains without social coverage.

- *Financing modes:* all financing modes contribute to the Lebanese health system: public, semi-public and private. The main financing source remains however the household itself.
- *Role of the State:* more often than not, the State is taking the place of charitable associations, and local or international NGOs. It is unfortunately not endorsing enough its role as regulator of the health system but playing more the role of health provider.

With regard to such contradictions, we can point out to the following important elements:

- The absence of a well-defined health policy
- The mismanagement of public services and subordination to the private sector
- The private sector is driven by mercantile considerations
- A 2-speed system: one for the well-off and one for the disadvantaged
- A financing system with multiple and divided coverage modes (public, semi-public and private)
- The absence of a adequate information system
- The absence of generalized social coverage
- Inequity in the access to healthcare
- The absence of outcome assessment criteria

Moreover, the vision of health in Lebanon is very individualistic. Medical care is organ based with technical acts highly valued, where the doctor heads all health professions and isolates himself from all other health professions and where the generalist MD is marginalized vis-à-vis the specialist.

Compared to other health systems, and bearing in mind the previous observations and assessments, the Lebanese health system is particular in that it combines private freedom and public intervention. The private sector is decentralized at the healthcare provider and user levels. The latter have the freedom of choice of the healthcare provider. Private healthcare providers enjoy total freedom in prescription. On the contrary, the public health system is centralized and is linked to the existence of public healthcare institutions, the presence of mandatory health insurance organisms and to the role of the State in funding part of the healthcare provided by the private sector.

To conclude, the Lebanese healthcare system can be qualified as an atypical system. It shares elements from other healthcare systems; however the combination of these elements defines its particularity. The development of the healthcare system is a fundamental pre-requisite for its sustainable improvement and development. The Lebanese Government's determination to contain expenses and offer equitable, effective and efficient services constitutes a key element in this development process. However, these procedures alone do not seem sufficient. Major changes in the mentalities and new practices are necessary to confront with the various challenges facing the system.

II.2.1 – MILLENNIUM GOALS FOR LEBANON

The Millennium Declaration adopted in September 2000 by the UN General Assembly has been ratified by 189 member states. It includes eight goals, twenty-one targets and fifty-eight indicators.

The eight goals are:

1. Eradicate extreme poverty and hunger
2. Achieve universal primary education
3. Promote gender equality and empowerment of women
4. Reduce under-five child mortality
5. Improve maternal health
6. Combat HIV/AIDS, malaria and other diseases
7. Ensure environmental sustainability
8. Develop a global partnership for development.

These goals are interdependent and influence each other. Three goals (goals 4, 5 and 6) out of the eight are focused on health. Today, 12 years later, results are encouraging, especially with respect to child and maternal health. However, additional efforts are still required for combating AIDS, malaria and tuberculosis.

The following is based on two reports:

A. Millennium Goals for Lebanon published by the UNDP in 2010.
B. Millennium Goals in the Arab region published by WHO-EMRO in 2010.

We shall first present the data concerning goals 4, 5 and 6 in Lebanon, and then at the regional level, for comparative purposes. Note that the regions are defined as follows:

- **Mashrek countries:** Egypt, Jordan, Iraq, Lebanon, Syria and occupied Palestinian territories
- Maghreb countries: Algeria, Lybia, Morocco and Tunisia
- **Gulf countries:** Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates (GCC)
- **Least developed Arab countries:** Comoros Islands, Djibouti, Mauritania, Somalia, Sudan and Yemen (LDC)

MDG 4 – Reduce under-five child mortality

Target: Reduce the under-five child mortality rate by two-third by the year 2015

a. In Lebanon

Lebanon has made significant efforts towards achieving MDG 4, especially in reducing infant mortality. Even though there seems to be a decreasing trend in infant and under-five mortality rates, there is no regional national study documenting this issue. Disparities are observed across the country especially in disadvantaged regions where mortality and morbidity rates are higher and vaccination rates are lower.

Table 4

Progress in MDG 4 – Reduce under-five mortality in Lebanon

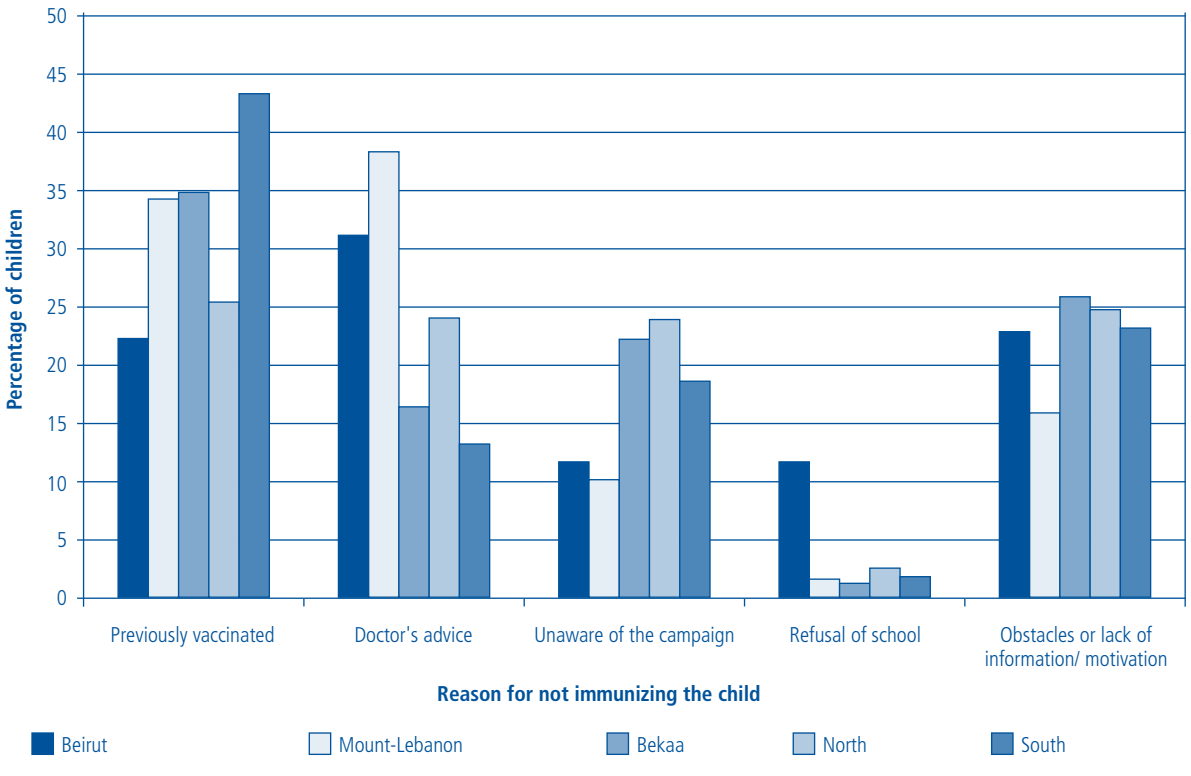
Indicators	1996	2000	2007	2015 (cible)
Under-five mortality rate (per 1,000)	32	33	18.3*	12
Infant mortality rate (per 1,000)	28	26	16.1*	10
Proportion of children under-one year immunized against DPT (%)	94.2	93.6	57**	95
Proportion of children under-two years immunized against MMR (measles, mumps, rubella) (%)	88	79.2	56**	90

*Source: * CAS and League of Arab countries, 2006, Lebanon Family Health Survey (PAPFAM) 2004, Principal Report*
*** Based on vaccination carried out by the public sector (excluding the contribution of the private sector which varies between 10 and 85% according to regions).*

Considerable attempts have been made over the past 20 years to improve immunization rates. The MOPH, in collaboration with the private sector, has revised the national vaccination calendar in order to progressively introduce new vaccines that will reinforce routine vaccination. Substantial steps were also undertaken to ensure the quality of the storage of vaccines and improve their transportation at both the central and peripheral levels.

However, there seems to be a problem with awareness about availability of measles vaccines and vaccination campaigns particularly in regions mostly at need of vaccination (Bekaa and South).

FIGURE 2 **Distribution of children by reason given for not-immunizing them**



Source: MOPH-WHO (joint report), 2009, Study on the measles coverage in Lebanon

According to data available from the MOPH, neonatal causes (64.9%), injuries (11.1%), pneumonia (1.1%) and diarrhea (1%) are the main causes of mortality among children below five years of age. Twenty-two percent (22%) of deaths result from unknown causes.

b – Comparison with other countries in the region

Under-five mortality rates have declined substantially in the Arab region from 83 deaths per 1000 live births in 1990 to approximately 52 deaths per 1000 live births in 2008 (37% decrease). In spite of this reduction, the region is far from reaching the projected goal of reducing under-five mortality to 28/1000. Many disparities persist whether inter or intra countries: the Gulf countries reached the projected goal in the mid-90s, whereas the less developed countries still exhibit high mortality rates (100/1000 live births): approximately 70% of deaths represent children below 1 year. Routine immunization coverage of 1 year old children has increased from 77% in 1990 to 82% in 2008, far higher than the rate found in developed regions (73%). Vaccination against measles is currently taking place in 15 countries of the region while 16 countries are in the process of eradicating it.

Table 5

Progress of Arab sub-regions MDG 4 – Under-five mortality rate (per 1000 live births) by sub-regions

Sub-regions	1990	1995	2000	2005	2007	2008	2015	Cible
Mashrek	71	52	42	31	28	27	17	24
Maghreb	70	56	46	39	36	35	25	23
Gulf countries	37	27	21	19	19	18	14	12
Less developed Arab countries	136	129	121	115	112	110	99	45
Arab region	83	72	64	56	53	52	462	28

Source: UNICEF, 2009, SOWC Statistical Database.

MDG 5 – Improve maternal health

Target: Reduce the maternal mortality rate by three-quarters and achieve universal access to reproductive health by the year 2015,

a. In Lebanon

Maternal mortality rate was estimated at 86.3 per 100000 live births (PAPFAM 2004) in 2008. Since then however, considerable efforts have been exerted to improve maternal health in general.

Table 6

Maternal and reproductive health statistics in Lebanon

Indicators	1990	1996	2000	2004*	2009
Maternal mortality rate (per 100000 live births)	140 (en 1993)	107	---	86.3	23**
Proportion of births carried out by qualified professionals (%)	N/A	N/A	96	98	
Modern and traditional contraceptive prevalence rate (%)	53 (1987-1994)	61	63	74.2	
Antenatal Care coverage (at least one visit) (%)	87.1	87	93.9	95.6	

*Source: * CAS and League of Arab countries, 2006, Lebanon Family Health Survey (PAPFAM) 2004, Principal Report.*
*** WHO-MOPH, 2009, Reproductive Age Mortality Survey, (RAMOS).*

The RAMOS study (2009) showed a maternal mortality rate of 23 per 100,000 live births (with an uncertainty margin of 15.3 to 30.6). Moreover, a second study carried out jointly by the MOPH and WHO in 2009 on complicated deliveries in Lebanon reveals that the prevalence of maternal death varied from one region to another with a rate in the Bekaa and the North that are two and 1.5 times higher respectively than the national average (21.3% and 16.1 against 10.7%),. The South presented the lowest rate. The main causes for mortality were bleeding and asepsis (Maternal Morbidity and Case Fatality Rate Study, MOPH, 2009, Unpublished)

The WHO, UNFPA, the MOPH and the Ministry of Interior and Municipalities are continuously collaborating in reinforcing the civil registration system to obtain valid, reliable and up to date data on maternal mortality, with particular attention to cause of death.

There is consensus among professionals in the field that the proportion of deliveries has remained the same since the PAPFAM study in 2004.

Box 1 Success story – The Wadi Khaled initiative

In an attempt to improve maternal health in the Akkar region, the MOPH, in partnership with a national NGO, Al Makassed, developed a pilot initiative that consisted of providing maternal and health services (including education/awareness, antenatal, postnatal care and vaccination) at the PHC level and directing deliveries and high risk cases towards the hospital.

A total of 15,000 pregnancies were followed up over a period of 2 years (2008-2009) with no maternal deaths observed in that period of time.

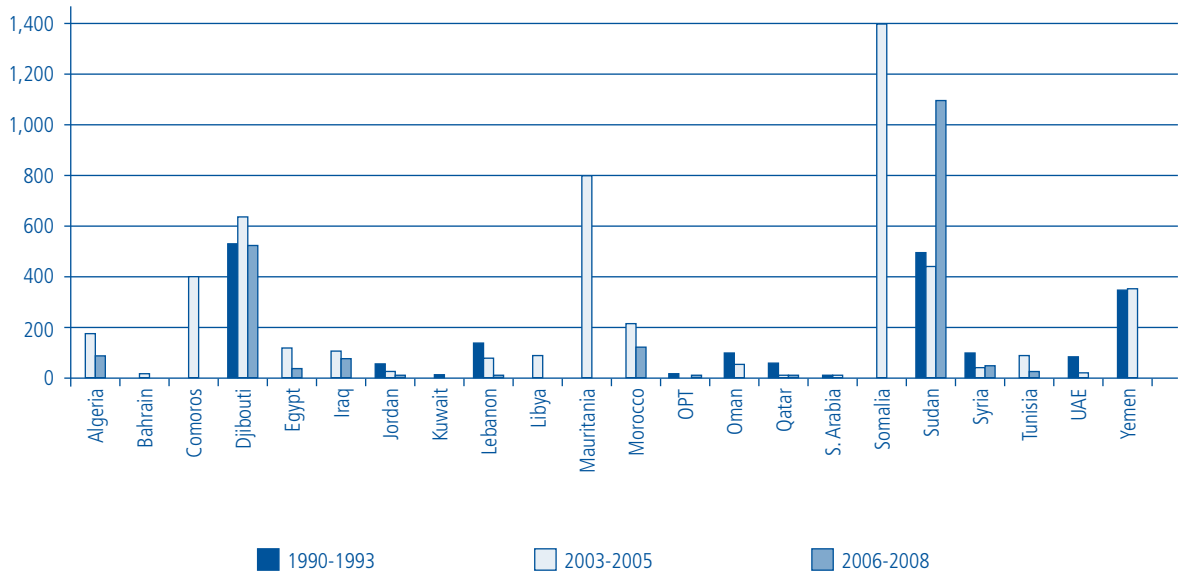
The initiative proved to be quite cost effective, and allowed the introduction of antenatal and postnatal care. The same initiative will be reproduced in other similarly underprivileged regions.

Source: MOPH, 2010, Makassed report

b. Comparison with other countries in the region

Disparities persist among different countries in spite of the low maternal mortality rate prevailing in the region. Some countries have shown substantial progress, while others realized little or no progress at all. Rural regions have rates that are sometimes 5 times higher than of the capital. Countries that have better indicators are also those with qualified health professionals. The Maghreb and Mashrek regions have succeeded in enforcing family planning. Available data on adolescent fertility varies by sub-regions with the Mashrek and the less developed countries presenting rates of 50 and 70 per 1000 girls respectively, while the Gulf countries and the Maghreb show a rate of 20 per 1000 girls. Many countries experienced an increase in pre-natal healthcare (UEA, Oman, Qatar, Bahrain, Jordan, Libya, Kuwait, Lebanon and Saudi Arabia).

FIGURE 3 **Maternal mortality rate by country**



Source: United Nation, League of Arab countries, 2010, The third Arab report on the Millennium Development goals 2010 and the impact of the global economic crisis

MDG 6 – Combat HIV/AIDS, malaria and other diseases

Target: Have halted by 2015 and begun to reverse the spread of HIV/AIDS; Ensure, by 2010, to all those in need, access to HIV/AIDS treatment

a. In Lebanon

HIV/AIDS

Lebanon is still considered a country with a low prevalence of HIV. The potential risks associated with the population's high mobility, migration and relative sexual permissive behavior require immediate and intensive interventions.

The total cumulative number of cases reported by the national program on combating HIV/AIDS since 1989 was by the end of 2011, 1455, with an average of 85 new cases per year over the last 3 years, as compared to 70 cases between 2003 and 2006. Currently, we count around 350 individuals living with HIV/AIDS.

Travelling and migration represent 39.24% of declared risk factors for all cases. The main transmission mode remains sexual contact which represents approximately 70% of reported cases, with a recently observed increase of cases reported among men having sex with men.

The prevalence of mother to child transmission of HIV remains limited, in spite of two new cases reported in 2009. It is noteworthy that since 1993, there has been no blood transmission cases reported. The male to female ratio is of 4.62 with 28% of reported cases among those who are under 30 years of age, 30% for individuals between 31-50 years old, and 9% for those above 50 years of age. Death due to HIV is low and estimated at less than 10 per 100000 population per year. Approximately 13% of cases are among non-Lebanese residing in the country.

It is important to note that as of 2000, all people with HIV who are eligible for MOPH coverage according to eligibility criteria developed in conjunction with scientific societies, are entitled to ARV treatment free of charge.

Target: Have halted, by 2015, and begun to reverse the spread of malaria and other major diseases.

Malaria

The disease has been eradicated in Lebanon since the 1950's. Sporadic cases are rarely reported among Lebanese living in endemic areas.

Tuberculosis

The joint MOPH and WHO National TB control programme adopted the DOTS program in 1998, to combat tuberculosis, and has achieved encouraging results with a 100% coverage rate by the end of 2009, as compared to 92% in 2005.

The average detection rate for the last 5 years is of 75%, compared to the WHO standard rate of 70%. The treatment success rate for the period 2004-2009 is of 91% compared to the treatment success WHO standard rate of 85%.

Table 7

National Statistics for Tuberculosis in Lebanon (2009)

Year	2002	2003	2004	2005	2006	2007	2008	2009
National	378	330	330	331	311	357	378	368
Non National	48	50	63	60	64	119	145	133
Total	426	380	393	391	375	476	523	501

Source: WHO-MOPH, 2009, National Report on Tuberculosis

The impact of HIV on the TB burden is negligible, with an HIV prevalence ratio not exceeding 0.2‰ of the population.

The Lebanese Government, through the MOPH has been providing for the past 10 years, treatment and care for all Lebanese citizens suffering from tuberculosis and HIV/AIDS. Currently, there are almost 1000 individuals suffering from tuberculosis and 350 with HIV, all benefiting from medication with an average cost of $50 per patient per month for tuberculosis and $250 per patient per month for HIV.

b. Comparison with other countries in the region

A considerable decrease in the spread of AIDS, malaria and tuberculosis has been observed in the Arab countries. The prevalence of AIDS remains relatively low in the Arab countries, but risk factors and vulnerability are high, considering the non-homogeneous epidemic trends in the region. In 2006, 68,000 individuals were newly infected with the disease; among them 36,000 (adults and children) died due to limited access to medical care and treatment.

Malaria has been eradicated in most countries. However, it still prevails endemically in 4 countries: Djibouti, Somalia, Sudan and Yemen.

Tuberculosis is considered as the main cause of death in the Arab region. In 2007 the rate was 35.8 for 100000 individuals.

Table 8

Incidence and prevalence of tuberculosis by sub-regions

Sub-region	Incidence			Prevalence		
	Mean incidence (1990)	Mean incidence (2007)	Variation (%)	Mean prevalence (1990)	Mean prevalence (2007)	Variation (%)
Mashrek	33.0	20.0	-39.4	59.5	27.0	-54.6
Maghreb	34.5	41.5	20.3	47.5	42.0	-11.6
Gulf countries	44.0	32.0	-27.3	69.5	42.5	-38.8
Least developed Arab countries	174.0	243.0	39.7	497.0	377.0	-24.1
Average	**47.3**	**35.8**	**-24.3**	**79.5**	**58**	**-37.1**

Source: World health Organization, 2009, Global Tuberculosis Control: Epidemiology, Strategy, Financing: WHO report 2009.WHO/HTM/TB/2009.411. World Health Organization, Geneva.

Table 9

Mortality rate due to tuberculosis by sub-region

Sub-region	1990	2007	Variation (%)
Mashrek	5.5	2.0	-63.6
Maghreb	4.0	2.5	-37.5
Gulf countries	4.0	2.5[7]	-37.5
Least developed Arab countries	62.5	67.0	7.2
Average	**5.5**	**3**	**-45.5**

Source: World health Organization, 2009, Global Tuberculosis Control: Epidemiology, Strategy, Financing: WHO report 2009.WHO/HTM/TB/2009.411. World Health Organization, Geneva.

[7] Saudi Arabia didn't register any deaths due to tuberculosis for 2006-2007 and 2008 (MDG report on Saudi Arabia, 2009).

II.2.2 – PUBLIC HEALTH REGULATIONS IN LEBANON

I- General part

A. Patient

1. **Law published by decree number 9809, dated 4/5/1968:** Mandatory vaccination against poliomyelitis in Lebanon.
2. **Decree law number 72 dated 9/9/1983:** Care, treatment and protection psychiatric patients.
3. **Law number 550 dated 24/7/1996:** Adoption of a health record booklet for every newborn.

B. Hygiene – Public health

1. **Decision number 1856 dated 22/2/1923:** Organization of health consultation of foreign products when imported to Syria and Lebanon.
2. **Decision number 2734 dated 10/10/1924:** Medical consultation for professionals
3. **Decree number 7975 dated 5/5/1931:** Cleanness of residences
4. **Decision number 174/L.R. dated 24/6/1940:** Publication relative to prevention of diseases.
5. **Decree number 1483 dated 27/3/1950:** Transport of deceased from Beirut towards provinces.
6. **Decision number 1011 dated 12/10/1960:** Protection of public health.
7. **Decree number 10276 dated 7/8/1962:** Delimitation of water sources.
8. **Law promulgated by decree number 8735 dated 23/8/1974:** Protection of public health.
9. **Number 5100 dated 12/4/1982:** Determination of technical conditions for professionals dealing with imports, sale, wrapping, preparation, manufacturing and pesticides.

C. Transmissible diseases

1. **Decision number 188 dated 19/4/1920:** Prevention in public health.
2. **Decree number 13702 dated 24/11/1948:** Recommendations to prevent diphtheria epidemic.
3. **Decree number 14538 dated 16/3/1949:** Combating malaria and flies with DTT
4. **Law dated 20/6/1957:** Leprous in Lebanon.
5. **Law dated 31/12/1957:** Transmissible diseases in Lebanon.
6. **Decree-law number 133 dated 12/6/1959:** Special regulations related to MOPH (treatment of some transmissible diseases).
7. **Law number 31/80 dated 25/9/1980:** Suspension of law dated 8/8/1959 regarding combating smallpox.
8. **Decree number 4486 dated 4/11/1981:** Addition of a new function to the provisory executives created within the MOPH for the project on malaria eradication.

D. Organization – Ministry of Health

1. **Decree number 9222 dated 22/4/1932:** Distribution of a health registry in summer regions
2. **Decree number 2280 dated 12/9/1935:** Attribution to the director of health and general assistance the power of delimitating water sources.
3. **Decree number 2698 dated 27/2/1945:** Control of private and public teaching institutions.
4. **Decree number 9259 dated 16/5/1955:** Attribution to the director of health and general assistance the power of delimitating water sources.

5. **Decree number 12040 dated 28/4/1956:** Approval of exemplary contractual specifications relevant to MOPH tenders.
6. **Decree number 8377 dated 30/12/1961:** Organization of MOPH.
7. **Decree number 8378 dated 30/12/1961:** Distribution of 4th and 5th category employees of the MOPH in different sections of the Ministry.
8. **Decree number 8389 dated 30/12/1961:** distribution of MOPH employees, category B, non-physicians, grade B3, B4, B5, B6.
9. **Decree number 12680 dated 2/5/1963:** Definition of diplomas and special conditions for the appointment of technical employees in the MOPH.
10. **Decree number 13949 dated 26/9/1963:** Establishment of the "rural health project".
11. **Decree number 14314 dated 4/11/1963:** Creation of a temporary cadre within the MOPH for the project on malaria eradication.
12. **Decree number 16436 dated 25/5/1964:** Definition of diplomas and special conditions for the appointment of technical employees in the MOPH.
13. **Decree number 4798 dated 22/6/1966:** Creation of a school for sanitary control within the Ministry of health and the creation of a temporary cadres for the administration and teaching in this school.
14. **Decree number 7007 dated 30/3/1967:** Amendment of decree number 10276 dated 7/8/1962, regarding the creation of a committee for delimitation of water sources.
15. **Decree number 8400 dated 11/10/1967:** Determination of access conditions and education systems in the school of sanitary control.
16. **Decree number 10645 dated 28/7/1968:** Extension of decree number 13949 dated 26/9/1963 relative to the constitution of a temporary cadre within the MOPH for the "rural health project", as well as the extension of the nomination of the employees in this position.
17. **Decree number 6016 dated 4/9/1973:** Extension of decree number 13949 dated 26/9/1963 relative to the creation of the "rural health project" and the institution of a temporary cadre in this respect.
18. **Law enforced by decree number 9224 dated 12/10/1974:** Permission to conclude the treaty constituting the Arab Health organization.
19. **Law enforced by decree number 9842 dated 4/3/1975:** Creation, organization and control of blood banks.
20. **Decree number 10043 dated 8/4/1975:** Extension of decree number 13949 dated 26/9/1963 relative to the institution of the rural health project and the creation of a temporary cadre.
21. **Decree number 1434 dated 24/6/1978:** Contract scheme with the MOPH.
22. **Decree number 4423 dated 20/10/1981:** Nomination conditions and indemnity levels of the superior council of medical services.
23. **Decree-Law number 91 dated 16/9/1983:** Modification of the name of the Ministry of public health and fusion of the social assistance service.
24. **Decree-Law number 107 dated 16/9/1983:** Organization of the health controller profession.
25. **Decree-Law number 159 dated 19/9/1983:** Creation of regions of medical centers.
26. **Decree number 4366 dated 19/11/1993:** Extension of decree number 13949 dated 26/9/1963 relative to the rural health project and institution of a temporary cadre.
27. **Law number 599 dated 28/2/1997:** Creation of a public health service in the Nabatiyeh Mohafazat.
28. **Decree number 10993 dated 15/9/1997:** Creation of two administrations within the cadre of the Ministry of Public Health.
29. **Decree number 11710 dated 22/1/1998:** Creation of a committee within the MOPH for the organization of the importation of natural medical products, and food complements and the determination of its salary.

30. **Decree number 12893 dated 8/8/1998:** Determination of the number of clerk employees within the MOPH.
31. **Decision number 397/1 dated 15/6/2000:** Delegation of some of the ministry of health competences to the General Director of the ministry.
32. **Decision number 206/2 dated 16/3/2001:** Delegation of competences to the director of the general secretariat of the MOPH.
33. **Decree number 5420 dated 10/5/2001:** Scheme of employees in the MOPH.
34. **Decree number 5833 dated 4/7/2001:** Creation of an IT department within the MOPH.
35. **Decree number 7148 dated 14/1/2002:** Modification of decree number 8377 dated 30/12/1961 (organization of the MOPH).
36. **Decision number 56/1 dated 24/1/2002:** Delegation of powers to the General Director.
37. **Decision number 224/1 dated 9/5/2003:** Delegation of some powers to the General Director of the MOPH.

E. Administration

1. **Decree number 2898 dated 2/3/1928:** Procedures of fine collection required for the non-respect of decision number 188.
2. **Decree number 6600 dated 7/5/1930:** The sanitary services.
3. **Law dated 5/12/1930:** Compulsory payment of penalties for health fines.
4. **Law published by decree number 1085 dated 9/10/1962:** The implementation of the law project concerning the adoption of a maximum rate for selling conserved human blood and organization of its preparation, conservation, exportation and sale.
5. **Law dated 4/12/1962:** Compulsory perception of the fine by the agent responsible of establishing the statement of offence.
6. **Law published by decree number 9809 dated 4/5/1968:** Authorizing MOPH grade B doctors to benefit from the specific indemnity mentioned in article 22 of decree-law number 112 dated 12/6/1959.
7. **Law published by decree number 9811 dated 4/5/1968:** The permission to the government to modify cadres of the central laboratory and the pharmacy section within the MOPH by decrees taken at the Council of Ministers.
8. **Decree number 11833 dated 14/1/1969:** Determination of indemnities for merit extra hours within the MOPH.
9. **Decree number 10748 dated 23/9/1975:** Approval of the agreement concerning the loan for the construction of a building and for the furniture of health and social centers.
10. **Decree number 2639 dated 24/8/1985:** Effects of medical fees and code values, the flat rate and adopted tariffs for dialysis.
11. **Decree number 4511 dated 7/1/1988:** Modification of the tariff of one dialysis session by the third category institutions contracting with the MOPH.
12. **Law number 355 dated 18/5/1994:** Reform of decree-law number 91 dated 16/9/1983.
13. **Decree number 1692 dated 16/11/1999:** Limitation of the number of beds in hospitals and public institutions contracting with the MOPH and the different medical services in medical institutions.

F. Computer technology

1. **Decision number 97/1 dated 14/2/2002:** Adoption of the computer, in addition to the daily register in recording information and daily operation.

G. Blood bank

1. **Decision number 42 dated 24/6/1962:** The organization, preparation, conservation, sale and exportation of conserved human blood.

H. Tissue sampling

1. **Decree-law number 109 dated 16/9/1983:** Human tissue and organ sampling for scientific and medical needs.
2. **Decree number 1442 dated 2/1/1984:** Application of provisions of decree-law number 109 dated 16/9/1983 regarding human tissue and organ sampling for scientific and medical needs.

I. Central laboratory

1. **Decision number 67 dated 14/2/1972:** Determination of means to examine microbes in water.

J. Other

1. **Law number 46/80 dated 249/1986:** Exoneration of social institutions from paying loans.
2. **Decision number 31/1T dated 5/11/1996:** Creation of the Auxilia fund for medical and social assistance.
3. **Decision number 58/1 dated 23/1/2001:** Categories and quantities of sedative products required under caring for urgent cases.
4. **Decision number 59/1 dated 23/1/2001:** Organization of records and files on drugs within the Ministry of Public health.
5. **Circular number 49 dated 28/7/2001:** Circular related to midwives.
6. **Circular number 53 dated 8/8/2001:** Circular related to owners of eyeglasses points of sales and production.
7. **Decision number 483/1 dated 19/8/2003:** Determination of conditions required in milk for nutrition of newborns and babies, to grant authorization for its importation.

II- Laboratories – Healthcare centers - Hospitals

A. Organization – Ministry of Health

1. **Ottoman Law dated 29 Safar 1293 and Law dated 3/3/1292:** Asylum for insanes.
2. **Law dated 19/12/1955:** Free healthcare centers.
3. **Law dated 24/8/1956:** Creation of a central laboratory for public health.
4. **Law published by Decree number 9826 dated 22/6/1962:** Private hospitals.
5. **Law in force by Decree number 1536 dated 25/11/1978:** Creation of public institutions to manage public hospitals.
6. **Decree number 3375 dated 8/8/1980:** Organization of public health laboratory administration.
7. **Decree number 2969 dated 25/1/1986:** Creation of dialysis centers in some public hospitals.
8. **Decree number 8908 dated 29/7/1996:** Creation of an office and two healthcare sections within the MOPH.
9. **Law number 603 dated 28/2/1997:** Modification of some provisions of decree law number 75 dated 9/9/1982 on the organization of medical laboratories.
10. **Decree number 4265 dated 25/10/2000:** Healthcare guidelines in hospitals, and public and private institutions contracting with the MOPH and the different internal and external medical services in medical institutions.
11. **Decree number 7262 dated 25/1/2002:** The creation of a public institution to manage the public hospital of Tripoli, and the appointment of a board of directors, a director and a government commissioner.
12. **Decree number 7313 dated 29/1/2002:** Closing of the general medical center in the village of Ehden and the creation of a public institution for the management of the public hospital, and appointment of a board of directors, a director and a government commissioner.

13. **Decree number 7363 dated 2/2/2002:** Guidelines of contracting and bed distribution in contracting institutions providing healthcare on behalf of the MOPH.
14. **Decree number 10945 dated 13/9/2003:** Guidelines of contracting with public and private institutions for healthcare on behalf of the MOPH.

B. Management

1. **Decision number 220 dated 10/12/1920:** Admission of sick individuals in public hospitals.
2. **Decree number 344 dated 7/3/1942:** Hospital for venereal diseases.
3. **Decree number 15206 dated 21/1/1964:** Conditions of MOPH contracts with private hospitals.
4. D**ecree number 16662 dated 18/6/1964:** Persons authorized to be hospitalized in public hospitals.
5. **Decree number 325 dated 14/1/1971:** Modification of some conditions required for the admission of sick individuals in health centers, hospitals and public medical centers.
6. **Decree number 10167 dated 29/4/1975:** Training sessions for nurse's aide in public hospitals.
7. **Decree number 4422 dated 20/10/1981:** Determination of missions and competencies of Board of administration of the public institution managing public hospitals, and missions and competencies of government commissioner in this institution, and determination of appointment conditions of the president, Board members and the government commissioner, and their indemnities.
8. **Decree number 1584 dated 25/4/1984:** Determination of the cadre of every public institution managing public hospitals and the categories and degrees of the employees, as well as recruitment conditions.
9. **Decree number 1585 dated 25/4/1984:** The status of administrative and technical agents, as well as employees of public institutions managing public hospitals.
10. **Decree number 1586 dated 25/4/1984:** Contract regime between hospitals managed by public institutions, physicians and technicians, and determination of degrees and contracting conditions.
11. **Decree number 1587 dated 25/4/1984:** Financial scheme of public institutions managing public hospitals.
12. **Decree number 2035 dated 1/12/1984:** Settlement of employees' situation in public hospitals managed by public institutions.
13. **Decree number 3099 dated 25/1/1993:** Determination of number of beds in hospitals and private institutions contracting with the MOPH and the MOSA.
14. **Decree number 5121 dated 28/4/1994:** Determination of number of beds in hospitals and private institutions contracting with the MOPH.
15. **Decree number 6867 dated 10/6/1995:** Determination of number of beds in hospitals and private institutions contracting with the MOPH and medical services in these institutions.
16. **Decree number 8769 dated 17/7/1996:** Determination of number of beds in hospitals and private institutions contracting with the MOPH and medical services in these institutions.
17. **Decree number 11763 dated 13/2/1998:** Determination of number of beds in hospitals and private institutions contracting with the MOPH and medical services in medical institutions.
18. **Decree number 3197 dated 10/6/2000:** Concluding the protocol regarding one branch of the eye bank within the public hospital of Quarantina.
19. **Decree number 7238 dated 21/1/2001:** Availability of the president of the board of administration of the public hospital.

C. Other

1. **Law published by decree number 9827 dated 22/6/1962:** Project law regarding physiotherapy and esthetics.
2. **Decisions number 1823/1 dated 4/11/1996:** Documents required for the authorization to practice the profession of dental laboratories for owners of laboratories for a period of 10 years prior to the application of Law number 554/96.

III- Other provisions

A. Hygiene – Public health

1. **Decision number 214 dated 19/2/1919:** Organization of slaughterhouses.
2. **Decision number 297 dated 6/6/1933:** Animal breeding for slaughterhouses.
3. **Decree number 706EC dated 5/6/1937:** Regulation of melting cheese industry or "green cheese".
4. **Decision number 480 dated 27/7/1938:** Provisions related to bottles of beverages.
5. **Decision number 86 dated 7/4/1939:** Banning of usage of saccharine and its components and ordinary water and harmful additives in beverages and food.
6. **Decision number 239 dated 7/10/1940:** Organization of barns.
7. **Decree-Law number 227 dated 1/10/1942:** Piping project of drinking water.
8. **Decree number 100 dated 7/4/1943:** Regulation of the breeding and sales of porks.
9. **Decision number 1158 dated 2/6/1949:** Organization of dairy product manufactures and chocolate and candy, and similar manufactures.
10. **Decree number 3485 dated 28/12/1953:** Sanitary surveillance of milk pasteurization operation.
11. **Decree number 12863 dated 26/7/1956:** Banning of the import of products containing microbes to kill animals and harmful insects.
12. **Decision number 778 dated 12/8/1960:** Conditions of utilization of pipes.
13. **Decision number 808 dated 12/8/1960:** Utilization of spoons to serve ice-cream.
14. **Decision number 67 dated 9/1/1961:** Obligation to reforest all public and private cemeteries.
15. **Decision number 218 dated 24/2/1961:** Banning of the production and sales of food products for leisure purposes.
16. **Decision number 247 dated 2/3/1961:** Banning of usage of ordinary taps in schools.
17. **Decree number 6459 dated 11/4/1961:** Mandatory conditions for manufacturers and importers of food products.
18. **Decision number 39 dated 17/2/1962:** Transport conditions of some food products.
19. **Decision number 6 dated 18/2/1964:** Organization of pastry manufactures.
20. **Decree number 17376 dated 2/9/1964:** Requirements of specific health conditions in meat points of sales.

B. Other

1. **Decision number 316 bis dated 16/5/1934:** The exercise of the profession of poultry sales.

III- Health status indicators and health system indicators

III.1 – HEALTH STATUS INDICATORS
III.1.1 – MORTALITY IN LEBANON

In 2010, the mortality rate was 5.4/1000. This rate has been rather stable since 2006. The declared and registered deaths reached 21 441 in 2010. These figures were taken from the registry of the Ministry of the Interior and included deaths of Lebanese citizens in Lebanon and abroad. On average, deaths are declared with a 1-year delay and death certificates are often incomplete. The highest death rate is found in Beirut, followed by Nabatiyeh; whereas Mount Lebanon has the lowest rate.

In 2009, the average age of death was 69 years (±22 years) and death among men was higher than that among women. Life expectancy at birth was 74 years (77 years for women and 71 years for men).

The maternal death rate is 23/100000 live births. According to a hospital-based survey conducted on the mortality of women in the reproductive age (RAMOS, 2009), this rate has significantly decreased in comparison to the 86.3/100,000 rate mentioned in the PAPFAM 2004 study. Similar trends are noticeable for the mortality rate of newborns (16.1/1000 in 2004) and children (18.3/1000 in 2004).

Cardiac arrests were the most frequent causes of death cited by physicians or Ministry of the Interior employees on death certificates. However, in a hospital-based survey conducted by the Ministry of Public Health in 2010-2011 on causes of mortality, the main cause of death was linked to circulatory system diseases (22%), followed by neoplasm (19%) and cardiac arrests (17%). No death due to eye and related diseases, ear and skin mastoid or subcutaneous tissue, or pregnancy, childbirth and puerperium were registered in this hospital based mortality survey. Also, there were no deaths due to mental or behavioral disorders in the hospital survey. The participation rate of hospitals was 70%, with the highest rate in the North (100%) followed by Nabatiyeh (91%), and the lowest in the South (31%) and Beirut (30%).

Mortality due to HIV and tuberculosis (1.5/100000) and H1N1 (0.1/100000) is low. Thirteen percent (13%) of accidents resulting from burns lead to death. Morbidity among accident victims is higher for men (77%) and for those between 18 and 34 years of age.

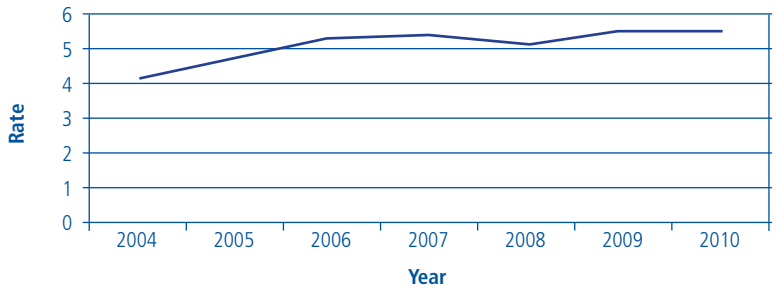
Table 10

Mortality in Lebanon (2010)

	n	Rate (/1,000)
Total	21,441	5.4
Gender[1]		%
Men	10,260	55.7
Women	8,157	44.3
Age		
0-1	472	2.6
1-5	132	0.7
5-10	104	0.6
10-15	117	0.6
15-20	203	1.1
20-25	226	1.2
25-30	190	1.0
30-35	221	1.2
35-40	276	1.5
40-45	369	2.0
45-50	516	2.8
50-55	746	4.1
55-60	899	4.9
60-65	1,163	6.3
65-70	1,639	8.9
70-75	2,352	12.8
75-80	2,716	14.7
80-85	2,889	15.7
85-90	1,755	9.5
90+	1,432	7.8
Region		**Rate (per 1,000)**
Mount Lebanon	5,442	3.6
North	4,930	6.0
Beirut	3,283	8.7
South	3,271	7.3
Bekaa	2,329	4.4
Nabatieh	2,186	7.9
Life expectancy at birth (years)	74[2]	

Source: MOPH, 2010, Statistics Bulletin

FIGURE 4 **Evolution of death rate between 2004-2010**



Source: MOPH, 2010, Statistics Bulletin

[1] Death according to gender and age are calculated from 2009 data (total of deaths = 18417). Harb, H. Kanaan, H. (2010), Vital Registry Data: Deaths and Births 2009. A Ministry of Public Health Portal.

[2] Life expectancy at birth is calculated according to 2009 estimates.

Table 11

Mortality by causes (2009)

	%	Confidence interval	Men	Women
III.1.1.1 Maternal and child mortality				
Maternal mortality rate (by 100,000 population)*	23			
Infant mortality rate (by 1,000 live births)**	9			
Under-five mortality rate (by 1,000 live births)**	12			
III.1.1.2 Mortality due to transmissible diseases				
Death due to tuberculosis among sero-negative individuals (by 100,000 population)**	1.5	(0.83-2.30)		
Death due to H1N1 (/100,000 population)***	0.1			
III.1.1.3 Hospital mortality**				
Circulatory system diseases	22.1		21.7	22.8
Neoplasms	18.7		18.1	19.8
Cardiac arrest	17		16.9	16.9
Respiratory system diseases	9.4		9.4	9.6
External causes of morbidity and mortality	6.9		8.9	4.4
Genital urinary system diseases	4.8		4.2	5.7
Digestive system diseases	3.7		3.6	3.7
Some infectious and parasitic diseases	3.7		3.6	3.8
Some affections originating in the perinatal period	3.4		3.6	3
Traumatic lesions, poisoning and other consequences of external causes	1.9		2	2
Congenital malformation and chromosome anomalies	1.2		1	1.4
Nervous system diseases	1		1	1
Endocrinal, nutritional and metabolic diseases	0.9		0.8	1
Blood diseases	0.5		0.4	0.7
Diseases of osteo-articulary system, muscles and conjunctive tissues	0.1		0.1	0
Pregnancy, childbirth and puerperium	0			0.1
III.1.1.4 Other cases of mortality				
Burns (96 cases of burns)*****	13			
Symptoms, signs and abnormal clinical and lab test results, unclassified elsewhere	2.1		2.1	2.1
Mortality by road accidents****** (n = 4,770)				
Gender				
Men	76.4			
Women	23.6			
Age				
0-5 years	2.5			
6-9 years	1.9			
10-14 years	3.8			
15-17 years	3.8			
18-25 years	22.8			
26-34 years	20.5			
35-44 years	8.8			
45-55 years	10.3			
56-65 years	7.7			
66 years and plus	18.0			

*Source: * OMS, 2009, RAMOS.*
*** CAS, UNICEF, 2009, Multiple Indicator Cluster Survey 3 (MICS 3).*
**** www.moph.gov.lb.*
***** MSP, 2009, Hospital-based causes of death reporting system, (unpublished report).*
****** Lebanese Hospital-Geitawi, 2010.*
******* Ministry of Interior-ISF, 2008, Report on road accidents.*

III.1.2 – MORBIDITY IN LEBANON

Several studies have determined the most frequent cause of morbidity in Lebanon. However, among these studies, only one, the National Household Health Expenditure and Utilization Survey (NHHEUS, 1999), is at the national level. According to that study the main morbidity is back pain. The study carried out by Sibai et al. in 2009 was intended to determine the prevalence of non-communicable diseases and associated risk factors. The data collected by the MOPH and the YMCA covered only the population that did not benefit from any medical coverage (51.7%), knowing that the number of beneficiaries of the medication distribution program of the YMCA is 155000. In the study carried out by Nuwayhid et al., in 1994 on health profiles in Beirut, morbidity was reported by the respondent, which explains the prevalence of symptoms rather than diseases.

Table 12

The top 10 causes of morbidity in Lebanon between 1984-2010

	National Household Health Expenditure and Utilization Survey (NHHEUS, 1999)	Study on No-communicable diseases and risk factors, Sibai and al., (2009)	Beirut: Health profiles 1984-1994, AUB	Programs of chronic medication MOPH-YMCA (2010)	MOPH – hospitalization case according to ICD – 10 (2010)
1	Back pain	Lipidemia	Hypertension	Cardio-vascular diseases	Circulatory system diseases
2	Hypertension	Arterial tension	Back pain	Hypertension	Respiratory system diseases
3	Arthritis	Asthma	Arthritis	Hyperlipidemia	Neoplasms
4	Abnormal levels of lipoproteins	Diabetes	Cardiac problems	Diabetes	Genital-urinary diseases
5	Cardiac problems	Cardiac problems	Dyslipidemia	Ulcers	Digestive system diseases
6	Ulcers	Cardiac peripheral diseases	Diabetes	Epilepsy	Injuries, poisoning and other external causes
7	Diabetes	Infarct	Migraine	Gout	Infectious and parasitic diseases
8	Migraine	Heart attack	Anemia	Thyroid problems	Muscle-skeleton diseases
9	Thyroid problems		Kidney diseases	Coagulation problems	Eye diseases
10	Kidney diseases		Asthma	Asthma	Endocrinal, metabolic and nutritional diseases

Source: WHO, 2011, Health System Profile, Lebanon

III.1.2.1 – Infectious morbidity

The Law of December 31, 1957 regarding communicable diseases in Lebanon mandates all physicians, from private or public sectors, in hospitals or ambulatory services, to declare to the epidemiologic surveillance unit of the MOPH all diseases considered a risk to public health.

The data available at the MOPH are compiled from different sources, and yet the declaration of cases remains irregular and insufficient.

Morbidity due to vaccine preventable diseases was 0.06% with the highest level in Nabatiyeh (0.07%) and the lowest in the Bekaa (0.03%). The most frequent infection in 2011 was viral

Hepatitis B which represents 74% of the total vaccine preventable diseases. Only two cases of tetanus were detected, whereas no cases of rabies, acute poliomyelititis, neonatal tetanus and diphtheria were declared.

Food and water borne diseases were the most frequently reported in Lebanon with a rate of 0.4‰. The highest rate was in the Bekaa (0.7‰) and the lowest in the South (0.1‰). The most common infection is viral Hepatitis A, which represents 31% of the total food and water borne diseases. No cases of cholera and trichinosis were declared.

Morbidity due to other infectious diseases was 0.07‰ in Lebanon. Nabatiyeh and the North region presented the highest rates (0.08‰), whereas the South had the lowest (0.03‰). The most common infection was meningitis which represented 52% of the total other infectious diseases. No cases of Bilharzias, Ebola, plague or yellow fever were reported.

Table 13

Number of patients suffering from infectious diseases by region (2011)

Vaccine preventable diseases	Mount Lebanon	North	Beirut	Nabatieh	Bekaa	South	TOTAL	%
Viral Hepatitis B	53	22	15	15	9	12	**168**	**74.0**
Acute flaccid paralysis	12	5	2	3	0	3	**25**	**11.0**
Measles	0	3	2	0	4	3	**12**	**5.3**
Mumps	3	2	0	1	0	3	**9**	**4.0**
Whooping-cough	2	1	1	1	2	0	**7**	**3.1**
Rubella	1	1	0	0	2	0	**4**	**1.8**
Tetanus	0	2	0	0	0	0	**2**	**0.9**
TOTAL	**71**	**36**	**20**	**20**	**17**	**21**	**227**[3]	**100**
Rate (‰)[4]	**0.05**	**0.04**	**0.05**	**0.07**	**0.03**	**0.05**	**0.06**	
H1N1[5] **(‰)**							**1,838**	**0.47**
Food and water borne diseases								
Viral Hepatitis A	72	128	14	19	183	17	**448**	**30.5**
Typhoid fever	77	79	32	57	66	19	**362**	**24.7**
Food poisoning	110	32	30	18	60	11	**311**	**21.2**
Dysentery	136	35	1	5	2	3	**186**	**12.7**
Brucellosis	24	31	1	12	52	6	**134**	**9.1**
Parasitic worms	0	0	14	1	0	0	**15**	**1.0**
Hydiatic Cyst	6	1	0	0	3	0	**12**	**0.8**
TOTAL	**425**	**306**	**92**	**112**	**366**	**56**	**1468**[6]	
Rate (‰)[4]	**0.3**	**0.4**	**0.2**	**0.4**	**0.7**	**0.1**	**0.4**	

[3] Additional cases are due to 42 cases of viral hepatitis coming from undetermined regions.

[4] Rates (‰) are based on 2008 population.

[5] Data of 2009.

[6] Additional cases are due to 111 food and water borne diseases from intermediary regions.

Table 13

Number of patients suffering from infectious diseases by region (2011)

Other diseases	Mount Lebanon	North	Beirut	Nabatieh	Bekaa	South	TOTAL	%
Meningitis	47	41	8	12	17	11	**137**	**51.5**
Viral hepatitis C	28	10	10	5	6	2	**72**	**27.1**
Malaria	8	8	2	2	0	0	**24**	**9.0**
Syphilis	1	1	0	3	0	1	**13**	**4.9**
Typhus	7	0	0	0	0	0	**7**	**2.6**
Leishmaniosis	2	2	1	0	0	0	**5**	**1.9**
Gonorrhea	2	0	1	0	0	0	**4**	**1.5**
Leprosy	2	0	0	0	1	0	**3**	**1.1**
Creutzfeldt-Jacob Disease	1	0	0	0	0	0	**1**	**0.4**
TOTAL	**98**	**62**	**22**	**22**	**24**	**14**	**266**[7]	**100**
Rate (‰)	**0.06**	**0.08**	**0.06**	**0.08**	**0.05**	**0.03**	**0.07**	

Source: www.moph.gov.lb.

III.1.2.1.1 – Tuberculosis

The declared prevalence in Lebanon was estimated at 12/100000 inhabitants in 2009. In that same year, the national program for combating tuberculosis diagnosed a total of 501 cases.

Beirut and Tripoli account for the highest number of patients suffering from tuberculosis, 107 and 40 respectively, with the highest incidence rate in Beirut district and Hermel district. Non Lebanese patients account for approximately 26.8% of total cases.

Table 14

Cases of Tuberculosis in Lebanon (2009)

	n	%
Total	**501**	**100**
Lebanese	368	73.5
Foreigners	133	26.5
Cases of tested sputum	179	35.7
Cases of relapse of treatment S+	10	2.0
Cases of resistance to medication	4	0.8

Source: WHO, 2010, Report on Millennium Goals for Lebanon.

III.1.2.2 – Chronic morbidity

III.1.2.2.1 – Cancer

Cancer related data is generated from the National Cancer registry based on declarations from the treating physicians and reports from pathology laboratories. The physician declarations are received by the MOPH on forms specifically designed for this purpose.

[7] Additional cases are due to 24 cases from undetermined regions.

In 2007, the number of declared patients was 8868 (2.3‰) with 50.1% women. The age group with the highest percentage of cancer cases was that of 70 years and above (27%) and the least affected was that below the age of 30 (8%). The most common type of cancer was for the malignant tumor of the breast cancer with a rate of 20%, whereas the least frequent one was malignant tumors in the bones and articular cartilages (1%). For women, the highest rate was for breast cancer (39%) and the lowest was that of malignant tumors in bones and articular cartilages (0.9%). For men, the highest rates were for the malignant tumors of the genital organs (19%), malignant tumor of the lip, the buccal cavity and the pharynx (17%), malignant tumors of the respiratory and intra-thoracic organs (17%), and malignant tumors of urinary tracts (16%), whereas the lowest rate was for the malignant tumor of the breast (0.5%).

Table 15

Distribution of patients suffering from cancer (2007)

Gender (n = 8,868)						
Women	4,445	50.1				
Men	4,401	49.9				
Undetermined	22	0.2				
Age group						
< 15	189	3.8				
15-19	93	1.2				
20-29	226	3.3				
30-39	506	6.9				
40-49	1,184	14.8				
50-59	1,599	20.0				
60-69	1,867	22.9				
> 70	2,564	27.0				
Undetermined	640	7.2				
Cancer type	**Total**	**%**	**Men**	**%**	**Women**	**%**
Malignant tumors of the breast	1,751	19.7	22	0.5	1,729	38.9
Malignant tumors of lips, oral cavity and pharynx	1,348	15.2	752	17.1	593	13.3
Primitive or presumed primitive malignant tumors of lymphoid tissues, haematopoietic and apparent	1,077	12.1	585	13.3	488	11.0
Malignant tumors of respiratory and intra-thoracic organs	1,008	11.4	728	16.5	276	6.2
Malignant tumors of urinary tract	871	9.8	696	15.8	175	3.9
Malignant tumors of men genital organs	826	9.3	826	18.8		
Malignant melanoma and other malignant tumors of the skin	646	7.3	386	8.8	259	5.8
Malignant tumors of women genital organs	475	5.3	0	0	475	10.7
Malignant tumors of thyroid and other endocrinal glands	204	2.3	63	1.4	140	3.1
Malignant tumors of the eye and appendix	202	2.2	112	2.5	89	2.0
Malignant tumors of mesothelium tissue and soft tissues	114	1.3	66	1.5	48	1.1
Malignant tumors of bones and articular cartilage	99	1.1	57	1.3	41	0.9
External causes of morbidity and mortality	238	2.6	107	2.4	129	2.9
Undetermined	9*	0.1	1	0	3	0

Source: MOPH, 2007, Cancer Records.
** Additional cases do not have a determined gender.*

III.1.2.2.2 – HIV/AIDS

Any case of detected HIV must be declared to the MOPH – Prevention Directorate. Data is collected and analyzed by the National AIDS Program team. The number of cumulated cases until November 2011 was 1455 with 109 new cases detected in 2011 (0.03‰)[8]. 93% of cases were men. The rate has been relatively constant over the past 4 years, with a small increase in 2008 and a slight decrease in 2009. In 2009, the number of individuals carrying the virus was higher than that of individuals suffering from AIDS.

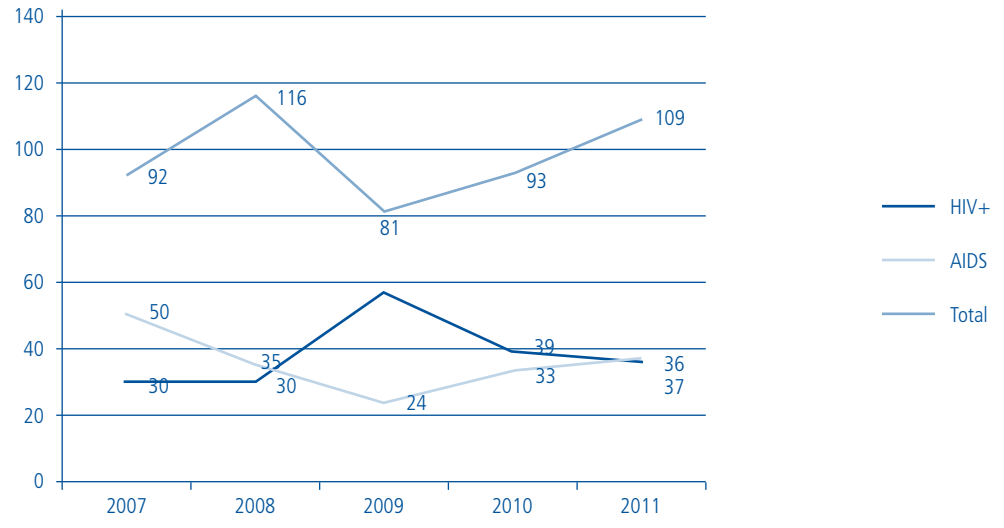
Table 16

Cumulated number of declared cases of HIV/AIDS (January 1989 to November 2011)

Gender (n = 1455)		
Men	1353	93%
Women	102	7%
Age		
< 30 years	407	28%
31-50 years	437	30%
> 51 years	131	9%
Undetermined	480	33%
Incidence in 2011	**n**	**%**
HIV*	36	33
AIDS	37	34
Undetermined	36	33
Total	**109**	

Source: MOPH, 2011, National Program for combating AIDS.
** HIV designates people carrying the human immunodeficiency virus that is the responsible agent of AIDS (Acquired immunodeficiency System).*

FIGURE 5 **New cases of HIV/AIDS (2007 - 2011)**



Source: MOPH, 2011, National AIDS Control Program

[8] Based on the population of 2010.

III.1.2.2.3 – Mental health

The Hôpital de la Croix is the only specialized psychiatric hospital in the country. In 2008, 110 patients were admitted for mental health problems; three-quarters of which were men and 35% were under the age of 20 years.

A study conducted by IDRAAC in 2003 on a representative sample of Lebanese non-institutionalized adults showed that the lifetime prevalence of at least one mental disorder is 26% with any anxiety disorder representing the most common category (17%), and any substance abuse disorder the least common (2%). The single most prevailing disorder was the major depressive disorder (10%). Approximately 11% of individuals have two or more disorders while 5% suffer from at least three disorders.

Table 17

Distribution of the population at the "Hôpital de la Croix" (2008)

	n	%
Gender	**(n = 110)**	
Men	82	74.5
Women	28	25.5
Age		
< 20 years	39	35.4
20-24	17	15.4
25-29	18	16.4
30-34	16	14.5
35-39	8	7.3
40-44	3	2.7
45 and above	9	8.1

Source: Psychiatric Hospital of the Cross, 2008.

Table 18

Lifetime Prevalence of mental disorders and age (n=2857)

Disease	n	%
Anxiety disorders		
Specific phobia	202	7.1
Separation anxiety/adult SAD**	95	6.1
Post-traumatic stress disorder*	70	3.4
Generalized anxiety disorder	61	2.0
Social phobia	52	1.9
Panic	16	0.5
Agoraphobia without panic	13	0.5
Any anxiety disorder*	**282**	**16.7**
Mood disorders		
MDD	283	9.9
Bipolar disorders	61	2.4
Dysthymia	34	1.1
Any mood disorders	**352**	**12.6**
Impulse control disorders		
Intermittent explosive disorders	43	1.7
ADHD**	20	1.5
Conduct disorder**	13	1.0
Any Impulse control disorder*	**53**	**4.4**
Substance abuse disorders		
Alcohol abuse	38	1.5
Alcohol dependence	9	0.4
Drug abuse*	6	0.5
Dependencyto drugs*	3	0.1
Any abuse disorders*	**27**	**2.2**
Any disorder*	**491**	**25.8**
Two or more disorders*	**234**	**10.5**
Three or more disorders*	**105**	**4.6**

Source: Karam, E. G. and al. (2008), Lifetime prevalence of mental disorders in Lebanon: first onset treatment and exposure to war, PLOS Medicine, vol 5, issue 4.
** n = 1 031*
*** n= 595*

III.1.2.3 – Open heart surgeries covered by the MOPH

The number of open heart surgeries covered by the MOPH in 2010 was 4038. More than half were angioplasties with stent and 30% were coronary bypasses. Only 1.3% of these cases are due to congenital malformations and 3% were Paediatric cases. The majority of valvuloplasties (89%) are interventions for valve replacement.

Table 19

Types of cardiac interventions

Interventions	n	%
Angioplasties with stent	**2,356**	**58.3**
Valvuloplastie	**301**	**7.5**
One valve	268	89.0
Two valves	26	8.6
Three valves	7	2.3
Coronary bypass	**1,198**	**29.7**
Congenital malformations	**52**	**1.3**
Paediatric cases	**131**	**3.2**

Source: MOPH, 2010, Statistics Bulletin.

III.1.2.4 – Burns

The only specialized center providing care to burn patients is found within the Geitawi Lebanese Hospital which was founded in 1927 and is run by the Maronite Congregation of Nuns of the Holy Family. The Burn Center was established in 1992 and has a capacity of 10 beds.

Over a period of 1 year (2010) a total of 84 burn cases were admitted between January and May. The majority of patients were men (70%), more than half of which (65%) were under the age of 30 with 30% under 10 years of age. The most common cause was from accidents at home (60%), and 13% resulted in death.

Table 20

Data on burn cases (2010)

	n	%
Gender		
Men	60	70
Women	24	30
Age		
0-10	24	30
11-20	12	15
21-30	17	20
31-40	8	8.8
41-50	8	10
51-60	7	8.8
61-70	3	1.2
71-80	4	5
81-90	1	1.2
Death		
Yes	12	13
No	68	87
Causes		
Accidents at home	48	60
Accidents at work	16	20
Leisure activities	16	20

Source: Getawi Hospital 2010, Traumatology Unit www.hopital-libanais.com.

III.1.2.5 – Road accidents

Assessing the extent of road accidents in Lebanon is problematic in the absence of reliable statistics and due to the under-estimation in the declaration of accidents resulting in death or injury. Death due to road accidents are defined in Lebanon as those taking place on the accident site, whereas internationally, deaths are defined as those resulting up to 30 days after the accident.

Furthermore, accidents occurring with army vehicles are not accounted for in this data. Also, accidents with only material damages are not included. These are evaluated at 100000 cases.

The Lebanese Red Cross and Kunhadi, a local NGO, estimate the number of road accidents in 2011 at approximately 11161 cases. This figure only reflects cases necessitating the intervention of first-aid units. The figures put forward by the Internal Security Forces (ISF) for 2010 are generally lower (4583) as they include only those accidents were the ISF are called on-site which happens in the case of the establishment of a police report, or if there is hospitalization or death.[9].

Table 21

Road accident cases in Lebanon (2010)

Regions	Internal Security Forces – ISF (2010)*						Kunhadi (2011)**	
	Accidents	(n = 4583)	Injured	(n = 6517)	Killed	(n = 549)	Accidents	(n = 11161)
	n	%	n	%	n	%	n	%
Mount Lebanon	1958	42.72	2,827	43.38	238	43.35	6739	60.4
Beirut	616	13.44	743	11.4	22	4.01		
North	668	14.57	920	14.12	102	18.58	1973	17.7
Bekaa	723	15.78	1069	16.4	117	21.31	834	7.4
South	368	8.03	569	8.73	40	7.29	1615	14.5
Nabatieh	250	5.46	389	5.97	30	5.46		
Gender								
Men				74.94		77.05		
Women				25.06		22.95		
Age								
0-5 years				2.59		2.19		
6-9 years				2.61		1.64		
10-14 years				4.04		2.37		
15-17 years				5.98		11.11		
18-25 years				29.61		19.85		
26-34 years				20.41		14.76		
35-44 years				14.62		14.57		
45-55 years				9.44		10.56		
56-65 years				5.57		10.38		
≥ 66 years				5.13		12.57		

Source: L'Orient-le-jour, Thomas Féat, March 14, 2012, « L'alcool au volant, ce fléau que le Liban néglige »
** Yasa, www.yasa.orgdata of the Internal Security Forces, 2010.*
*** www.kunhadi.com, 2011.*

[9] *L'Orient-Le Jour*, Thomas Féat, March 14, 2012, « L'alcool au volant, ce fléau que le Liban néglige ».

III.1.2.6 – Genetic diseases

Lebanon is composed of 17 officially recognized ethno-religious communities. For many years, endogamy and consanguineous marriages within these confessions were often the norm. Marriages among 1st degree cousins were frequent reaching, according to some authors, 30%. Recent publications suggest that this rate has significantly decreased and represents today only 15%, with the lowest rate found in the capital city, Beirut. These historical patterns have favored a high incidence of both common and rare genetic diseases. Almost 184 different genetic diseases have been reported from Lebanon.

Factors and measures affecting the existence of genetic diseases

Many factors and measures can affect the increase or decrease of genetic diseases, whether they are encouraged or neglected:

- Consanguineous marriages
- Pre-wedding screening tests
- Lack of a national screening policy

Service and diagnostic centers

Diagnostic centers and research on genetic disorders have, for a long time, been limited in Lebanon. Since 1960, these services were available only in a few university affiliated centers and for limited deficiencies only.

In 1990, centers such as that of the AUBMC and the Medical Genetic Unit of Saint-Joseph University (USJ-UGM) began to acquire the knowledge, as well as state of art technologies for more developed diagnosis and screening. In addition to these two centers, the Chronic Care Center (CCC) a multidisciplinary not for profit foundation dedicated to the treatment of childhood genetic diseases was established in 1994. This NGO remains the largest diagnostic center in Lebanon for childhood hemoglobinopathy and Type I DM. The AUBMC laboratory works almost exclusively with newborns delivered in its maternity unit. The Saint-Joseph University laboratory collaborates with many hospitals (35 in 2009) all over the Lebanese territory. A great number of projects for cytogenic and/ or molecular diagnostic laboratories are under development in other academic centers in Lebanon. Although the cost of these services is low compared to the benefits, it remains an obstacle for many families. Expenses are rarely covered by public and private third-party payers. Consequently 50% of Lebanese newborns do not benefit from coverage for disease screening

Available services for people with specific needs

Secondary prevention of mental retardation cases involves behavioral management techniques, specialized schools, community support for the family and medical follow-up. These services are currently lacking in quantity and quality, and are insufficient to respond to the needs of patients in Lebanon.

Most of these services are provided by NGOs; and there are no apparent plans for significant public provision of care in the coming few years. Although, no curative treatment is yet available early diagnosis is essential to provide the family with adequate genetic counselling.

Table 22

Genetic and molecular deficiencies

Type of deficiency	Deficiency	Incidence	Genes
Molecular	Hearing loss	1/1000 newborn	DFNB1; DFNB6; DFNB2; DFNB13; DFNB14; DFNB21; DFNB31
	Usher syndrome (neurosensory deafness)		USH1B; USH1C; USH1G; USH2A
	Familial Paroxysmal Polyserositisor Familial Mediterranean fever		
	X fragile syndrome		
	Oculocutaneous Albinismtype IOCA1 Ataxia; Progressive Pseudorhumatoid Dysplaxia (PPD); CMT4F; Osteoporosis; Frazer syndrome; dysplasia progressive pseudorhumatoid WISP3; congenital adrenaline hyperplasia (CAH); Cystic fibrosis (CF)		
Genetic diseases in screening programs for newborns	Congenital hypothyroidism G6PD Phenylketonuria (PCU) Congenital Galactosemia Methylmalonic Fatty acid disorders: SCAD; VLCAD; Carnitine Metabolism: CACT; CUD Organic disorders: Methylmalonic Aciduria; Isovaleric Aciduria; Glutaricaciduriatype I; 3-methylglutaconyl CoA-hydratase (T2)	60/100,000 (93 cases) 830 cases (1% male) 10/100,000 (16 cases) 4/100,000 (6 cases) 15/100,000 (3 cases) 1 case	

Source: Khneisser, I. ; Adib, S.; Megarbané, A.; (2012), Genetic Disorders in Lebanon: Challenges and Opportunities, chapter 55, in Genomics and Health in the Developing World, Oxford University Press.

Table 23

Incidence of genetic diseases by region

Genetic diseases	Incidence	Region	Distribution
Hemoglobinopathies	**2%**		
Sickle cell anemia		North and South Lebanon	387 patients 50% male 56% children of co-blood parents
Thalassemia		Homogenous distribution on all the Lebanese territory	452 patients (2-68 years) 67% under 20 years 64% TM and 36% TI 63% co-blood ratio 12 deaths (TM)
Other chronic hematologic diseases			
Deficiency G6PD			10/1 000 (Men) 0.4/1 000 (Women)
Hemophilia A			1/5000 (Men)

Source: Khneisser, I. ; Adib, S.; Megarbané, A. ; (2012), Genetic disorders in Lebanon: challenges and opportunities, chapter 55, in Genomics and health in the developing world, Oxford University Press.

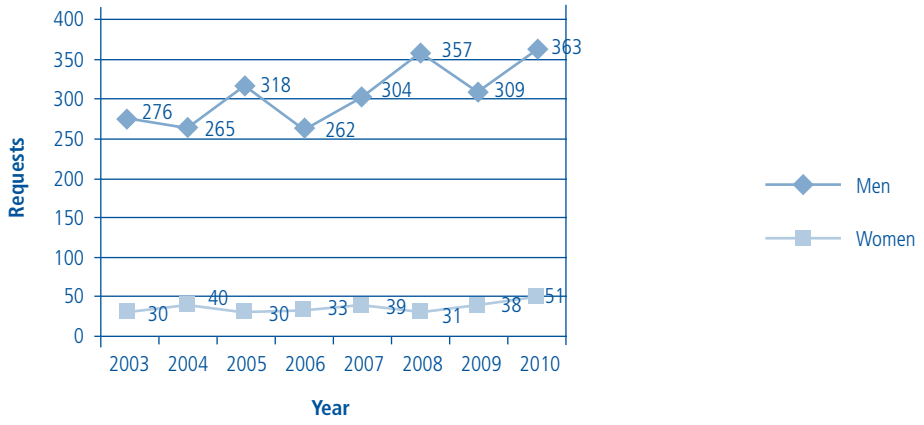
III.1.3 – RISK FACTORS (INTENTIONAL AND NON-INTENTIONAL)

III.1.3.1 – Drug Use

In 2010, rehabilitation requests from both men and women showed an increase compared to previous years. However, the number of individuals admitted to the rehabilitation program of Oum El Nour between 2003 and 2010 seems stable, with an average of nearly 85 admissions per year. The age at first consumption is in more than half of the cases between 14 and 19 years (58%) with slightly less than 25% initiating their consumption between 20 and 24 years. Services offered in 2008 included medical services, social services, judicial services, health education, and answering phone calls. During the period 2003-2008, the number of parents who participated in the rehabilitation program increased by almost 10%.

According to the NGO "Skoun", no official statistics exist on the consumption of psychoactive licit and illicit substances. The data available are not always reliable due to the arbitrary choice and variability of the selected samples, the methodology used and the lack of continuity in the studies carried out. However, field experts estimate that the number of drug users in Lebanon ranges from 10000 to 15000 and that this figure is continuously increasing. The statistics collected among drug addict population show that the consumption rates vary from 59% for heroin to around 30%-34% for cannabis, cocaine, amphetamines and alcohol. It seems that the society as a whole is afflicted by this epidemic, especially among the 15-25 age group (Source: www.skoun.org).

FIGURE 6 **Trends in drug addiction service demands by gender (2010)**



Source: http://www.oum-el-nour.org/factsstat10.php?i=3010.

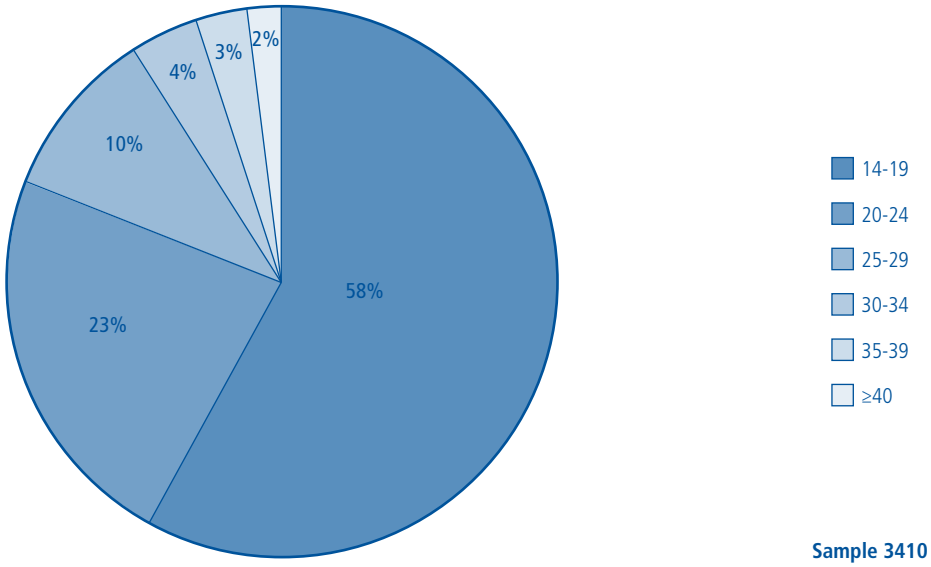
Table 24

Number of drug addicts admitted to the rehabilitation program (2003-2010)

Years	Beneficiaries
2003	82
2004	91
2005	87
2006	70
2007	82
2008	90
2009	89
2010	91

Source: http://www.oum-el-nour.org/factsstat10.php?i=3010.

FIGURE 7 **Age of initiation of drug consumption (2010)**



Source: http://www.oum-el-nour.org/factsstat10.php?i=3010.

Table 25

Services available for drug addicts (2008)

Medical services	n
Medical consultation	94
Hospitalizations	81
Visit to the dentist	612
Social services	
Group dynamics	3,760
Group therapy	5,040
Parents' visits	3,240
Individual consultations	1,890
Interviews	1,500
Judicial services	
Tribunal appeals	603
Health education	
Seminars	810
Other	
Phone calls	2,610

Source: Oum el Nour, Rapport 2008.

Table 26

Number of individuals who participated in the drug addiction rehabilitation program (2003-2008)

Years	n
2003	246
2004	273
2005	255
2006	207
2007	243
2008	270

Source: Oum el Nour, Rapport 2008.

Medical care for drug addicts is provided by many hospitals and associations. Generally, the data indicate that individuals receiving care are mainly men between the ages of 20 and 34. For the vast majority, the age of initiation of drug use is almost always before the age of 20.

Table 27

Medical care of drug addicts by institutions (2008)

Characteristics	Oum el Nour n = 388	JCD n = 58	Saint-Charles Hospital n = 194	SKOUN n = 237	Cross Hospital n = 239	SIDC n = 34	JAD n = 320
Treatment	**90**			**172**		**34**	
Gender							
Men	358	58	179	185	222		255
Women	31	0	15	52	17		65
Age at initiation of addiction							
< 20 years	233*						
20-24	60						
25-29	14						
30-34	15						
35-39	6						
40-44	5						
Current age							
< 20 years	67**	21	32	37***	28		
20-24	131	49	50	145	63		
25-29	88	64	51		84		
30-34	33	32	13	23	20		
35-39	21	10	18		16		
40-44	22	15	10	20	10		
45 and plus		18	20	5	18		

Source: Oum el Nour, JCD, JAD, SIDC, Skoun, Hôpital Saint-Charles, Hôpital psychiatrique de la Croix (2008).
** The age of initiation of addiction is not determined for 55 individuals.*
*** The current age is not determined for 26 individuals.*
**** Age distribution according to categories: 17-21; 22-30; 31-40; 41-50; 51-59*

III.1.3.2 Cigarette Use and other Risk Factors for NCD's

A study conducted by Sibai & Hwalla in 2009 on a representative sample of the adult Lebanese population aged between 25 and 64 with the aim of identifying risk factors of chronic diseases collected data on tobacco and alcohol consumption, physical activity patterns, obesity and food habits among 1982 individuals.

Thirty-nine percent (39%) of adults were current smokers, whereas 57% claimed to have never smoked. Half of the individuals between the age of 45 to 54 were current smokers, whereas 70% of individuals aged between 25 and 34 never smoked. The current smoking rate was higher among men (47% vs. 32%).

Twenty-one percent (21%) of adults currently consumed alcohol with 32% for the men and 11% for the women. It is noteworthy to mention that 43% of those between 25 and-34 years are former drinkers.

Physical activity was measured on a scale varying between high and low activity. Almost half of the individuals (46%) showed low physical activity, with the highest percentage (54%) being for those aged between 25 and 34 years; 52% of the men and 40% of the women report low physical activity.

Seventy-three percent (73%) of the sample (59% for men and 65% for women) are classified as overweight (BMI ≥25), whereas 27% are obese with an almost equal rate for men and women (29% vs. 27%).

Table 28

Consumption of cigarettes among Lebanese adults (25-64) by age and gender (2009)

Age group (years)	Total				Men				Women			
	n	% current smoker	% former smoker	% never smoked	n	% current smoker	% former smoker	% never smoked	n	% current smoker	% former smoker	% never smoked
25-34	707	27.7	2.0	70.2	318	40.5	2.8	56.6	389	17.5	1.3	81.2
35-44	575	40.0	3.8	56.2	247	49.4	5.7	44.9	328	32.9	2.4	64.6
45-54	414	50.0	7.5	42.5	188	55.3	9.6	35.1	226	45.6	5.8	48.7
55-64	286	45.1	10.8	44.1	140	45.7	15.0	39.3	146	44.5	6.9	48.6
Total	**1,982**	**38.5**	**4.9**	**56.6**	**893**	**46.8**	**6.9**	**46.1**	**1,089**	**31.6**	**3.3**	**65.1**

Source: Sibai and Hwalla, 2009, WHO STEPS surveillance.

Table 29

Consumption of alcohol among Lebanese adults (25-64) by age and gender (2009)

Age group (years)	Total			Men			Women		
	n	% current drinker	% former drinker	n	% current drinker	% former drinker	n	% current drinker	% former drinker
25-34	707	22.6	43.4	318	36.8	58.5	389	11.1	31.1
35-44	575	17.9	35.1	247	29.2	48.6	328	9.5	25.0
45-54	414	20.3	42.8	188	31.9	52.7	226	10.6	34.5
55-64	286	20.6	44.4	140	28.6	55.7	146	13.0	33.6
Total	**1,982**	**20.5**	**41.0**	**893**	**32.4**	**54.1**	**1,089**	**10.7**	**30.3**

Source: Sibai and Hwalla, 2009, WHO STEPS surveillance.

Table 30

Physical activity of Lebanese adults (25-64) by age and gender (2009)

Age group (years)	Total				Men				Women			
	n	% low[10]	% moderate[11]	% high[12]	n	% low	% moderate	% high	n	% low	% moderate	% high
25-34	707	53.5	25.0	21.5	318	55.4	19.2	25.5	389	52.0	29.8	18.3
35-44	575	42.4	33.4	24.2	247	55.5	25.1	19.4	328	32.6	39.6	27.7
45-54	414	41.1	36.5	22.5	188	50.0	30.3	19.7	226	33.6	41.6	24.8
55-64	286	40.2	36.4	23.4	140	43.6	36.4	20.0	146	37.0	36.3	26.7
Total	**1,982**	**45.8**	**31.5**	**22.8**	**893**	**52.4**	**25.9**	**21.7**	**1,089**	**40.3**	**36.1**	**23.6**

Source: Sibai and Hwalla, 2009, WHO STEPS surveillance.

Table 31

Percentage of individuals classified as overweight (BMI25), Lebanon (2009)

Age group (Year)	Total			Men			Women		
	n	% BMI ≥ 25	95% CI	n	% BMI ≥ 25	95% CI	n	% BMI ≥ 25	95% CI
25-34	316	64.6	(9.3; 69.9)	386	38.6	(33.7 ; 43.5)	702	50.3	(46.6 ; 54.0)
35-44	246	73.2	(67.6 ; 78.7)	318	61.3	(56.0 ; 66.7)	564	66.5	(62.6 ; 70.4)
45-54	186	81.2	(75.5 ; 86.9)	221	76.9	(71.3 ; 82.5)	407	78.9	(74.9 ; 82.9)
55-64	135	80.0	(73.2 ; 86.8)	145	83.5	(77.3 ; 89.6)	280	81.8	(77.2 ; 86.3)
Total	**883**	**72.8**	**(69.9; 75.8)**	**1,070**	**59.4**	**(56.4 ; 62.3)**	**1,953**	**65.4**	**(63.3 ; 67.5**

Source: Sibai and Hwalla, 2009, WHO STEPS surveillance.

Table 32

Percentage of individuals classified as obese (BMI≥30), Lebanon (2009)

Age group (Year)	Total			Men			Women		
	n	% BMI ≥ 30	95% CI	n	% BMI ≥ 30	95% CI	n	% BMI ≥ 30	95% CI
25-34	702	17.7	14.8-20.5	316	22.2	17.5-26.8	386	14.0	10.5-17.5
35-44	564	26.4	22.8-30.1	246	27.6	22.0-32.3	318	25.5	20.7-30.3
45-54	407	38.8	34.1-43.6	186	39.2	32.2-46.3	221	38.5	32.0-45.0
55-64	280	37.5	31.8-43.2	135	31.1	23.2-39.0	145	43.5	45.3-51.6
Total	**1,953**	**27.4**	**25.5-29.4**	**883**	**28.7**	**25.7-31.6**	**1,070**	**26.5**	**23.8-29.1**

Source: Sibai and Hwalla, 2009, WHO STEPS surveillance.

[10] A person not achieving the high or moderate criteria.

[11] Vigorous intense activity of at least 20min/day on at least 3 days OR 5 or more days of walking; physical activity of moderate intensity during at least 30min/day OR 5 or more days of walking. Moderate - or vigorous – intensity activities achieving a minimum of at least 600 MET minutes per week.

[12] Intense activity on at least 3 days with a minimum of at least 1500MET min/week OR 7 days or more of walking, activities of moderate - strong intensity with a minimum of 3000 MET min/week.
MET = Metabolic equivalents are commonly used to express the intensity of physical activities during work activities, transportation and leisure.

Table 33

Average number of meals taken outside home by week among Lebanese adults (25-64) by age and gender (2009)

Age group (Year)	Total			Men			Women		
	n	average	95% CI	n	average	95% CI	n	average	95% CI
25-34	707	1.7	1.5-2.0	318	2.3	2.1-2.4	389	1.3	0.9-1.7
35-44	575	0.9	0.8-1.0	247	1.6	1.4-1.8	328	0.4	0.3-0.5
45-54	414	0.6	0.5-0.7	188	0.9	0.7-1.1	226	0.4	0.3-0.5
55-64	286	0.7	0.2-1.2	140	1.2	0.1-2.3	146	0.3	0.2-0.4
Total	**1,982**	**1.1**	**1.0-1.2**	**893**	**1.6**	**1.4-1.8**	**1,089**	**0.7**	**0.5-0.8**

Source: Sibai and Hwalla, 2009, WHO STEPS surveillance.

III.1.4 – SPECIAL GROUPS

III.1.4.1 – The Elderly Population

In 2007, there were 377,473 of elderly was individuals in Lebanon, with about 65% of them aged between 65 and 74. The percentage of elderly men was slightly higher than that of women. The highest rate was found in Mount Lebanon (38.6%), whereas the lowest rate was in Nabatiyeh (6.9%).

Table 34

Distribution of the elderly population by age, gender and region (2007) (n=377,473)

Characteristic	n	% of elderly	% of population[14]
Age			
65-69	128,418	34.0	3.2
70-74	108,961	28.9	2.8
75-79	73,938	19.6	1.9
80-84	46,698	12.4	1.2
85 +	19,457	5.2	0.5
Gender			
Men	190,682	50.5	4.9
Women	186,791	49.5	4.8
Region			
Mount Lebanon	145,558	38.6	3.7
North Lebanon	77,281	20.5	2.0
Bekaa	50,311	13.3	1.3
South Lebanon	42,131	11.2	1.1
Beirut	36,156	9.6	0.9
Nabatieh	26,033	6.9	0.7

Source: MAS, 2007, The National Survey of Household Living Conditions.

In 2010, Lebanon counted 49 residential establishments, 58 daycare institutions and 21 health-care centers that catered to the elderly. The majority of these (47.6%) are located in Mount Lebanon. The Bekaa and South regions are at a disadvantage, with rates of 7% and 7.8% respectively.

[13] According to the Ministry of Social Affairs, elderly is considered to be any individual aged 65 and above.

[14] Population in 2009 was of 3,891,466.

Table 35

Institutions that provide elderly care (2010)

Region	Number of residential institutions	Number of day institutions	Number of healthcare centers	Total
Mount Lebanon	28	20	13	61
Beirut	7	20	2	29
Bekaa	3	2	4	9
North Lebanon	10	8	1	19
South Lebanon	1	8	1	10
TOTAL	**49**	**58**	**21**	**128**

Source: MOSA-UNFPA, National report on services offered to elderly in Lebanon, 2010

Organizations that provide services to the elderly welcome the poor irrespective of nationality, gender, legal status, or health condition (suffering from chronic diseases, physically and/or mentally disabled). Services offered to the elderly population vary according to type of institution but they all aim at providing for medical needs, care, treatment, medical tests, diagnosis, medication, hospitality and hygiene. All these institutions face financial, logistic and legal problems, and have to deal with shortage of staff, the families of their elderly residents, as well as governmental institutions.

Table 36

Services for the elderly

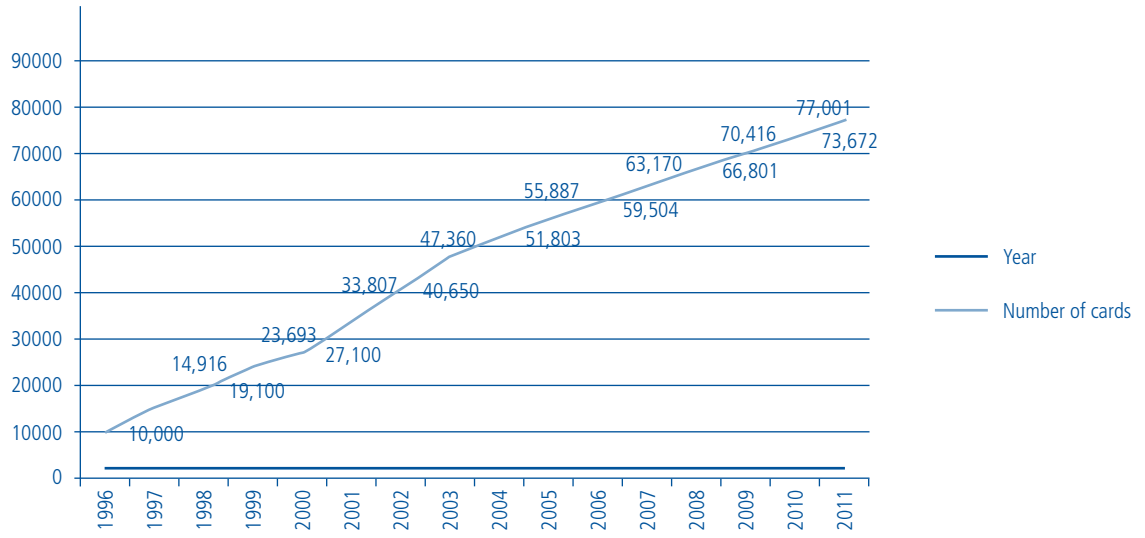
Type	Number	Region		Duration of stay
Residence	49	Mount Lebanon Beirut South Lebanon North Lebanon Bekaa	56.9% 14.3% 2% 20.7% 6.1%	Medium and long stay
One day	58	Mount Lebanon Beirut South Lebanon North Lebanon Bekaa	34.5% 34.5% 13.7% 13.9% 3.4%	Short stay
Healthcare center	21	Mount Lebanon Beirut South Lebanon North Lebanon Bekaa	61.9% 9.5% 4.8% 4.8% 19%	0
Out patients	74	Mount Lebanon Beirut South Lebanon North Lebanon Bekaa	51.3% 25.7% 8.3% 10.6% 4.1%	64.9% Medium and long stay 29.7% Short stay
Restaurants	41	Mount Lebanon Beirut South Lebanon North Lebanon Bekaa	58.7% 26.8% 2.4% 2.4% 9.7%	0

Source: MOSA-UNFPA, National Report on services offered to elderly in Lebanon, 2010

III.1.4.2 – Disabled

The Lebanese Ministry of Social Affairs started granting invalidity cards in 1995. By the end of 2011, the cumulative number of individual cards delivered was 77001. There are no official data regarding the number of disabled individuals in Lebanon. However, the Ministry of Social Affairs estimates this number to be around 4% of the Lebanese population, i.e. in the range of 158473 individuals (considering that the deficiency classification adopted is not exhaustive). The WHO, on the other hand considers it at 7% of the population, i.e. 277328 disabled individuals. It should be noted that these figures are both under-estimates, since disability cases are under-declared in Lebanon.

FIGURE 8 **The number of cards granted by the Ministry of Social Affairs for disabled persons (1996-2011)**



Source: MOSA, 2011, Access and Right Program.

In 2009, the rate of disability was higher for men. Nearly 45% of the disabled are between 6 and 34 years of age with almost 30% between 35 and 65 years. A little less than 60% are among the economically productive age group of the population, i.e. 19 – 65 and are usually excluded from the labor market. Minimal efforts are exerted in Lebanon in this respect. Mount Lebanon has the highest rate of disabled individuals, followed by the North. Four kinds of disabilities are registered with the highest rate for those in the motor disability category.

Table 37

Distribution of disability according to gender, age, regions and type of deficiency (2009)

	%
Gender	
Men	63.13
Women	36.87
Age	
0-5	4.02
6-18	20.27
19-34	23.46
35-65	35.72
≥ 66	16.52
Regions	
Mount Lebanon	36.29
North	18.29
South	13.95
Bekaa	13.85
Nabatieh	9.39
Beirut	8.22
Type	
Motor	54.40
Mental	27.40
Audit	10.10
Visual	7.84

Source: MOSA, 2009, Access and Right Program.

Table 38

Beneficiaries and medical services for the disabled offered in MOSA centers

Year	Beneficiaries	Medical services offered
2003	355	611,697
2004	369	503,797
2005	379	659,915
2006	379	594,900
2007	407	469,404

Source: MOSA, 2009, Access and Rights Program.

III.1.4.3 – Mother / Child

Data relative to mother and child was gathered by a study carried out from March to December 2009 by the Central Administration of Statistics, in collaboration with the UNICEF (MICS). The sample included 15181 houses from all over the Lebanese territory with the exception of the Palestinian camps. Three questionnaires were used: a- for families; b- for women; c for children under five. Collected data were entered on Visual basic 2005 program and were analyzed afterwards through ORACLE and SPSS software.

According to this study:

i- Contraception

The percentage of contraception use in Lebanon in 2009 was 53.7, with the two most frequent methods of contraception being the pill (22.2%) and the diaphragm (17.4%). This rate was highest in Beirut (62.4%) and its suburbs, and lowest in Nabatiyeh (32.6%). Contraception use increased with age (21% among 15-19; 43.6% among 20-24) until the age of 39, where it started to decrease. Also, this rate increased according to the number of children from 1.8% among those without children to 64.7% among those with 4 children or more.

The percentage of infants born with low birth weight (< 500 grams) was highest in Nabatiyeh (16.9%) and lowest in the rest of the Bekaa (5.9%). This rate was slightly higher among illiterate mothers across the country. Approximately 15% of newborns were exclusively breastfed. In fact, the study showed that 1 out of 5 children aged between 0 and 11 months was malnourished. These rates varied according to region with 6.2% in the South, 11.8% in Beirut's suburbs, 14.1% in Hermel and above 24% elsewhere. Almost 9% of newborns suffered from diarrhea. The lowest rate was recorded in Beirut (2.2%) and the highest in the North and the South (11%); these rates also varied according to age with the highest being among children between 6 and 23 months.

Table 39

Women and children indicators (2009)

Characteristics	%
Women 15-49 (n = 7560)	
Mortality rate[15] (per 100,000)	23.0
Contraception[16]	
None	45.5
Pill	22.2
Diaphragm	17.4
Withdrawal	5.1
Condom	4.3
Methods based on the calendar	2.3
Breastfeeding	1.3
Other	2.0

[15] Reproductive Age Mortality Survey (RAMOS) 2009

[16] Among married women.

Table 39

Women and children indicators (2009)

Characteristics	%
Child **< 5 years (n = 3439)**	
Infant mortality rate (per 1,000)	9.0
Under-five mortality rate (per 1,000)	10.0
Low weight at birth	11.5
Breastfeeding exclusively	14.8
Appropriate nutrition per month	
0-5: Breastfeeding exclusively	14.8
6-8: EB + at least 2 additional meals	29.2
9-11: EB + + at least 3 additional meals	22.6
Measles vaccination	70.9
DTP 1	83.2
DTP 2	72.6
DTP 3	70.6
Polio 1	85.3
Polio 2	86.7
Polio 3	72.4
Diarrhea[17]	8.5
Home treatment for dehydration	86.7
Home treatment for diarrhea	27.5
Disabled	7.8

Source: UNICEF–CAS, 2009, (Cluster Survey)

ii- Vaccination

The national calendar of vaccination adopted by the MOPH for 2005 is as follows:

Table 40

National calendar of vaccination

	Birth	2 months	4 months	6 months	9 months	12 months	18 months	4-5 years	10-12 years	16-18 years
Hepatitis B	Dose 0									
Polio (muscular)		Dose 1								
Polio (oral)			Dose 2	Dose 3			Booster 1	Booster 2	Booster 3	
DTP-Hib-Hepatitis B		Dose 1	Dose 2	Dose 3						
Measles					Dose 1					
MMR						Dose 1		Dose 2		
DTP-Hib							Booster 1			
DTP								Booster 2		
DT									Booster 3	Booster 4

Source: www.moph.gov.lb.

[17] Two weeks prior to interview.

Vaccination against poliomyelitis by region

Data relative to vaccination against poliomyelitis reveals a high level of coverage varying between 88 and 97% according to regions with a national average of 94%. It is worth mentioning that these results have been collected after an awareness campaign was carried out by the MOPH in 2009 on the Lebanese territory. This may help explain the high rates reported.

Table 41

Poliomyelitis vaccination rate by region (2010)

Region	%
Bekaa-Ouest	97
Hermel	93
Baalbeck	91
Rashaya	97
Zahlé	93
Jezzine	92
Tyr	92
Saida	94
Batroun	92
Koura	92
Bécharré	94
Zgharta	94
Tripoli	92
Minieh	88
Akkar	94
Nabatieh	96
Bint Jbeil	94
Hasbaya	91
Marjeyoun	93
Chouf	97
Metn	94
Baabda	94
Jbeil	95
Aley	95
Kesrouan	97
Beirut	92
TOTAL	**94**

Source: MOPH, 2010, Statistic bulletin

III.1.4.4 – Youth

The Global School Health Survey (GSHS) developed in 2001 by the WHO in collaboration with the MOPH and the Ministry of Education and Higher Education - MEHE targeted students aged between 13 and 15, in the 7th, 8th and 9th grades.

A total of 2286 students participated in the study. One thousand eighty-one (1081) students came from private schools and 1205 from public schools. This study investigated health behaviors among young people, including their dietary habits, physical activity, psycho-mental state, alcohol and drug use, violence, as well as personal and oral hygiene.

Table 42

GSHS 2011 results for Lebanon (n = 2286)

Alcohol Consumption	Total (%)	Boys (%)	Girls (%)
Alcohol Use			
Students who drank at least one drink containing alcohol on one or more of the past 30 days	28.5	36.5	21.6
Students who ever had a drink of alcohol (other than a few sips), the percentage who had their first drink of alcohol before age 14 years	87.5	88.9	85.9
Students who drank so much alcohol that they were really drunk one or more times during their life	21.2	27.1	16.0
Dietary Behaviours			
Students who were underweight (<-2SD from median by BMI for age and sex)	5.3	4.2	6.5
Students who were overweight (>+1SD from median by BMI for age and sex)	24.1	34.0	14.1
Students who were obese (>+2SD from median for BMI by age and sex)	6.7	9.1	4.2
Students who usually drank carbonated soft drinks one or more times per day during the past 30 days	60.2	65.0	55.9
Drug Use			
Students who ever used drugs, the percentage who first used drugs before age 14 years	*	*	*
Students who used marijuana one or more times during their life	3.5	6.3	1.0
Personal and Oral Hygiene			
Students who usually cleaned or brushed their teeth less than one time per day during the past 30 days	9.8	12.9	7.1
Students who never or rarely washed their hands after using the toilet or latrine during the past 30 days	2.4	3.2	1.8
Mental health			
Students who ever seriously considered attempting suicide during the past 12 months	15.0	12.5	17.3
Students who actually attempted suicide one or more times during the past 12 months	13.5	13.5	13.5
Students who had no close friends	3.4	4.1	2.9
Physical Activity			
Students who were physically active for a total of at least 60 minutes per day on five or more days during the past seven days	34.6	42.4	27.7
Students who went to physical education (PE) class on three or more days each week during the school year	33.1	36.1	30.3
Students who spent three or more hours per day during a typical or usual day doing sitting activities	48.8	45.9	51.4
Protective factors			
Students who missed classes or school without permission on one or more of the past 30 days	17.5	21.4	14.0
Students whose parents or guardians understood their problems and worries most of the time or always during the past 30 days	47.8	47.2	48.4
Students whose parents or guardians really knew what they were doing with their free time most of the time or always during the past 30 days	53.5	50.7	55.9
Unintentional Violence and Injuries			
Students who were in a physical fight one or more times during the past 12 months	48.5	69.3	30.2
Students who were seriously injured one or more times during the past 12 months	39.0	43.8	35.0
Students who were who were bullied on one or more days during the past 30 days	25.1	35.0	16.4

Source: WHO/MEHE/MOPH, (2011), Lebanon Global School-based student Health Survey
** Indicates that data are not available*

Results of the GSHS and Global Youth Tobacco Survey carried out in March and June 2011 were finalized in December 2011. The major results are as follow:

- Dietary habits and physical activity seemed to be satisfactory.
- The trends in drug and alcohol use have not changed. These issues need be further discussed in schools and integrated in mental health programs.
- Results related to mental health and the use of alcohol were alarming. There seems to be a definite tendency.
- Lebanese students seem to have better results with respect to tooth brushing, hand hygiene and parental control. In other fields, they have rates similar to those of other Arab countries.

Knowledge, attitudes, beliefs and practices (KABP) surveys linked to sexual and reproductive health and HIV

The Sagesse University carried out in 2011 with the support of the WHO, UNFPA, UNICEF and in collaboration with the MOPH and the AIDS National Program a survey about youth's sexual and reproductive health and their knowledge, attitudes and practices linked to HIV.
The methodology was:

- Quantitative through a questionnaire that targeted university (18 – 24 years old) and secondary schools (16 – 18 years old) students in public and private schools and universities.
- Qualitative through focus groups with young people who had dropped out of school or had special needs.

Results did not vary significantly between different age groups or genders. The level of knowledge linked to the transmission and prevention of AIDS was high, whereas the level of knowledge related to sexually transmitted infections was relatively lower. Principal sources of information included their peers, schools, the internet and, to a lesser extent their parents.

As opposed to youth who had special needs or had dropped out of school, the majority of students had attended a course on reproductive health and AIDS, and most of them had heard about contraception and condoms. A smaller proportion knew where abortions could be performed.

Nevertheless, some misconceptions still prevail among all groups about how to recognize people suffering from HIV and other sexually transmitted infections (STI) or the availability of vaccines against HIV and other STIs.

Regarding risk taking other than sexual behaviors, the majority of students reported that they:

- Knew someone their age who smoked cigarettes (93.3%)
- Had heard of energy drinks (93.2%)
- Knew where to buy energy drinks (89.5%)
- Knew someone their age who consumed energy drinks (89.1%)
- Had heard of tranquillizers (84.8%).

In general, the study recommends that more reliable data sources be accessible to young people, and that parents become more involved in the sexual and reproductive health education of their children. Efforts should be exerted to initiate discussions about STIs. Interventions associated with risk taking behaviors related to reproductive health should be conducted earlier on for boys and girls, with the required adaptations whenever necessary.

Youth Policy[18]

The Youth Policy is an interactive procedure between the State and the youth. Its elaboration results from the many challenges the youth have to face and the need to incorporate the recommendations of international agreements. The development of this policy is the first phase within the framework of the "Reinforcement of youth participation" project lead by UNESCO in coordination with the Ministry of Youth and Sports, and other ministries and youth organizations.

The goals of this project include:

1. Reinforcing the participation of youth (19 – 25 years old) in the different aspects of public life.
2. Encouraging the participation of youth in decision making.
3. Supporting the development and application of a national youth policy in Lebanon.

Youth is defined by the UN as individuals aged between 15 and 24. However, there is no clear definition of youth in Lebanon and no unified terminology at the international level. For example, the EU considers any individual aged between 15 and 25 as a young person, whereas Canada labels those between 16 and 30 as youngsters. In order to accommodate most definitions, this study defined youngsters as individuals aged between 15 and 29 years.

The young people (15 – 29 years old) represented 28% of the Lebanese population in 2004. It was estimated that the percentage of young people in the Lebanese population will drop to 24% by 2020 and 18% by 2050. The age of first marriage among women and men was the highest in the Arab region. Although there were no significant differences across Lebanon, the age at first marriage was slightly younger in the South and North, than in Beirut and Mount Lebanon. This phenomenon can be explained by many factors such as unemployment, education and immigration.

The level of health of young individuals in Lebanon is considered good in comparison to countries with a similar GDP.

[18] UNESCO, 2011, National report on policy of youngsters in Lebanon 2011-2016.

Table 43

Characteristics of young people in Lebanon

Demographic characteristics	2004	2020
% of Youth in the Lebanese population	28%	24%
Age of 1st marriage (women)	29 years	
Age of 1st marriage (men)	32 years	
Divorce rate	2%	
Ratio of divorce men/women	26%	
Percent of single women		
25-29 years	47%	
30-34 years	30%	
Fertility ratio (2006)	1.9	
Age distribution[19]		
15-19	9.9	7.8
20-24	9.9	8.4
25-29	7.9	8.1
Total	**27.7**	**24.3**
Emigration		
Crude ratio (1997-2004) (n = 50000 individuals)		
Men	57%	
Women	43%	
Emigration rate among young people (n = 28,500)		
Men (15-29 years)	44%	
Youngsters	28%	
Youth and education		
Illiteracy rate 15-19 years	2%	
Years of education	13 years	
Index of development of education in Lebanon[1]	87e	
Youth and employment		
Youth in the labor force	41%	
Women in the labor force	20%	
15-19 years	7%	
25-29 years	38%	
Percent of women managers	11%	
Percent of expert women	46%	
Rate of unemployment among youth	66%	
Youth and health		
Life expectancy at birth		72 years
Infant mortality rate (< 1 year)		24/1 000
Rate of consultation during pregnancy	52%	96%
Maternal mortality rate (100,000 live births)		100-150
Ratio of Paediatric consultations during the 1st year		

Source: UNESCO, 2011, National report on youth policy in Lebanon 2011-2016

[1] *classification among 129 countries.*

[19] United Nations, 2009. World Popularity Prospects: The 2008 Revision Population Database et CAS, 2004, Living Conditions Survey.

III.1.4.5 – Refugees

III.1.4.5.1 – Palestinians

The UNRWA's human development and humanitarian services encompass primary and vocational education, primary health care, social safety net, community support, infrastructure and camp improvement, microfinance and emergency response including situations of armed conflict.

In Lebanon, the UNRWA provides these social services to approximately 500000 Palestinian refugees, with an annual budget of nearly $123 700 000.
The UNRWA supplies basic health services and is responsible for providing a healthy environment for Palestinian refugees, according to the Millennium Development Goals and the WHO standards.

The UNRWA's major target with respect to health issues is to allow refugees to live a long and healthy life through:

- Ensuring universal access to quality comprehensive services
- Preventing and controlling diseases
- Protecting and promoting family health

The primary health care and mobile clinics network is the backbone of its health service provision, whether preventive general medicine, or specialized healthcare adapted to every stage of life.

The UNRWA has established considerable health benefits for the Palestinian refugee population during the past six decades. However, the context in which UNRWA is working is changing in terms of

- the population is aging
- the burden of non-communicable diseases like hypertension, diabetes, obesity and cancer is rapidly growing
- the demands for healthcare are increasing
- the costs of healthcare continue to rise.

The UNRWA is attempting, through the introduction of a Health Family Unit –HFU approach, to answer all these challenges in order to ensure an efficient healthcare system for the future.

This approach will ensure complete healthcare for all the family, with an emphasis on long term and continuity of healthcare as well as the reinforcement of relations among healthcare providers, patients, families and the community. The introduction of the new approach is consistent with the health system modernization efforts undertaken in other countries of the region.

This approach consists of putting in place a multidisciplinary team of health professionals collaborating to answer all the needs of a specific population.
Every team is composed of a physician, one or more nurse, and a midwife. The families are registered at an HFU, and patients are always seen by that team.

The HFU approach includes the introduction of an appointment system, in order to reduce the waiting period of patients and to allow members of the team to manage their time efficiently and ensure enough time for quality consultation.

Table 44

Palestinian refugees registered at UNRWA (n = 433000)*	
General data	
Refugees resident in the country (n)	260,000-280,000
In camps (%)	62
In gatherings (%)	38
Residents below 18 years (%)	25.5
Residents below 25 years (%)	50
Residents above 40 years (%)	36.2
Average household size	4.9
Women 15-49 years	27.4
Growth rate (%)	0.8
Fertility rate	2.3
Camp	
Burj el-Barajneh	16,888
Shatila	9,154
Dbayeh	4,237
Mar Elias	627
Wavel	8,308
Ein el-Hilweh	50,309
Mieh Mieh	4,958
Beddawi	7,866
Nahr el-Bared	36,338
Burj Shemali	21,205
El-Buss	10,559
Rashidieh	29,363

Source: www.unrwa.org, 2011.
** Almost 10% of the Lebanese population.*

Table 45

School and Health services available through UNRWA (June 2011)	
Structures	**n**
Schools	**74 (6 secondary) (31,000 students)**
Vocational and technical schools	2
Primary health care centers	29
Community rehabilitation centers	1
Women program centers	9
Contracts with hospitals	35
Dental centers	19*
Laboratories	17*
Radiology centers	4*

Source: www.unrwa.org, 2011.
** Data of 2009.*

[20] Almost 10% of the Lebanese population.

Box 2 Palestinian refugees through UNRWA (June 2011)

Palestinian refugees and education

- School-aged children not registered in schools 8%
- Teens above 15 years old without the Brevet 2/3
- Teens aged between 16 - 18 registered in a school or technical institution 50%

Palestinian refugees and employment

- 56% of Palestinians are unemployed (half of them residing in the South of Lebanon).
- Women have significantly less jobs than men.
- In general, those employed hold manual jobs, requiring no qualification, and providing little security.

Source: www.unrwa.org.

Table 46

Living conditions of Palestinian refugees in Lebanon (June 2011)	
Palestinians earning less than $6 per day	288 666[21]
Palestinians earning less than $2.17 per day	19 052[22]
Ratio of unemployed refugees (%)	56

Source: www.unrwa.org, 2011.

Table 47

Health condition of Palestinian refugees in Lebanon (June 2011)	
Palestinian suffering from chronic diseases	144,333
Infant mortality rate (1000 live births)	19
Child mortality rate< 3 years (1000 live births)	20.8
Refugees with no insurance (%)	95
Hospitalization expenses ($/family/year)	1,228
General consultations	972,487*
Dental treatment	686 83*
Average doctor consultation/day	107*
Average dentist consultation/day	26*

Source: www.unrwa.org, 2011.
** UNRWA, 2009.*

III.1.4.5.2 – Other refugees

The UN High Commissioner for Refugees (UNHCR) was established on December 14, 1950 by the UN General Assembly. The agency is mandated to lead, manage and coordinate international actions to protect refugees and resolve their problems worldwide. Its primary target is to safeguard the rights and well-being of the refugees. It strives to ensure that everyone can exercise the right to seek asylum and find safe refuge in another State, with the option of returning

[21] This represents 2/3 of refugees.

[22] This represents 6.6% among 2/3 of refugees.

home voluntarily, integrating locally or settling in a third country. It also has a mandate to help stateless people. The UNHCR works with a yearly budget of $13 115 150.

Moreover, the irregular flow and mix of migrants and shelter-seekers, as well as the situations of prolonged refugees and the poor asylum granting systems, constitute additional challenges for the HCR.

Table 48

Refugees and shelter-seekers in Lebanon (2011)

Nationality	Refugees	Shelter seekers	Total refugees and shelter seekers	Other	Total refugees registered
Iraqi	8,491	739	9,230	16	9,246
Non Iraqi	354	998	1,352	682	2,034
Total	**8,845**	**1,737**	**10,582**	**698**	**11,280**

Source: www.unhcr.org, 2011.

Health and psycho-social support for refugees

The UNHCR, through its partners ensures healthcare assistance to refugees and shelter-seekers. Arrangements have been made with 11 public hospitals to provide health care assistance according to pre-defined rates.

Table 49

Refugees who benefited from health care funded by UNHCR (2011)

	2011 (n = 1,696)		January-15 March 2012 (n = 1,558)	
	n	%	n	%
Number of visits	3,438		2,967	
Age				
0-4	265	15.6	224	14.4
5-11	151	8.9	140	9.0
12-17	65	3.8	66	4.2
18-59	1,028	60.6	952	61.1
> 59	187	11.0	176	11.3
Men	858	50.6	771	49.5
Women	838	49.4	787	50.5
Hospitalized	139	8.2	77	4.8
Ambulatory	1,557	91.8	1,536	95.2
Diseases*				
Circulatory system	280	22.3	288	23.4
Respiratory system	227	18.1	233	19.2
Endocrinal, nutrition and metabolic system	178	14.2	162	13.4
Muscular system	174	13.9	49	40.4
Genital-urinary system	61	4.9	80	66.1
Digestive system	55	4.4	51	42.1
Symptoms, signs and abnormal results of clinical tests and labs	47	3.7	79	65.2
Infectious and parasitic diseases	30	2.4	40	33.0
Eye diseases	29	2.3	---	---
Nervous system diseases	29	2.3	---	---
Skin diseases	---	---	41	33.8
Other	145	11.6	198	16.4

Source: www.unhcr.org, 2011.
** 2011: 441 undetermined.*
2012 : 347 undetermined.

Box 3 Education

Children registered in primary and secondary schools for the year 2011-2012:
- 80% of children aged between 4-17 years
- 400 students registered in technical schools (BT-TS)

In 2010-2011:
- 41 refugee students were able to pass their official exams.

Source: www.unhcr.org, 2011.

Community development
The UNHCR supports 3 community centers for refugees and shelter-seekers. Two of these centers, one for children and youngsters in the southern suburbs of Beirut and another for women East of Beirut, are managed by the Amel association and are found.

The third is run by the Caritas Migrant Center and is located in the northern suburb of Beirut and concentrates on vocational technical training for men and women.

Voluntary repatriation
The UNHCR offers assistance with counselling and repatriation to those who voluntarily decide to return to their country. In 2011, 82 individuals were assisted.

Relocation
In 2011, 3230 departure requests were submitted, but only 832 refugees of different nationalities were able to leave Lebanon for other countries.

III.1.4.6 – Prisoners
Lebanon has 21 prisons distributed all over the Lebanese territory. The majority of these prisons serve adult males. There are three prisons for women only one specialized for minors. Some minors are also kept in the Roumieh prison in a special department. Drug users as well as mentally or physically disabled prisoners are sent to the Roumieh prison since there are no specialized hospitals for their treatment. All prisons in Lebanon are overpopulated which constitutes a major handicap in respecting the fundamental rights of imprisoned individuals such as the right to: equal access to health services, healthy nutrition, regular visits from parents, judicial follow-up of their file and professional training.

Many recommendations were proposed during the first congress on the health in prisons that took place in Lebanon in 2008. These recommendations included:
1. Elaborating a specific health system for prisoners
2. Developing the current medical structure
3. Increasing the number of hospitalization beds in hospitals; especially beds in the intensive care unit
4. Reinforcing mental health
5. Developing an individual medical file for every sick prisoner
6. Providing the medication required for treatment
7. Developing a declaration system for emergencies
8. Establishing an efficient transport system for sick prisoners
9. Ensuring the presence in the prisons of a permanent medical team
10. Developing a prevention policy
11. Improving incarceration conditions
12. Guaranteeing the rights of prisoners.

III- Health status indicators and health system indicators

In 2011, the Lebanese prisons had an estimated capacity of up to 3000 prisoners. This number was largely exceeded, as the capacity of prisons was 1.5 to 2 times higher than its real capacity. The number of condemned individuals reached 1147 and that of detainees was 2924; among them 781 had no lawyer, 56 were sentenced to the death penalty and 80 for life.

With the exception of the Roumieh prison where data could not be gathered, the medical staff in the prisons included 26 nurses, 2 administrative employees, 6 doctors and 2 medical officers. These figures remain insufficient for the provision of adequate health care within the prisons and affect as a result the health of the prisoners.

The services provided were mainly medical consultations, diagnostic tests (radiology and laboratory), dental consultations and medications.

The most common chronic disease detected among prisoners, was depression disorder, followed by ulcers. A few cancer cases were reported; Other diseases included skin diseases and syphilis.

The ISF has contracts with some of the public and private hospitals thus guaranteeing approximately 30 beds available to sick prisoners.

Table 50

Characteristics and description of prisons and prisoners (2011)

Prison	Real capacity	Current capacity	Condemned	Detained	Detained/ condemned	Sentenced to death	Life sentence	Without lawyers
Barbar Khazen	Not available	Not available	Not available	Not available	Not available	Not available	Not available	Not available
Roumieh	1,250	2486	622	1864	811	48	72	700
Dahr el bachek-minors	30	10	6	4		0	0	3
Baabda Women	45	70	15	55		0	0	15
Aley	40	74	15	59		0	0	1
Tripoli-Women	130	83	16	67		1	2	
Tripoli-Men	400	779	135	162		6	4	
Amioun	50	67	14	53		0	0	
Zghorta	60	76	10	66		0	0	12
Halba	90	70	48	22		0	0	22
Batroun	41	39	37	0	2	1	0	0
Tebnine	60	99	4	95		0	0	
Nabatieh	84	79	0	69	10	0	2	
Tyr	70	60	60	0		0	0	0
Jezzine	50	65	5	60		0	0	10
Baalbeck	75	98	25	73		0	0	
Rachaya	50	65	63	2		0	0	0
Jeb Jennine	Not available	Not available	Not available	Not available	Not available	Not available	Not available	Not available
Zahlé-Women	30	20	11	9		0	0	3
Zahlé-Men	400	500	55	232	112	0	0	
Jbeil	25	38	6	32	0	0	0	15
Total	**2,980**	**4,778**	**1,147**	**2,924**	**935**	**56**	**80**	**781**

Source: ISF - September 2011

Table 51

Medical staff in prisons (2009)[23]

Name of prison	Number of nurses	Administration	Doctors	Officer doctors
Tyr	1			
Nabatieh	2			
Tebnine	1			
Jezzine	1			
Amyoun	1	1		
Batroun	1	1		
Halba	1		1	
Tripoli (Women)	1			
Tripoli (Men)	5			
Rachaya	1		1	
Baalbeck	1			
Zahlé (Men)	3			1
Zahlé (Women)	2			
Jeb Jennin	2		1	
Jbeil	1			
Baabda	2		3	1
Total	**26**	**2**	**6**	**2**

Source: ISF - September 2011

Table 52

Medical consultations in prisons (2009)

Medical consultations	Men	Women	TOTAL
Echography	18	18	**36**
XRay	47	20	**67**
MRI	7		**7**
Scanner	5		**5**
Endoscopy			
Lab tests (per patient)	121	40	**161**
Tissue examination (per patient)		7	**7**

Source: ISF- September 2011

[23] With the exception of Roumieh central prison.

Table 53

Distribution of diseases by type in prisons (2009)

Chronic diseases	Men	Women	TOTAL
Depression	75	90	**165**
Ulcer	70	52	**122**
Arterial hypertension	43	15	**58**
Asthma	42	11	**53**
Diabetes	27	6	**33**
Psychoses	20	3	**23**
Epilepsy	7	3	**10**
Hyperlipidemia	5	3	**8**
Thyroid problems	1	3	**4**
Schizophrenia		1	**1**
AIDS		1	**1**
Kidney failure	1		**1**
Alzheimer		1	**1**
Cancer	**Men**	**Women**	**TOTAL**
Urinary bladder cancer	1	1	**2**
Breast cancer		1	**1**
Infectious diseases	**Men**	**Women**	**TOTAL**
Diphtheria	60	15	**75**
Whooping cough	30		**30**
Measles	15	4	**19**
Mumps	7	5	**12**
Viral hepatitis B	3	3	**6**
Other diseases	**Men**	**Women**	**TOTAL**
Skin diseases	55	35	**90**
Syphilis	8	12	**20**
Tuberculose	1		**1**
Consumption of medication	**Men**	**Women**	**TOTAL**
	50	35	**85**
Dental care*	**Men**	**Women**	**TOTAL**
Follow-up on dental care	121	30	**151**
Extraction	90	5	**95**
Surgery	1		**1**

Source: ISF -September 2011
** Dental healthcare is carried out inside the prison.*

Table 54

Hospitals and healthcare centers having concluded contracts with the ISF (2009)

Hospital's name	Number of beds	Number of admissions
Dahr Al Bachek Hospital	13	Not available
Riyak public hospital	9	145
El Hayat Hospital	5	Not available

Source: ISF - September 2011

III.2 – HEALTH SYSTEM INDICATORS
III.2.1 – INFRASTRUCTURE

III.2.1.1 – Ambulatory care

The country has 950 dispensaries and primary healthcare centers. The former which operate with minimal human and physical capacities and offer limited services, will eventually be transformed into primary healthcare centers. Primary healthcare centers are in constant evolution and offer a multitude of services including prevention programs, reproductive health programs, family planning and prenatal care. They also develop training programs and offer logistic support, via a wide network, in buying and distributing essential medication. In spite of this, the public primary healthcare system remains weak. The number of individuals making use of these centers remains limited (estimated at a maximum of 20% of the population) and the quality of services varies by region and provider.

The MOPH has chosen 130 centers among all the primary healthcare centers operating in the country to establish a primary healthcare network distributed as follow:

Seventy-one percent (71%) of the 130 primary healthcare centers (PHC) of the national PHC network of the country belong to NGOs. Of the 130 PHCs, 21 are under a trial period, 14 belong to the public sector (10 belong to and are managed by the MOPH, and 4 belong to and are managed by the MOSA), 29 belong to the MOPH and are managed by NGOs or local authorities and 106 are managed and belong to NGOs and/or municipalities.

Table 55

Number and distribution of primary healthcare centers (PHC) by type of adherence (2010)

Qada	Number of PHC belonging to the network	Trial period	NGO	Municip/ NGO	MOSA/ municip	MOSA	MOPH/ NGO	MOPH	Municip	MOPH/ Municip	Pilot accreditation
Beirut	12	2	11	0	0	1	0	2	0	0	3
Baabda	9	2	8	1	0	0	0	0	1	1	3
Metn	6	2	3	4	0	0	0	1	0	0	1
Kesrouan	2	0	1	0	0	0	1	0	0	0	0
Jbeil	4	0	2	0	0	1	0	0	0	1	0
Chouf	3	1	1	0	0	0	1	1	0	1	1
Aley	5	0	2	0	0	0	0	1	0	2	1
Tripoli	8	1	7	1	0	0	0	1	0	0	3
Menyeh	4	1	2	0	0	0	0	1	1	0	0
Zghorta	4	0	3	0	0	1	0	0	0	0	1
Akkar	8	0	6	0	0	0	0	0	2	0	1
Batroun	0	1	0	0	0	0	0	0	0	1	0
Koura	3	0	1	1	0	0	0	0	0	1	0
Zahlé	6	1	4	0	0	0	0	1	0	2	1
Rashaya	2	1	2	0	0	0	0	0	0	0	0
Hermel	2	1	2	0	0	0	0	0	0	0	0
Baalbeck	11	0	8	0	0	0	0	0	0	3	1
West Bekaa	3	0	3	0	0	0	0	0	0	0	0
Saida	14	2	10	0	1	0	0	1	2	0	1
Jezzine	1	0	1	0	0	0	0	0	0	0	0
Tyr	6	2	5	0	0	0	0	1	0	0	1
Nabatieh	5	3	3	0	0	0	0	0	0	2	2
Marjeyoun	5	0	4	0	0	0	0	0	0	1	2
Hasbaya	2	0	0	0	0	0	1	0	0	1	0
Bint Jbeil	5	1	4	0	0	1	0	0	0	0	0
Total	**130**	**21**	**93**	**7**	**1**	**4**	**3**	**10**	**6**	**16**	**22**

Source: MOPH, 2011

Table 56

Distribution of consultations by type of specializations (2010) (n=1,177,548)

Specialization	%
General medicine	20.4
Paediatric	17.7
Dental and oral health	14.6
Reproductive health	6.7
Cardio-vascular diseases	4.7

Source: WHO EMRO, 2011, Health System Profile, Lebanon

Between 2002 and 2010, the utilization of primary healthcare centers has increased by four folds, with the number of visits rising from 211675 to 1063690. The number of new beneficiaries more than doubled (from 69335 to reach 160181) while the number of medication bought almost tripled (from 269414 in 2002 to 746296 in 2010). The number of chronic disease medication distributed also increased from 152190 in 2002 to 458455 in 2010.

III.2.1.2 – The hospital sector

The history of hospitals in Lebanon dates back to more than one century. Today, after the development of the 20th century, the hospital network includes 165 public and private institutions distributed on all the Lebanese territory and covering all medical and surgical specializations.

The public hospitals were until recently under-equipped, offered bad quality services and lacked qualified professionals. These hospitals provided free general care, were managed like administrative units of the MOPH and did not benefit from financial autonomy. Their management was centralized and the budget allocation was based on estimations rather than studies of actual need.

In 1997, the Lebanese government tried to address these problems by several means namely: rehabilitation, construction of new public hospitals and the promulgation of the law of autonomy of public hospitals (law 544 dated July 24, 1996). The aim of this law was to grant public hospitals more flexibility by allowing them to operate as semi-autonomous entities accountable to a Board of Administration that is appointed by the Council of Ministers. They are financed for services rendered, like private hospitals. The law of autonomy led to improvements in efficiency in these hospitals by encouraging competition between the private and public sectors, and thus improving the quality of services rendered. This resulted in an improved image of public hospitals.

Today, there are 28 public hospitals (one of which has a university hospital status) representing a total of 2550 beds. This is equivalent to 16.6% of the total capacity of private and public functional beds (MOPH, 2011). Most public hospitals have less than 100 beds. All the hospitals, except one, are autonomous hospitals.

The private hospital sector is the main component and backbone of the Lebanese healthcare system. Highly developed both in number and capacity, it includes 135 long and short stay hospitals, with a total of 12648 beds (Private Hospitals Syndicate, 2009) which account for 82% of the country's total capacity. They are mainly general multidisciplinary hospitals with 80 to 400 beds per hospital. Twelve of these hospitals have the status of university hospitals (MOPH, 2011) and the occupation rate does not generally exceed 55% (Ammar, 2003).

The number of admissions in private hospitals is greater than that in public hospitals, except in the Beirut and Nabatiyeh regions.

Table 57

Distribution of hospitals according to type and number of beds (2011)

Number of beds	Number of private hospitals short and long stay	Number of private hospitals long stay
< 50 beds	49	5
50-100 beds	38	7
101-200	25	1
> 200	4	6

Source: Syndicate of Private Hospitals, 2011.

Table 58

Distribution of public, private and military hospitals by region and number of beds (2011)

Region	Private hospitals*				Public hospitals**		Military hospital***	
	Short and average stay		Long stay		Short and average stay		Short stay	24h stay
	Number of hospitals	Number of beds	Number of hospitals	Number of beds	Number of hospitals	Number of beds	Number of beds	
Beirut	17	1,857	2	754	2	595	50	94
Metn	28	2,359	10	1,897	6	430		
Kesrouan/Jbeil	8	635	1	30				
Chouf/Aley	9	382	3	400				
Bekaa	19	1,231	0	0	5	470		
North	19	1,397	2	175	7	455		
South	16	1,331	1	200	3	235		
Nabatieh					5	365		
TOTAL	**116**	**9,192**	**19**	**3,456**	**28**	**2,550**	**50**	**94**

*Source: * Syndicate of Private Hospitals, 2011.*
*** MOPH, 2011.*
**** Ministry of Defence, 2010.*

Table 59

List of private and public university hospitals (2011)

Private Hospitals	Public Hospitals
1. AUBMC 2. HDF 3. St. Georges des Grecs Orthodoxes 4. Makassed 5. LAU-Rizk 6. ND Secours – Jbeil 7. Sacré-Cœur 8. Al Zahraa 9. Hammoud 10. Sahel General 11. Dar el Amal 12. Ain Wa Zein	1. Beirut Governmental Hariri University Hospital

Source: MOPH, 2011

Table 60

Number of hospitals having contracts with the MOPH by type and Mohafazat (2010)

Mohafazat	Public	Private
Beirut	2	11
Mount Lebanon	5	56
North	6	26
Bekaa	4	23
South	2	17
Nabatieh	5	5
TOTAL	24	138

Source: MOPH, Statistics bulletin, 2010

Table 61

Number of admissions by type of hospital and geographic location (2010)

Mohafazat	Public	Private
Beirut	16,682	7,356
Mount Lebanon	9,749	41,921
North	12,925	37,974
Bekaa	9,900	37,840
South	4,652	28,185
Nabatieh	13,108	9,237
Total	**67,016**	**162,513**

Source: MOPH, Statistics bulletin, 2010

III.2.1.3 – Technology and heavy equipment in hospitals

Most private hospitals are highly equipped and evolved in a free-market and with unregulated development which results in a considerable number of high-tech equipment in all hospitals, putting Lebanon, in terms of technology, at the same level as high income countries. Consequently, the main characteristic of the health field remains that of a chaotic sector with a surplus of beds, an over-investment in equipment and an abundance (almost 75%) of hospitals with less than 100 beds. The main reason for this situation is essentially the absence of control of the MOPH that encouraged the opportunistic tendencies of consumers and suppliers.

Table 62

Available technology (2010)

	Number of units	Units per million
Open heart surgery departments	22	5.6
Cardiac catheterization laboratories	32	8.1
Dialysis centers	52	13.1
Organ transplant centers	5	1.3
Bone marrow graft units	3	0.8
Specialized centers for burns	1	0.7
In vitro fertilization centers	12	3.1
Mammography	74	18.6
Radiology	225	56.8
Bone densitometry	32	8.1
Endoscopy	237	59.8
Radiotherapy	8	2.1
Lithotripsy	37	8.0
CT Scan	96	26.9
PET Scan	6	0.8
MRI	31	9.8

Source: MOPH, 2010

Table 63

Distribution of technology by region (2010)

	Beirut	Mount Lebanon	Bekaa	North	South	Nabatieh	Total
MRI	7	8	4	5	6	1	**31**
Echography (Medical ultrasonography)	49	54	23	32	24	7	**189**
Tomodensitometry (CT scan)	12	36	15	16	13	4	**96**
PET scan	2	1	1	1	0	1	**6**
Radiology	72	75	27	36	35	10	**225**
Mammography	10	28	7	16	10	3	**74**
Endoscopy	49	65	31	44	40	8	**237**
Bone densitometry	10	11	3	4	4	0	**32**
Lithotripsy	6	13	6	8	4	0	**37**
Hemodialysis	8	19	7	11	6	1	**52**
Open heart surgery							**22**
Cardiac catherization							**32**
Organ transplant centers							**5**
Bone marrow graft units							**3**
In vitro fertilization centers							**12**
Radiotherapy							**8**

Source: MOPH, 2010

III.2.1.4 – Other health infrastructures

The other health infrastructures include pharmacies (within hospitals and private) medical laboratories (within hospitals and private), blood banks, as well as dialysis, physiotherapy and radiology centers.

III.2.1. 4.1 – Pharmacies and laboratories

In 2011, there were 2536 (91.3% private and 8.7% within hospitals) pharmacies in Lebanon. The highest percentage of private pharmacies was in Mount Lebanon (44.4%) and the lowest in Nabatiyeh (6.3%). Hospital pharmacies were mostly located in Beirut (40.3%), with only 3.6% in Nabatiyeh.

Table 64

Geographic distribution of pharmacies and labs according to Mohafazats (2011)

Region	Pharmacy*		Laboratory**	
	Hospital pharmacies	Private pharmacies	Hospital labs	Private labs
Beirut	89	223	20	41
Mount Lebanon	57	1,027	38	67
North	24	349	22	29
South	23	243	23	31
Nabatieh	8	145	--	--
Bekaa	20	328	18	13
Total	**221**	**2,315**	**121**	**181**

*Source: * Order of Pharmacists, 2011.*
*** Syndicate of Biologists, May 2011.*

III.2.1.4.2 – Dialysis, physiotherapy and radiology centers

In 2011, the largest concentration of dialysis (23) physiotherapy (171) and radiology (78) centers was found in Mount Lebanon, and the lowest in Nabatiyeh.

Table 65

Geographic distribution of dialysis, physiotherapy and radiology centers (2011)

Region	Dialysis center	Physiotherapy center	Radiology center
Beirut	8	59	22
Bekaa	9	26	24
North	12	79	35
Mount Lebanon	23	171	78
South	7	34	20
Nabatieh	3	12	6
Total	**62**	**381**	**185**

Source: MOPH, 2011

III.2.1.4.3 – Licenses granted by the MOPH to open new health infrastructures

The opening of any health infrastructure requires the authorization of the MOPH. In 2010, 34% of licenses were granted for opening healthcare centers and 0.69% for aesthetic centers. To date, home care companies were not subjected to this regulation.

Table 66

Number of licenses granted by the MOPH for the opening of health infrastructures (2010)

	Beirut	Mount Lebanon	North	South	Nabatieh	Bekaa	Total	Total per 10,000 population
Healthcare centers	58	265	215	91	76	175	**880**	**2.22**
Physiotherapy centers	70	200	98	45	15	28	**456**	**1.15**
Dental laboratories	42	166	37	31	11	30	**328**	**0.83**
General laboratories	48	113	50	33	16	40	**300**	**0.76**
Radiology centers	34	111	45	25	11	30	**256**	**0.65**
Private hospitals	21	67	35	24	10	36	**193**	**0.49**
Blood banks	6	19	7	5	1	4	**42**	**0.10**
Prosthesis centers	6	22	6	6	--	2	**42**	**0.11**
Pathology laboratories	6	13	7	8	1	5	**40**	**0.10**
Public hospitals	2	6	7	4	6	5	**30**	**0.08**
Aesthetic centers	3	13	1	--	--	1	**18**	**0.05**
Total	**296**	**995**	**508**	**272**	**147**	**356**	**2,585**	**6.5**
Total per 10,000 population	**7.8**	**6.6**	**6.2**	**6.1**	**5.3**	**6.6**	**2,585**	**6.5**

Source: WHO EMRO, 2011, Health system profile-Lebanon.

III.2.1.4.4 – Blood banks

In 2011, the country had 32 blood banks, 12 of which were under the responsibility of the Lebanese Red Cross (LRC), whereas 1 belonged to a public hospital, and 19 to private hospitals. A local NGO, "Donner Sang Compter" (DSC), was established in 2009 to ensure the follow up of requests through a database of potential blood donors.

Table 67

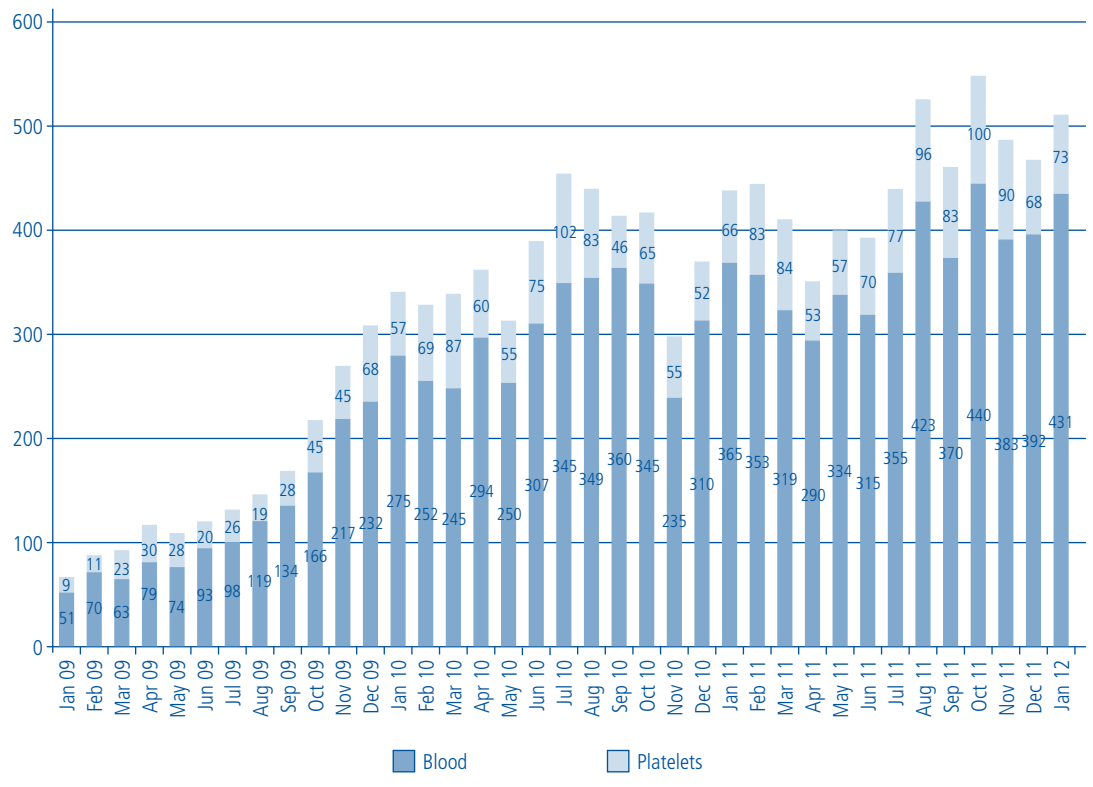
Distribution of blood banks by type and region

	Lebanese Red Cross*	Public hospitals**	Private hospitals**	TOTAL
Beirut	2	1	7	**10**
Mount Lebanon	5		2	**7**
Bekaa	1		3	**4**
South Lebanon	2		3	**5**
North Lebanon	2		4	**6**
TOTAL	**12**	**1**	**19**	**32**

*Source: * Lebanese Red Cross, 2012.*
*** WHO, 2011.*

Between January 2009 and January 2012, the NGO DSC was able to fulfill 431 requests for blood and 73 for platelets.

FIGURE 9 **Blood and platelet demands fulfilled by « Donner Sang Compter » (January 2009 and January 2012)**



Source: Donner Sang compter, newsletter janvier 2012.

III.2.1.4.5 – Emergency transportation system and first aid centers

The Lebanese Red Cross had 43 first aid centers spread out across the country and 264 ambulances.

a. Missions during conflicts

During the war of 2006, 10768 missions were carried out by the Lebanese Red Cross volunteers, with 87% of these missions for medical emergencies. In 2007, 39% of the missions were medical emergencies, 29% war emergencies and 24% dealt with evacuations of civilians.

Table 68

Missions carried out by the LRC during wars (2006-2007)

	July 2006 war	Nahr el Bared conflict (May 2007 to September 2007)
War emergency	993	1,124
Medical emergency	9,373	1,520
Transport of bodies	402	149
Evacuations of civilians		1,022
Convoy with International CR and PRCS		51
Total	**10,768**	**3,866**

Source: LRC, 2010.

Table 69

Missions apart from conflicts carried out by the LRC (2009-2010)

Missions	2009	2010
Emergency and transport	75,673	65,109
First aid at home	9,399	7,475
First aid at the center	105,713	85,490
Other	6,098	4,833
Total	**196,883**	**162,907**

Source: LRC, 2010.

III.2.1.4.6 – Organ donation

The National Organization for Organ and Tissue Donation and Transplantation (NOOTDL-Lb) was established in 1999 by ministerial decree 1/509 (July 1999) as a non-profitable organization affiliated to the MOPH. The president of the NOOTDT-Lb is the Minister of Health and his rapporteur is the President of the Order of Physicians. NOOTDL-Lb is now recognized as the official organization for human organ and tissue donation in Lebanon. Its mission is to establish a Lebanese model for human organ and tissue donation for transplantation purposes. The model is based on the training and presence of coordinators, able to detect and manage any potential donor, in most hospitals in Lebanon. During the first year of the project (2010) 15 hospitals participated; this number increased to 23 hospitals in 2011. The consent rate of organ donation after brain death increased by 2% (0.5 per million inhabitants) in 2010 and by 10% in 2011 (2.5 per million inhabitants), with a similar increase for donors after cardiac arrest: 16.4% (7 per million inhabitants) in 2010 and 22% (5 per million inhabitants) in 2011. Before 2010, the rate of donations varied between 0.5 and 2.5 per million inhabitants with zero donors in 2005, 2007 and 2009.

Table 70

Organ donation in Lebanon by reason of death (2010-2011)

Year	2010	2011
Total deaths	**1,501**	**1,684**
Total potential donor by cerebral death	**82**	**67**
Brain death diagnosed	54 (65%)	48 (71.6%)
Medical contra-indications	39 (47.5%)	20 (30%)
Families approached	34	32
Family consent	2 (5%)	10* (32%)
Organ and corneas donors	2	5 organs and tissues 3 organs only 2 refused by surgeons
Percentage / million inhabitants	0.5	2.5
Total cardiac arrests	**1,419**	**1,617**
Medical contra-indications	1,096 (77.2%)	1,343 (83%)
Judicial contra-indications	64	59
Families approached	182	91
Families not approached	77	121
Family consent	30 (16.4%)	20 (22%)
Corneas donors	28**	18***
Percentage / million inhabitants	7	4.5

Source: www.nootdt.org, 2011
** A donor was refused for medical reasons.*
*** Two corneas were lost because of logistic problems*
**** Four corneas couldn't be used.*

Table 71

Statistics on organ donation in Lebanon (May 1990 & December 2010)

NGO activities			
Year	**Number of donors referred**	**Number of real donors**	**Per million inhabitants**
1990-1999	151	33	0.82
After the creation of NOOTDT and the TPM courses under the supervision of Spanish experts (DTI)			
2000	10	4	1
2001	24	4	1
2002	17	8	2
2003	28	10	2.5
2004	20	3	0.75
2005	0	0	0
2006	14	5	1.25
2007	0	0	0
2008	3	2	0.50
2009	0	0	0

Source: www.nootdt.org, 2011.

III.2.1.4.7 – Home healthcare

In 2011, there were 4 home healthcare companies in Lebanon. To date, there were no laws governing the opening of home healthcare companies in Lebanon and not enough information concerning the activities of this sector. A list of 14 companies has been gathered:

- Network services (NSN)
- Doctors at home
- Home care
- Private care
- Patient health care
- Professional care
- Enaya at home
- Life care
- Home visiting doctors
- Adcome invest
- Doctors on call
- Khaliji Lebanese Nursing
- Patient care

III.2.1.4.8 – Insurance companies

The number of active insurance companies decreased by 15% from 2001 (61 companies) to 2010 (52 companies).

The total gross premiums on the Lebanese market were estimated at 1.2 billion dollars in 2010. This represented an increase of 12.5% from 2009. Since 2001, the premium yearly turnover was multiplied by 2.8, the profits by 4.5, assets by 3.9, equities by 3.3 and reserves by 6.3. The fire, accidents and miscellaneous risks branch has dominated the market since 1981 with a market share estimated at 70%. The progression of these branches in 2010 is of 12%. The life insurance branch represented 30% of the overall turnover, with a progression of 15% in 2010.

Table 72

List of private insurance companies in Lebanon (2010)

	Name	Life	Accident	Fire	Credit	Agriculture	Marine
1	Adonis Insurance & Reinsurance Co. SAL (Adir)	Yes	Yes	Yes	No	No	Yes
2	Al Ittihad Al Watani General Insurance Company For The Near–East SAL L'Union Nationale	Yes	Yes	Yes	Yes	No	Yes
3	Al Nisr Insurance Company SAL	No	Yes	Yes	No	No	Yes
4	Amana Insurance Co SAL	Yes	Yes	Yes	Yes	No	Yes
5	Arab Reinsurance Company SAL (Inter–Arab Company)	Yes	Yes	Yes	No	No	Yes
6	Arope Insurance SAL	Yes	Yes	Yes	Yes	No	Yes
7	Assurex SAL	Yes	Yes	Yes	No	Yes	Yes
8	Bancassurance SAL	Yes	No	No	No	No	No
9	Berytus Insurance & Reinsurance Co. SAL	Yes	Yes	Yes	No	No	Yes
10	Byblos Insurance Company SAL	No	Yes	Yes	No	No	Yes
11	Caisse Centrale de Réassurance (CCR)						
12	Confidence Insurance Group SAL (CIG)	Yes	Yes	Yes	No	No	Yes
13	Commercial Insurance Co. (Lebanon) SAL	Yes	Yes	Yes	No	No	Yes
14	Continental Trust Insurance & Reinsurance Co. SAL	No	Yes	Yes	No	No	Yes
15	Fajr Al Gulf Insurance & Reinsurance Co. SAL	Yes	Yes	Yes	No	No	Yes
16	Gen Re	No	No	No	No	No	No

Table 72

List of private insurance companies in Lebanon (2010)

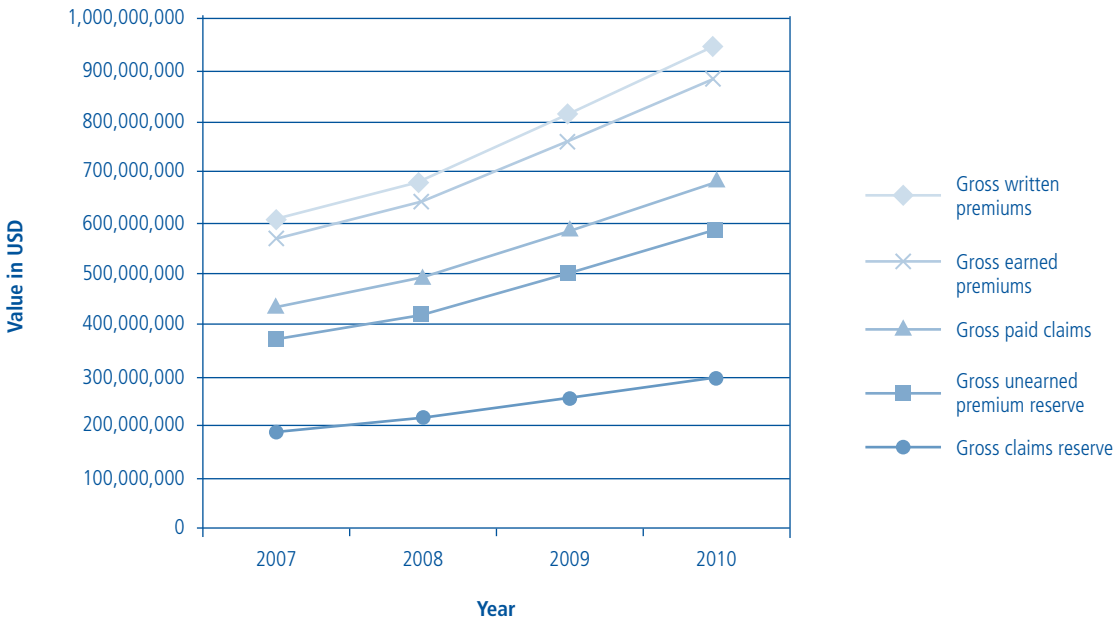
	Name	Life	Accident	Fire	Credit	Agriculture	Marine
17	La Phénicienne Compagnie d'Assurances SAL	Yes	Yes	Yes	No	No	Yes
18	Leaders Insurance & Reinsurance SAL	No	Yes	Yes	No	No	Yes
19	Sécurité Assurance SAL	Yes	Yes	Yes	No	No	Yes
20	Liberty Insurance SAL	No	Yes	Yes	No	No	Yes
21	Middle East Assurance & Reinsurance Co. SAL (MEARCO)	No	Yes	Yes	No	No	Yes
22	Allianz SNA SAL	Yes	Yes	Yes	No	No	Yes
23	Sogécap Liban SAL	Yes	No	No	No	No	No
24	United Commercial Assurance SAL (UCA)	Yes	Yes	Yes	No	No	Yes
25	United Assurance Co. SAL	No	Yes	Yes	No	No	Yes
26	Al–Bahriah Insurance & Reinsurance SAL	No	No	Yes	No	No	Yes
27	CHARTIS Lebanon SAL	No	Yes	Yes	No	No	Yes
28	Al-Mashrek Insurance & Reinsurance SAL	Yes	Yes	Yes	Yes	No	Yes
29	American Life Insurance Company (ALICO)	Yes	Yes	No	No	No	No
30	Al Aman Takaful Insurance SAL (ATI)	Yes	Yes	Yes	No	No	Yes
31	Burgan Insurance Company SAL	Yes	Yes	Yes	No	No	Yes
32	Arabia Insurance Company SAL	Yes	Yes	Yes	Yes	Yes	Yes
33	Assalam Insurance & Reinsurance SAL	No	Yes	Yes	No	No	Yes
34	Axa Middle East SAL	Yes	Yes	Yes	No	No	Yes
35	Bankers Assurance SAL	Yes	Yes	Yes	No	No	Yes
36	BEST Re. (Middle East & Gulf Regional Office)	Yes	Yes	Yes	No	No	Yes
37	The Capital Insurance & Reinsurance CO. SAL	Yes	Yes	Yes	No	No	Yes
38	Zurich Insurance Middle East SAL	Yes	Yes	Yes	Yes	Yes	Yes
39	Crédit Libanais d'Assurances and de Réassurances SAL (CLA)	Yes	Yes	Yes	No	No	Yes
40	Compass Insurance Company SAL	Yes	Yes	Yes	No	No	Yes
41	Cumberland Insurance and Reinsurance Co. SAL	No	Yes	Yes	No	No	Yes
42	Fidelity Assurance & Reinsurance Company SAL	Yes	Yes	Yes	No	No	Yes
43	L'Horizon Société d›Assurances and de Réassurances SAL	Yes	Yes	Yes	No	No	Yes
44	The Lebanese Credit Insurer SAL (L.C.I)	No	No	No	Yes	No	No
45	LIA Insurance SAL	Yes	Yes	Yes	No	No	Yes
46	Libano-Suisse SAL, Insurance Company	Yes	Yes	Yes	No	No	Yes
47	MEDGULF, the Mediterranean & Gulf Insurance & Reinsurance Co. SAL	Yes	Yes	Yes	Yes	No	Yes
48	North Assurance SAL	Yes	Yes	Yes	Yes	No	Yes
49	The Overseas Insurance & Reinsurance CO. SAL	No	Yes	Yes	No	No	Yes
50	Trust Insurance CO. SAL	Yes	Yes	Yes	Yes	No	Yes
51	Union Franco Arabe d›Assurances and de Réassurances SAL (UFA)	Yes	Yes	Yes	Yes	No	Yes
52	Victoire SAL	Yes	Yes	Yes	No	No	Yes

Source: Ministry of Economy and Trade, 2010, Annual report

Between 2007 and 2010, the medical insurance branch evolved by 16.1% per year for all categories, except for the claims paid which increased by 13.7% per year for the same period.

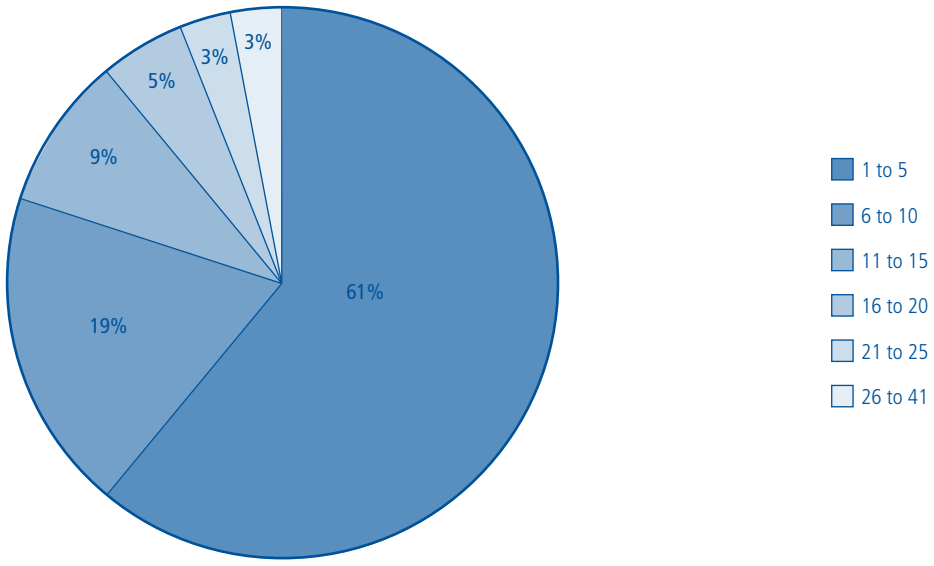
The market is heavily concentrated as the first 10 companies capture 80% of the market (the first top 5 companies represent 61% of the production).

FIGURE 10 **Evolution of the medical insurance branch (2007-2010)**



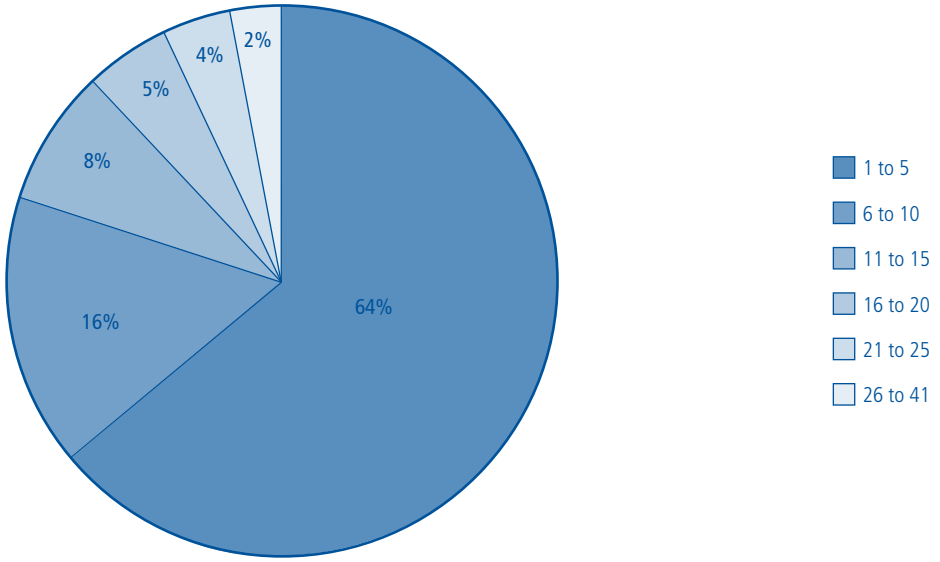
Ministry of Economy and Trade, 2010, Annual report

FIGURE 11 **Distribution of premiums in the health field according to the classification of insurance companies (2010)**



Ministry of Economy and Trade, 2010, Annual report

FIGURE 12 **Distribution of disasters in the health field according to the classification of insurance companies (2010)**



Source: Ministry of Economy and Trade, 2010, Annual report

III.2.1.4.9 – Authorized nurseries by the MOPH

In 2011, the total number of nurseries authorized by the MOPH was 196 with the highest concentration in Mount Lebanon (63.7%).

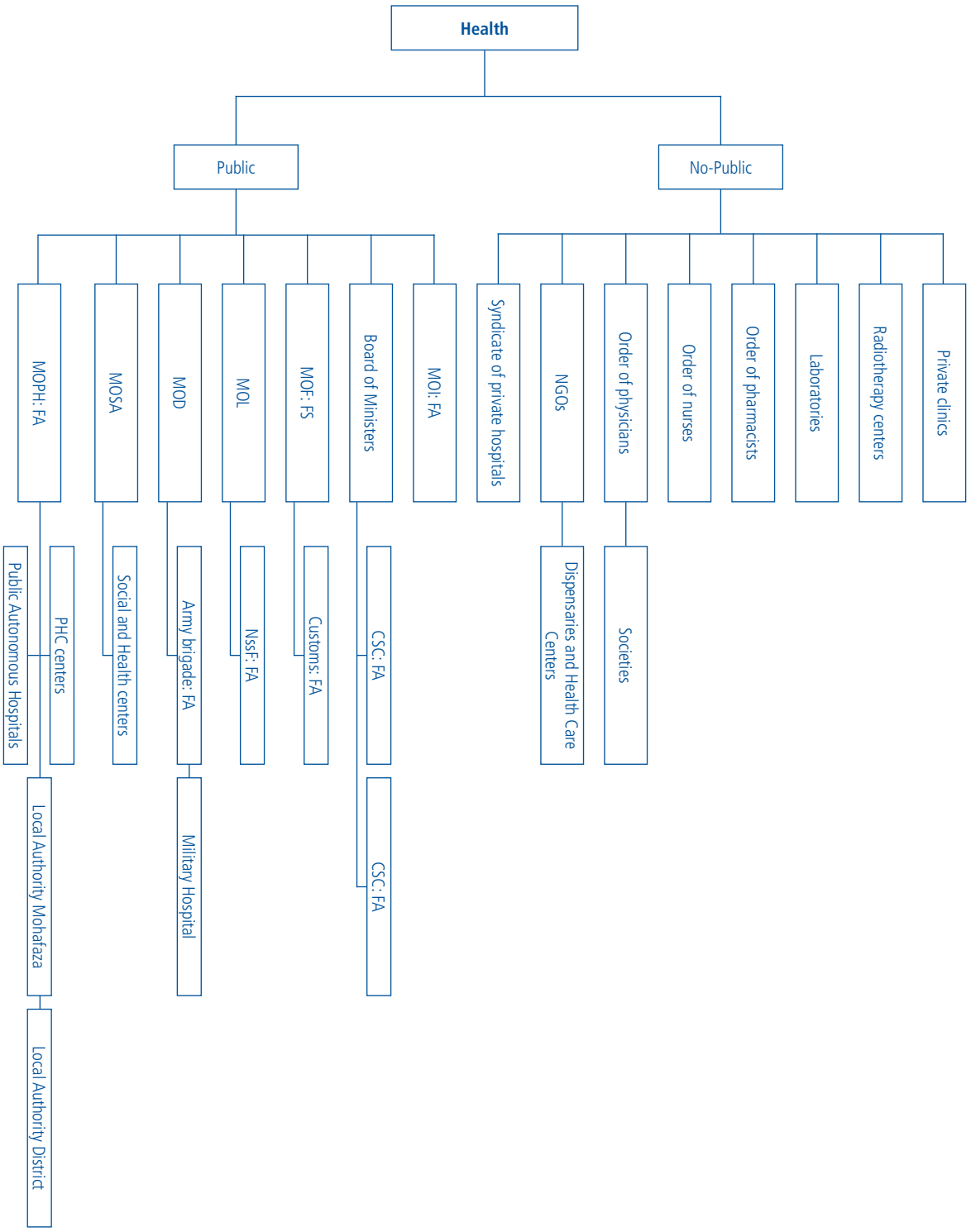
Table 73

Number of nurseries by region (2011)

Region	n
Beirut	26
Mount Lebanon	125
North	22
Bekaa	13
South	10
Total	**196**

Source: www.moph.gov.lb.

Figure 13 Organizational structure of health system



Source: WHO-EMRO, 2011, Health system profile - Lebanon

III.2.2 – HUMAN RESOURCES

Health professionals today include physicians, pharmacists, dentists, nurses, as well as other paramedical professionals such as physiotherapists, psychologists, speech therapists, psychomotor therapists, and others. These professionals are educated and trained in Lebanon or abroad (France, Europe, Latin America, Eastern Europe, North America).

Health professionals are granted a working permit from the Ministry of Public Health and must register in their Order or professional Syndicate to obtain the authorization to work in Lebanon. In general, physicians and dentists are rarely employees in the institutions in which they work, whereas the rest of the professionals are.

III.2.2.1 – Orders and Syndicates

III.2.2.1.1 – Physicians

In 2010, around 11782 physicians 70% of which were specialists were registered in the two Orders of Physicians in the country (Beirut and North Lebanon) (Order of Physicians in Beirut and North Lebanon, 2010). Approximately, 10-15% of registered physicians did not practice in Lebanon. The rate of doctors in Lebanon was on the average 2 per 1000 inhabitants but was unevenly distributed among regions, with a large concentration in the capital. The rate in Beirut was the highest in the region (Ducruet, 2009).

III.2.2.1.2 – Pharmacists

There were 5457 pharmacists (Order of Pharmacists in Lebanon, 2009).

III.2.2.1.3 – Dentists

Dentists, like physicians, were in surplus in Lebanon. In 2008, they reached 5116, with the highest concentration in Beirut and Mount Lebanon. Only 3795 dentists were practicing at the time (Order of Dentists in Beirut and the North, 2008).

III.2.2.1.4 – Nurses

The number of nurses registered at the Order of Nurses in Lebanon as of April 30, 2011 was 9460. Nearly 72% were active. Among the active nurse population, 81% are women and 19% men. Approximately 68.51% were between 26 and 40 years old, and 46.41% had a university degree. Almost 71.92% worked in Lebanon, whereas 10.68% did not work or had retired. Five thousand nine hundred and sixty-five nurses (87.6%) worked in hospitals, 80.3% in private and 19.70% in public hospitals. The ratio of qualified nurses/population is 3/10000. This ratio is one of the lowest in the world. The nurse/physician ratio is 1/2.5; this ratio is generally reversed in most countries (Order of Nurses in Lebanon, 2011).

III.2.2.1.5 – Physiotherapists

The number of physiotherapists registered at the Order as of April 2010 was of 1431, among which 780 are women. The majority (731) live in the Mount Lebanon region (Order of Physiotherapists in Lebanon, 2010).

III.2.2.1.6 – Other health professionals

In 2009, the number of biologists was 249 with 103 working in hospital labs and 146 in private laboratories.

There are 40 drug importers and druggists with a majority (36) located in Beirut, whereas there are none in the Bekaa, Nabatiyeh, North and South of Lebanon.

Moreover, the country has 291 opticians, 28 orthoprothesists, 48 laboratory and 3 radiology technicians registered at the MOPH.

In terms of first aid, the Lebanese Red Cross has 2700 volunteers distributed in 80 night teams and 30 to 35 day teams (LRC, 2011).

Table 74

Statistics of professional Orders

	Physicians		Dentists		Pharmacists*****	Nurses******	Physiotherapists*******
	North*	Beirut**	North***	Beirut****			
Total registered	1791	9991	679	4645	5457	9,460	1,431
Non-practicing	447				1,290	1,010	
Practicing	1,344		571		4,167	6,804	
Men	1,113	7,916			2,279	1,807	651
Women	231	2,075			3,178	7,653	780
Region							
Beirut	31	2,476		1,215		2,522	268
Bekaa	6	874		365		672	49
Mount Lebanon	6	4,980		2,409		1,789	731
North Lebanon	1,301	217		23		969	239
South Lebanon		985		403		479	144
Nabatieh		459		86		373	
No fixed place				144			

Physiotherapists are distributed according to their residence and others according to their working place.

*Source: * Order of Physicians in the North, 2009.*
*** Order of Physicians in Beirut, 2009.*
**** Order of Dentists of the North, 2009.*
***** Order of Dentists in Beirut, 2009.*
****** Order of Pharmacists, 2009.*
******* Order of Nurses in Lebanon, April 2011.*
******** Order of Physiotherapists, April 2010.*

Table 75

Statistics of professional syndicates (2009)

	Biologists*		Drug importers**	Opticians***	Ortho-prosthesists****	Laboratories technicians*****	Electro-radiology technicians******
	Hospital laboratories	Private laboratories					
Total registered	103	146	40	291	28	48	3
Practicing			40	291	28	28	3
Men					28	11	2
Women					0	37	1
Region							
Beirut	14	34	36		7	9	
Bekaa	16	10	0		3	7	
Mount Lebanon	35	60	4		7	15	
North Lebanon	19	23	0		6	9	
South Lebanon	19	19	0		5	7	
Nabatieh			0		0	1	

*Source: * Syndicate of Biologists, 2009.*
*** Syndicate of drug importers and druggists, 2009.*
**** Syndicate of Opticians, 2009.*
***** Syndicate of Orthoprosthesists, 2009.*
****** Syndicate of laboratory technicians, 2009.*
******* Syndicate of radiology technicians, 2009.*

III.2.2.2 – Number of health professional with university degrees for the academic year 2007-2008

Health professionals graduate from 19 universities offering 14 health related specializations in Lebanon. These universities are:

1. Saint-Joseph University - Beirut (USJ)
2. American University of Beirut (AUB)
3. University of Balamand (UOB)
4. Beirut Arab University (BAU)
5. Lebanese University (UL)
6. Notre Dame University (NDU)
7. Lebanese American University (LAU)
8. Holy Spirit University of Kaslik (USEK)
9. Makassed University (MU)
10. Lebanese International University (LIU)
11. Islamic University of Lebanon (IUL)
12. Antonin University (UPA)
13. Jinane University (JU)
14. Lebanese German University (LGU)
15. Global University (GU)
16. Holy Family University
17. Manar University of Tripoli (MUT)
18. American University of Science and Technology (AUST)
19. American University of Technology (AUT)

During the academic year 2007-2008, 1323 BA degrees were awarded. We notice that the highest rate of degrees was in nursing (411) followed by pharmacy (201), nutrition (186) and physio-therapy (150). With respect to Masters Degrees, the highest rate was also found in nursing (52) followed by public health (33). Furthermore, 151 medical degrees were awarded.

Table 76

Distribution of degrees in health related fields (2007-2008)

Program	BA	Master	Ph.D.	UD
Nursing	411	52		61
Pharmacy*	201	7		26
Medicine	42		151	36
Nutrition	186	17		
Biomedical sciences	150			
Physiotherapy	71	14		
Dental medicine	74	5	6	
Midwifery**	53	2		1
Speech therapists	19			
Public health	20	33		
Medico-social worker	51			
Medical analysis	33	2		
Psychomotor therapy	6	1		
Ergotherapy	6			

Source: MEHE, 2008, University guide in Lebanon.
** Practice Ph.D. replaces the BA in the pharmacy program in USJ.*
*** The new ECTS program replaces the BA in the midwifery program at USJ.*

III.2.2.3 – New working licenses granted by the MOPH for medical and paramedical professionals

The total number of working licenses granted by the MOPH for 2008 was 2638. Among these, 59.32% were for nurses (BA & BT), 15.08% for physicians, 9.47% for biologists and 7.47% for dentists.

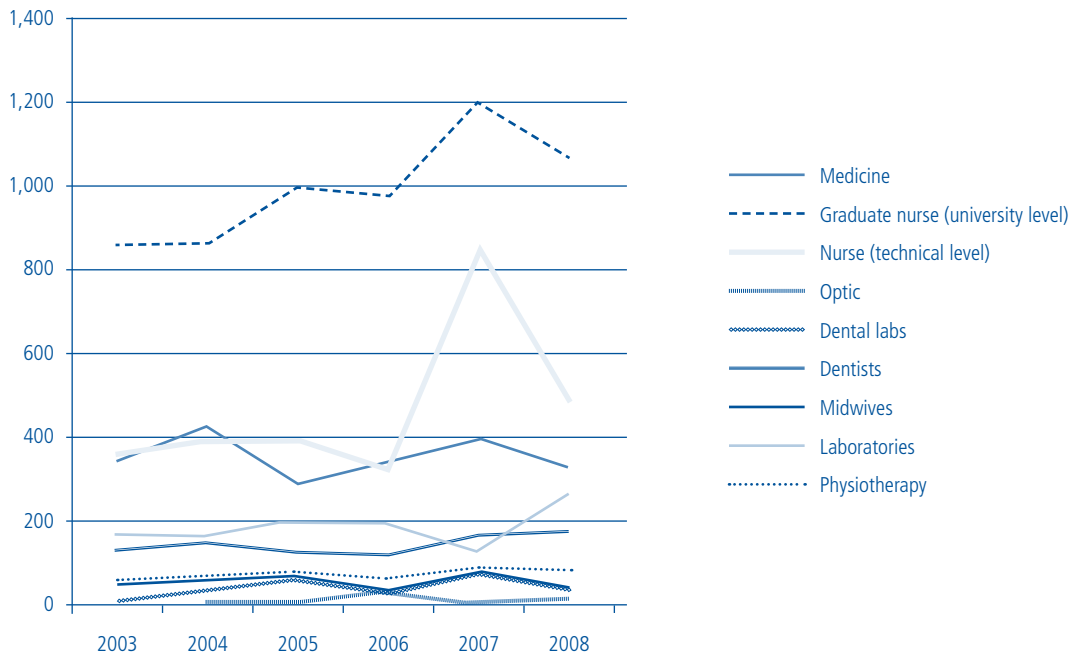
Table 77

Distribution of practice licenses for health professionals (2008)

Profession	n
Graduate nurse (university level)	1,098
Nurse (technical level)	467
General medicine	398
Biologists	250
Dental medicine	197
Physiotherapy	73
Auxiliary nurse (study + training)	56
Midwife	43
Dental labs	42
Optic	14

Source: MOPH, 2008.

FIGURE 14 **Evolution of working licenses in medical and paramedical professions (2003-2008)**



Source: MOPH, 2008.

III.2.2.4 – Health education institutions

According to the official list of universities and institutes of the Ministry of Education and Higher Education, Lebanon counts 19 universities and 2 institutes awarding diplomas in the health sector. The terminologies used in the diploma names for the same specialization differ from one university to another; the situation is similar regarding affiliation to faculties.

Table 78

Names[24] of University degrees in the health field (2011)

Name of Institution	Faculty	Degree
III.2.2.4.1 – University		
American University of Beirut (AUB)	Health Sciences	BS: Safety of the environment, medical laboratory technique Masters MS, MPH: Health of the environment, health and hospital management, epidemiology and vital statistics, population studies.
	Medicine	Program of medical education: Four years, including summer to get a doctorate in medicine
		Program specialization in medicine
	Nursing	Nursing: Bachelor of Science in Nursing BSN 3 years
	Agriculture	B.Sc. nutrition and food regulation,
		Masters food technology, nutrition, agricultural development.
University of Balamand	Health sciences	Nursing, laboratory technology, public health and science development: BA 3 years
	Medicine	Medicine
Beirut Arab University	College of Pharmacy	Pharmaceutical Sciences.: BA in 5 years, Diploma; Master, PhD
	Faculty of Medicine	Medicine and surgery. BA in 6 years; Diploma, Master; PhD
	College of Dentistry	Dentistry: BA in 5 years, Diploma, Master, PhD
	Higher Institute of Nursing	Nursing. Bachelor of 4 years
Holy Spirit University of Kaslik (USEK)	Faculty of Medicine	General Medicine 7 years
	Higher Institute of Nursing Science	Masters in nursing sciences 2 years
Saint Joseph University (USJ)	Faculty of Medicine	Medicine (7 years); University diploma (DU) specialization in surgery, physiotherapy (BS and masters), Laboratory (BS), Speech therapy (BS and masters), psychomotor therapy (BS and masters)
	Faculty of Pharmacy	Doctorat d'exercice; Ph.D ; nutrition
	Faculty of dental medicine	Doctorat d'exercice; spécialisation
	Faculty of Nursing	BS (3 years), Masters, DU
	Ecole de Sages-femmes	Diploma
	IGSPS	MBAIP-Health option; DU
Lebanese American Univesity (LAU)	College of Pharmacy	Bachelor (5 years) and Ph.D
Lebanese International University (LIU)	College of Pharmacy	Bachelor (5 years) and Ph.D
	Faculty of Agriculture	BA nutrition and meal planning
Islamic University of Lebanon (IUL)	Faculty of nursing sciences	Bachelor (3 years)

[24] Denomination of institutions, faculties and degrees are submitted in the language they appear on the Ministry's site.

Table 78

Names of University degrees in the health field (2011)

Name of Institution	Faculty	Degree
Notre Dame University (NDU)	Faculty of Nursing	Bachelor (3 years)
Makassed University of Beirut (MU)	College of nursing	Nursing, midwifery and radiology (3 years)
Antonin University (UPA)	College of Public Health	Institute of nursing science (3 years) Institute of physical therapy (4 years)
Jinan University (JU)	School of Public health	Nursing Sciences, diagnosis, treatment and supervision of social health. (BSc. 3 years and master 1 an)
Global University (GU)	School of Public health	Medical care, nursing, medical tests (lab), physical therapy, off the legal, nutrition Prosthetics: (Bachelor of 3-4 years)
Manar University of Tripoli (MUT)	School of Public health	Nursing, Audiology (BA 3 years)
American University of Science and Technology (AUST)	College of health sciences	Medical laboratory technology, clinical laboratory science, optics and optometry (BSc 3 years)
Lebanese German University (LGU)	School of public health	Bachelor›s degree (3 years) nursing care, nutritional science, health and medical technology, medical laboratory. Bachelor's degree in Physical Therapy (4 years) and Master of Physical Therapy (2 years)
Holy Family University	Not available	Not available
American University of Technology (AUT)	Faculty of Applied sciences	Nutrition (Bachelor, 3 years) ; Environmental health (Bachelor, 3 years)
Lebanese University (UL)	Faculty of medicine Faculty of Dentistry Faculty of Pharmacy Faculty of Agriculture Faculty of Public health	Undergraduate (7 years); Graduate (3 years); Ph.D. Undergraduate (5 years); Graduate (1 year); Ph.D. Undergraduate (6 years) Food science and technology Sciences infirmières (BS, 4 years; Master) Laboratoire (BS, 4 years) Physiotherapy (Licence, 4 years) Midwifery (BS, 4 years) Speech therapy (BS, 4 years) Ergotherapy (BS, 4 years) Santé et environnement (Licence, 4 years)
III.2.2.4.2 – University institutes and colleges		
Saidoun Institute for dental laboratory sciences		University Diploma (3 years)
Rassoul el Aazam University Institute of health sciences		Nursing (BS 3 years) Laboratory (BS 3 years) Radiology (BS 3 years)

Source: http://www.higher-edu.gov.lb.

III.2.3 – HEALTH SURVEILLANCE AND NATIONAL HEALTH PROGRAMS

III.2.3.1 – Health Surveillance

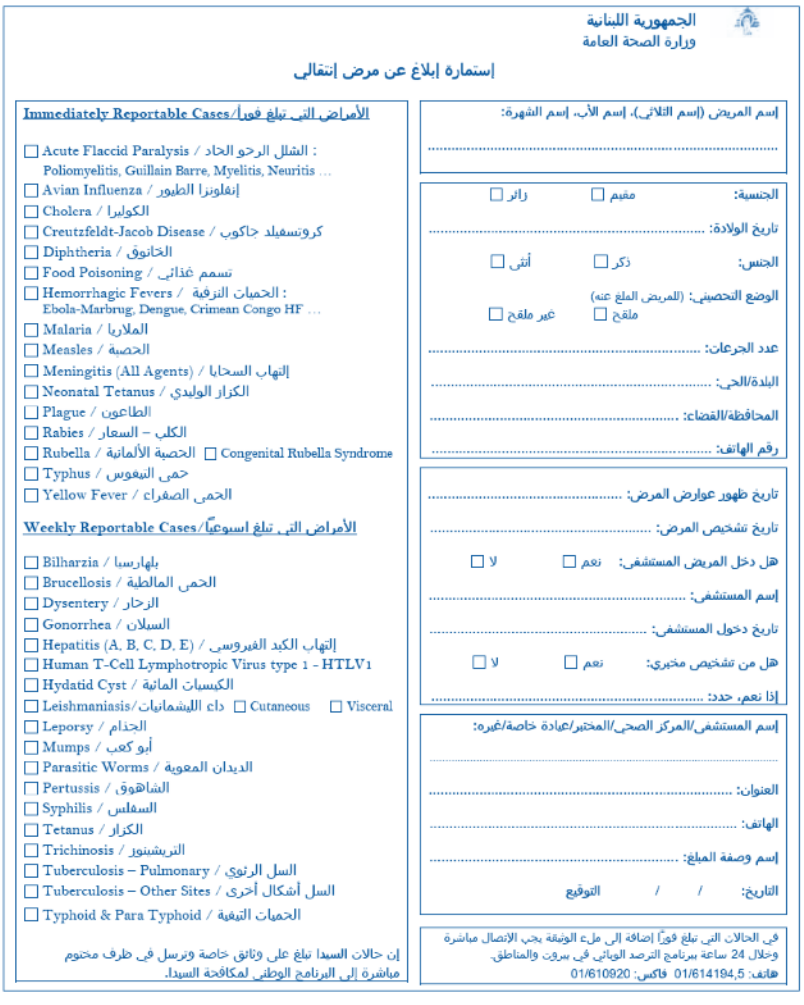
III.2.3.1.1 – Routine Health Information System

The system of routine health surveillance relies on two main sources of information:

- Hospitals
- Primary Health Care

All private and public hospitals, including the labs operating in these hospitals and the PHC centers belonging to the MOPH network report periodically to the MOPH Epidemiology and Surveillance Unit (ESU) on a list of selected diseases. The time of reporting is either immediate, within 24 hours, within 48 hours, within a week or a month, depending on the disease or condition being reported. The MOPH issues periodically a surveillance bulletin.

Figure 15 Communicable diseases declaration form



الجمهورية اللبنانية
وزارة الصحة العامة

إستمارة إبلاغ عن مرض إنتقالي

Immediately Reportable Cases/الأمراض التي تبلغ فوراً

- ☐ Acute Flaccid Paralysis / الشلل الرخو الحاد : Poliomyelitis, Guillain Barre, Myelitis, Neuritis ...
- ☐ Avian Influenza / إنفلونزا الطيور
- ☐ Cholera / الكوليرا
- ☐ Creutzfeldt-Jacob Disease / كروتسفيلد جاكوب
- ☐ Diphtheria / الخانوق
- ☐ Food Poisoning / تسمم غذائي
- ☐ Hemorrhagic Fevers / الحميات النزفية : Ebola-Marbrug, Dengue, Crimean Congo HF ...
- ☐ Malaria / الملاريا
- ☐ Measles / الحصبة
- ☐ Meningitis (All Agents) / إلتهاب السحايا
- ☐ Neonatal Tetanus / الكزاز الوليدي
- ☐ Plague / الطاعون
- ☐ Rabies / السعار – الكلب
- ☐ Rubella / الحصبة الألمانية ☐ Congenital Rubella Syndrome
- ☐ Typhus / حمى التيفوس
- ☐ Yellow Fever / الحمى الصفراء

Weekly Reportable Cases/الأمراض التي تبلغ اسبوعياً

- ☐ Bilharzia / بلهارسيا
- ☐ Brucellosis / الحمى المالطية
- ☐ Dysentery / الزحار
- ☐ Gonorrhea / السيلان
- ☐ Hepatitis (A, B, C, D, E) / إلتهاب الكبد الفيروسي
- ☐ Human T-Cell Lymphotropic Virus type 1 - HTLV1
- ☐ Hydatid Cyst / الكيسيات المائية
- ☐ Leishmaniasis/داء الليشمانيات ☐ Cutaneous ☐ Visceral
- ☐ Leprosy / الجذام
- ☐ Mumps / أبو كعب
- ☐ Parasitic Worms / الديدان المعوية
- ☐ Pertussis / الشاهوق
- ☐ Syphilis / السفلس
- ☐ Tetanus / الكزاز
- ☐ Trichinosis / التريشينوز
- ☐ Tuberculosis – Pulmonary / السل الرئوي
- ☐ Tuberculosis – Other Sites / السل أشكال أخرى
- ☐ Typhoid & Para Typhoid / الحميات التيفية

إن حالات السيدا تبلغ على وثائق خاصة وترسل في ظرف مختوم مباشرة إلى البرنامج الوطني لمكافحة السيدا.

إسم المريض (إسم الثلاثي)، إسم الأب، إسم الشهرة:

الجنسية: مقيم ☐ زائر ☐

تاريخ الولادة:

الجنس: ذكر ☐ أنثى ☐

الوضع التحصيني: (للمريض المبلغ عنه) ملقح ☐ غير ملقح ☐

عدد الجرعات:

البلدة/الحي:

المحافظة/القضاء:

رقم الهاتف:

تاريخ ظهور عوارض المرض:

تاريخ تشخيص المرض:

هل دخل المريض المستشفى: نعم ☐ لا ☐

إسم المستشفى:

تاريخ دخول المستشفى:

هل من تشخيص مخبري: نعم ☐ لا ☐

إذا نعم، حدد:

إسم المستشفى/المركز الصحي/المختبر/عيادة خاصة/غيره:

العنوان:

الهاتف:

إسم وصفة المبلغ:

التاريخ: / / التوقيع

في الحالات التي تبلغ فوراً إضافة إلى ملء الوثيقة يجب الإتصال مباشرة وخلال 24 ساعة ببرنامج الترصد الوبائي في بيروت والمناطق.
هاتف: 01/614194,5 فاكس: 01/610920

قرار وزارة الصحة العامة رقم 241 تاريخ 31 آذار 2008

III.2.3.1.2 – School health surveillance system

A national school based health surveillance system was established in 2009, both in the private and public sectors, to report on flu-like symptoms and absenteeism.

III.2.3.1.3 – Early Warning and Response System

In addition to the hospital and PHC based surveillance system, the MOPH established an Early Warning and Response System (EWARS) involving the private sector and the armed forces.

i. EWARS in the private sector:

A total of 66 private practitioners selected from across the country have accepted to periodically report to the Epidemiological Surveillance Unit (ESU) on selected diseases and clinical symptoms, as part of an early warning surveillance to enable prompt public health response. Data is reported both as aggregate and on a case basis to allow proper and timely investigation and response.

Table 79

Weekly form of ambulatory surveillance system A3S

#	Item	Paper reporting	Web-based reporting
G1.	**Physician**		
11	Physician name	Text	Automatic field, on login
12	Physician speciality	Text	Automatic field, on login
13	Physician code	Text	Automatic field, on login
G2.	**Week**		
21	Week starting on Monday	date	
22	Week	-	Automatic field, ISO weeks
23	Date of report	date	Automatic field, date of the day
G3.	**Aggregated Data**		
311	All consultations, under 5y	Digits	Digits
312	All consultations, 5y+	Digits	Digits
313	All consultations, all ages	Digits	Automatic calculation
321	All consultations ARI, under 5y	Digits	Digits
322	All consultations ARI, 5y+	Digits	Digits
323	All consultations ARI, all ages	Digits	Automatic calculation
331	All consultations AWD, under 5y	Digits	Digits
332	All consultations AWD, 5y+	Digits	Digits
333	All consultations AWD, all ages	Digits	Automatic calculation
341	All consultations injury, under 5y	Digits	Digits
342	All consultations injury, 5y+	Digits	Digits
343	All consultations injury, all ages	Digits	Automatic calculation
G4.	**From Notifiable Diseases**		
41	Measles	Digits	Digits
42	Rubella	Digits	Digits
43	Mumps	Digits	Digits
44	Pertussis	Digits	Digits
45	VHA	Digits	Digits
46	Dysentery	Digits	Digits
G5.	**Comments**	**Text**	**Text**
G6.	**Signature**	**Text**	**Save and submit**
		Total 25 fields	**Total 16 fields**

Source: MOPH, 2011.

Table 80

Declaration form based on reported cases

#	Item	Paper reporting	Web-based reporting by private physician	Data Base verification and validation at MOPH
1	Disease	List of 37 diseases	List of 6 target diseases	-
2	Patient Name	Text	Text	-
3	Patient Nationality	Text	-	-
4	Patient status: Resident/tourist	List (resident/status)	-	-
5 (51, 52, 53, 54)	Date of birth	Date of birth	Date of birth, or year of birth, or age in years, or age in months	-
6	Gender	List (M/F)	List (M/F)	-
7	Vaccination status	List (Yes/No)	-	-
8	Number of vaccine doses	Digits	2 Digits	-
9	Patient: Commune	Text	Text	Coding
10	Patient: Caza	Text	-	Coding
11	Patient: Mohafazat	Text	-	Coding
12	Patient: Phone	Phone	Phone	Phone investigation if needed
13	Onset Date	Date	-	-
14	Diagnosis Date	Date	Date of consultation	-
15	Inpatient	List (Yes/No)	-	-
16	Hospital name	Text	-	-
17	Date of hospital admission	Date	-	-
18	Laboratory diagnosis (Yes/No)	List (Yes/No)	-	-
19	Laboratory results	Text	Text	Coding
20	Reporter: institution name	Text	Automatic field, on login	-
21	Reporter: address	Text	Automatic field, on login	-
22	Reporter: phone	Text	Automatic field, on login	-
23	Reporter: name	Text	Automatic field, on login	-
24	Date of reporting	Date	Automatic field, day of today	-
25	Signature	Text	Save and submit	Validate and integrate in national database
		Total 25 fields	**Total 9 fields**	**Total 4 fields**

Source: MOPH, 2011.

ii. EWARS at the armed forces level

A functioning surveillance system at the Army medical services was established at three levels in a total of 42 sites:

- Central level: Military hospital
- Provincial level
- Military medical units

The system operates through military health information software based on both International Coding of Diseases 10 as coding tool, EPI info and MESU for data analysis and syndrome alert. Standard forms are elaborated jointly by the Ministry of Public Health, and the Lebanese Army. The forms include:

a. Reporting forms:

- standard in and out patient form
- medical unit immediate reporting form
- medical unit zero reporting form

b. Alert system

- Based on threshold levels of some conditions (e.g. increase in Hepatitis A incidence between two time periods…): Software harmonized with the Ministry of Public Health surveillance unit
- Based on Syndromes: (Center of Diseases Control guidelines, 2005)

iii. Surveillance of Hospital death

All hospitals operating in the country report, on a monthly basis, all the deaths occurring at their wards to the ESU. Data includes age sex and immediate cause of death with underlying diseases. Deaths on arrival or deaths occurring in the emergency room are not included.
Maternal deaths are reported separately on special forms to the Mother and Child unit and to the ESU.

III.2.3.2 – National health programs

III.2.3.2.1 – The National AIDS Control Program

Initially established by the WHO in 1989, the NAP is currently a joint program executed by the WHO with an annual Trust Fund made available by the MOPH. The NAP is also the secretary of the UN Theme group on HIV/AIDS, established in 2006 and presently chaired by WHO. A national strategic plan for HIV was developed and revised in 2011.The main interventions in the last five years were focused on vulnerable groups including youth and prisoners, and on high risk groups namely men who have sex with men, drug users and sex workers.

The main strategies adopted by the NAP include: capacity building on prevention and harm reduction, community awareness and periodic campaigns, outreach through a large and active network of NGOs, epidemiology and data collection including research and improving patient care and support. The NAP has introduced in 2000 free ARV treatment according to a national protocol, and has also established 20 VCT centers in collaboration with NGOs.

III.2.3.2.2 – Primary Healthcare program (PHCP)

It includes the following sub-programs:

i. The Non communicable diseases program (NCDP)

Initially established in 1996, the NCDP focused on prevention, control, and life style education and modification rather than on case management. The program witnessed fluctuations in its performance, which led to its restructuring to include:

1. The National Diabetes Control Program, aims at prevention, care for the diabetic and updating of epidemiological data
2. The National Cardiovascular Program, aims at prevention, cardiovascular care and updating of epidemiological data
3. The National Injury/ road traffic accidents Prevention Program: The national data available shows that death and injury from road accidents which are on the rise especially among young people, are now among the highest in the world. It is expected that the program will expand its activities to cover prevention of road accidents as well. This will be done with support from local NGOs.

ii. The national registries

1. The National Cancer Registry, which was established in cooperation with the Scientific Cancer Societies in the country, was transferred to the ESU, supported by the National Cancer registry Committee. Data is collected using the capture and the recapture methods.
2. The Lebanese Interventional Cardiology registry is housed currently at the Society of Interventional Cardiology.

iii. The national Viral Hepatitis Programme (VHP)

The VHP was established in 2007, and focuses on the prevention and care of viral hepatitis as well as on epidemiologic updates.

III.2.3.2.3 – The Expanded Program on Immunization (EPI)

The EPI program established initially by the WHO and UNICEF jointly was entrusted to the MOPH in 1996. The main activities of the EPI include:

- developing and implementing national vaccination campaigns (polio, measles).
- updating the national vaccination calendar
- implementing the "reach every child" approach though local community mobilization

III.2.3.2.4 – The National School Health Program

The School Health program (SHP), is currently implemented under a memorandum of Understanding signed by the WHO, MOPH and MEHE in 2007.

It has three main axes of intervention:

- the medical screening component, including provision of necessary medical equipment to all 1,400 public schools, a new medical prevention component (including oral health screening and fluoride gargle) with a referral system to PHC network,
- the health education component that targets students, parents and teachers (under which the health promoting schools and e-learning projects were implemented),
- the assessment of the healthy school environment component.

III.2.3.2.5 – National Tuberculosis Program (NTP)

The program was established more than 20 years ago, it works mainly on implementing the Directly Observed Treatment (DOT) and the surveillance of the disease on the Lebanese territory.

III.2.4 – FUNDING OF THE HEALTHCARE SYSTEM

In 2005, healthcare spending in Lebanon represented 8.1% of the GDP. Moreover, the share of the Budget allocated to healthcare in 2010 was around 5.9%. The contribution of the public sector reached 28.98%, that of the private sector 70.99% and that of international donors' around 0.03%. Households which represented 44% of total spending on health, constituted the largest source of funding. These expenditures covered insurance premiums, healthcare services provided in private clinics and medication. Despite this high spending level, health indicators remain below the average of countries having similar spending levels (Ammar, 2009).

Table 81

Public spending and utilization of third-party payment (2005)

	NSSF*	GSF**	Army***	SSF	ISF	CSC	MOPH
Number of beneficiaries[25]	1,077 683[26]	14,310	225,250	5,645	77,609	197,392	1,629,015
Number of adherents	492,085	5,300	85,000	1,447	26,762	62,664	1,629,015
Number of hospital admissions	211,533	1,800	51,663	1,219	26,718	24,762	183,365
Cost of Hospital admissions (1000 LBP)	278,987	4,046,134	56,920,752	1,614,141	24,675,000	41,713,443	244,761,686
Cost of Ambulatory care (1000 LBP)	200,987,933	5,299,790	12,909,356	2,368,451	12,296,434	45,808,209	45,256,875
Total cost (1000 LBP)[27]	479,915,920	9,345,924	69,830,108	3,982,520	36,971,434	87,521,652	301,168,561
Spending/Beneficiary (2005)	445,322	653,104	310,011	705,507	476,380	443,390	184,878

*Source: * Ammar, W., 2009, Health beyond politics.*
*** General Security Forces, 2005.*
**** Ministry of National Defence, 2005.*

There are six employment-based social insurance funds that are publicly managed in Lebanon, four of which are military schemes (excluding MOPH). NSSF, which is the largest fund, covers 1,077,683 beneficiaries and 492085 adherents. The MOPH covers 1,629,015 beneficiaries. The cost of hospital admission varies between 1,614,141 LBP for the ISF and 278,927,987 LBP for the NSSF. The cost of ambulatory healthcare services varies between 2,368,451 LBP (ISF) and 20,097,933 (SSF). The spending per beneficiary is the highest for the NSSF, it reaches 705,507 LBP. Expenditures are generally oriented toward treatments.

[25] Number of beneficiaries= number of subscribers + number of dependents.

[26] Of which 30,084 benevolent subscribers and 51, 350 university students, except 11,307 non Lebanese.

[27] Excluding administrative costs.

Table 82

MOPH Budget (1,000 LBP)

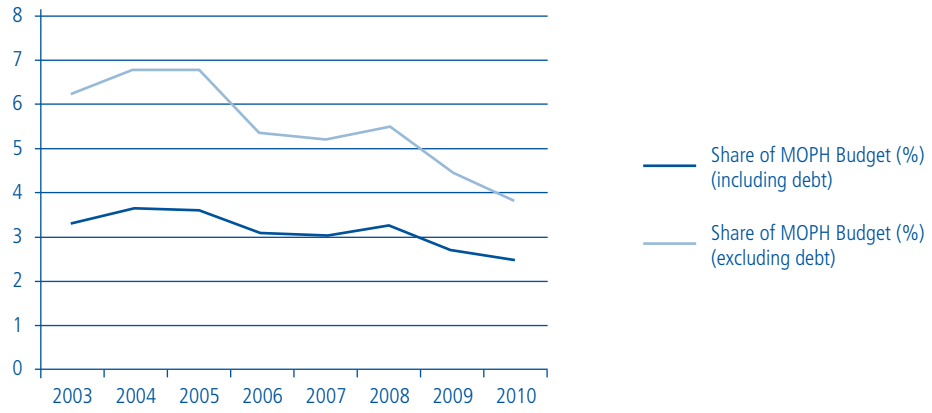
	2010	2009	2008
Hospitalization in the private sector	320,000,000	305,000,000	256,000,000
Public hospitals	12,000,000	12,000,000	15,000,000
Drugs	91,000,000	66,000,000	52,500,000
Contribution and support to NGO	12,817,770	12,817,770	12,817,770
Salaries and indemnities of employees and other benefits	27,472,900	27,522,100	24,052,860
Other expenses	18,593,039	13,936,228	11,047,403
Central laboratory (1st part)	977,500	948,500	992,192
Central laboratory (2nd part including MOP)	3,797,000	1,523,000	1,507,000
Total MOP Budget	486,658,209	439,747,598	373,917,225
Total Government Budget	19,537,600,000	16,304,000,000	11,475,000,000
Service of the debt	6,860,120,314	6,441,000,000	4,650,000,000
Total Government Budget excluding debt	12,677,479,686	9,863,000,000	6,825,000,000
Share of MOPH Budget (%) (including debt)	2.49	2.70	3.26
Share of MOPH Budget (%) (excluding debt)	3.84	4.46	5.48

Source: Ministry of Finance, 2010.

The overall MOPH budget represents 2.49% of the total government Budget. It is distributed as follows: 65.75% for private sector hospitalizations, 2.47% for public sector hospitalizations, 18.7% for drugs, 0.98% for the central lab, 2.63% for the NGO contributions, 5.64% for salaries and 3.83% for other expenditures.

The overall government budget increased by 70% whereas the MOPH budget increased by only 30%. In 2012, expenditures linked to hospitalizations were 68% of the MOPH budget whereas in 2009 they represented 72%. Moreover, the budget allocated to drugs increased on a yearly basis going from 15% in 2009 to 18% in 2010.

FIGURE 16 **Evolution of the MOPH share in the Budget (2003-2007)**



Source: Ministry of Finance, 2010.

Table 83

Distribution of the MOPH charges related to curative care (2005)

	Number of cases			Costs (1,000 L.L.)
	Admissions	Patients	Days	
Medical	93,463			83,822,020
Surgical (except open heart surgery)	87,148			93,110,491
Heart surgery	2,754			18,119,044
Burns		34		689,937
Dialysis		1,246		19,107,398
MRI		794		2,060,911
LDH apheresis		37		1,056,000
Long stay			1,385,968	26,795,885
Total				**244,761,686**

Source: Ammar, W., 2009, Health beyond politics.

In 2005, expenditures related to treatments reached 244761686 LBP.

Table 84

Acute in-patient care (2005)

	MOPH	NSSF	CSC	Army	SF*	Total
Admissions	183,365	247,907	24,762	51,663	29,737	**537,434**
Hospitalization rate (%)	11.3	23	12.5	22.9	30.5	**16.6**
Acute in-patient cost (1000 LBP)	214,039,909	278,927,987	41,713,443	56,920,752	30,335,275	**621,937,366**
Cost per admission (1000 LBP)	1,167	1,125	1,684	1,102	1,020	**1,157**

Source: Ammar, W., 2009, Health beyond politics.
** SF include ISF, GSF and SSF.*

The total cost of hospitalizations, taking all third party payers into consideration reaches 621,937,366,000 LBP with the NSSF accounting for 45% and the MOPH for 34% of that cost.

Table 85

Public expenditures breakdown (2005)

	MOPH	NSSF	CSC	Army	SF
In-patient care (1,000 LBP)	244,761,686*	278,927,987	41,713,443	56,920,752**	30,335,275
Ambulatory services	45,256,875***	200,987,933	45,808,209	12,909,356	19,964,675
Administrative cost for medical coverage	11,632,479	42,177,766	3,226,116	13,112,568	2,793,032
Total (1,000 LBP)	**301,651,040**	**522,093,686**	**90,747,768**	**82,942,676**	**53,092,982**

Source: Ammar, W. (2009), Health beyond politics.
** Hospital care, including public hospitals and long stay.*
*** Including military hospital.*
**** Excluding primary health care costs.*

In 2005, the MOPH spent 301.6 billion LBP on private and public hospital care and ambulatory services including administrative costs. This sum was used for the medical coverage of 1,629,015 uninsured individuals. Average cost per beneficiary per year amounts to 123 USD. Expenditures are higher for the NSSF; they reach 522 billion LBP with a considerable administrative cost. This amount covers the needs of 1,077,683 beneficiaries at an average cost of 323 USD.

Table 86

Private health insurance adherents according to coverage plan (in USD) (2005)

	Private insurance alone	%	Private insurance complementary to NSSF	%	Total	%
Hospitalization only	30445	6.2	128162	26.1	158607	32.3
Hospitalization and ambulatory care	284804	58	47631	9.7	332435	67.7

Source: Ammar, W., 2009, Health beyond politics, Table III-12, p. 86.

Nearly 35.8% of the privately insured are at the same time NSSF adherents and are divided into 26.1% covered for hospitalization only and 9.7% covered for additional ambulatory care.

Table 87

Private insurances premiums and claims (in USD) (2005)

	Private insurance				Private insurance complementary to NSSF				
	Premiums	%	Claims	%	Premiums	%	Claims	%	Total (%)
Hospitalization only	18,066,972	9.7	6,689,648	5.8	13,783,051	7.4	5,766,938	5	**100**
Hospitalization and ambulatory care	128,145,121	68.8	85,927,368	74.5	26,262,299	14.1	16,954,710	14.7	**100**

Source: Ammar, W., 2009, Health beyond politics, Table III-13, p. 86.

Total premiums as published by ACAL 2005 reached 186257443 USD while claims amounted to 115,338,664 USD (62% of the premiums).

Table 88

Mutual adherents and contributions by type of coverage (2005)

	No other coverage		Complementary to NSSF or MOPH		Total	
	n	%	n	%	n	%
Adherents	115065	75.3	34744	24.7	152,809	100
Contributions (1,000 LBP)	43,739,642	77.4	12,771,523	22.6	56,511,165	100

Source: Ammar, W., 2009, Health beyond politics, Table III-14 p. 88.

The total number of adherents in mutual societies reaches 152,809. Among those, less than 25% benefits from NSSF and MOPH co-payments.

Table 89

Government subsidies for Mutual Funds (1000 LBP) (2005)

Source of Financing	Mutual Fund for Members of Parliament	Mutual Fund for Parliament employees	Mutual Fund for Judges	Mutual Fund for the Lebanese University Professors
Government Budget	9,200,000	1,600,000	8,500,000	17,438,000
Contributions	-----	-----	5,502,000	5,900,000

Source: Ammar, W., 2009, Health beyond politics, Table III-15, p. 88.

Table 90

Household annual health expenditures by spending item (LBP) (2004-2005)

Type of expenditure	Average per household	%	Total
Drugs	632,022	48.17	557,666,007,100
Hospital services	198,780	15.15	175,394,526,900
Physician consultations and services	154,600	11.79	136,412,083,000
Dentists consultations and services	96,200	7.33	84,953,139,400
Medical lab analysis	78,270	5.96	69,061,925,850
Dentures and appliances	63,760	4.86	56,258,954,800
Imaging	40,110	3.06	35,391,259,050
Eyeglasses and contact lenses	26,630	2.03	23,497,113,650
Paramedical services	8,730	0.67	7,702,959,150
Other pharmaceutical products	7,310	0.56	6,450,015,050
Other appliances and maintenance	5,540	0.42	4,888,246,700
Total	**1,312,030**	**100**	**1,157,676,230,650**

Source: Ammar, W., 2009, Health beyond politics.

Half of the household healthcare expenditures go to purchasing drugs. Medical and dental consultations represent 19.19% and hospital services account for 15.15%.

Table 91

Spending on hospitals and pharmaceuticals by household and intermediaries in 2005 (1,000 LBP)

	Total hospitals (including pharmaceuticals)	Hospitals (excluding pharmaceuticals)	Pharmaceuticals (outside hospitals)	Total pharmaceuticals
Intermediaries	831,166,818	656,621,786	271,601,836	446,146,868
Households	175,390,341	138,558,369	648,760,826	685,592,798
Total	1,006,557,159	799,180,155	920,362,662	1,131,739,666
% of total health expenditures	37.55	29.66	34.34	42.22

Source: Ammar, W., 2009, Health beyond politics.

In 2005, total purchases of pharmaceutical products amounted to 1131.74 billion LBP that is 42.22% whereas expenditures on hospitals excluding pharmaceutical accounted for 29.66% only.

Table 92

International comparison of health expenditure per capita and as a percentage of GDP

Region	GDP per capita ($)*	Health expenditure ($ per capita)**	Health expenditure ($ per capita, PPP)**	Health expenditure as a % of GDP**		
				Total	Public sources	Private sources
Yemen	880	39	88	5.1	2.1	3
UAE	30,881	833	625	2.6	1.9	0.7
Tunisia	3,000	158	477	5.5	2.4	3.1
Qatar	53,125	2,186	1,283	4.1	3.2	0.9
Egypt	1,449	78	279	6.1	2.3	3.8
Morocco	2,144	89	258	5.3	1.9	3.4
Jordan	2,564	241	649	10.5	4.8	5.7
Iran	3,108	212	677	7.8	4.4	3.4
Lebanon (2005)* **	**5,555**	**460**	**5842**	**8.2**	**2.4**	**5.8**
East Mediterranean**	2,184	107	242	4.9	2.5	2.4
France	36,674	3,819	3,314	11.2	8.9	2.3
Greece	27,784	2580	2,955	10.1	4.3	5.8
European region[2]	19,200	1,652	1,649	8.6	6.4	2.2

Source: Ammar, W. (2009), Health beyond politics.
** www.worldbank.org, 2006, World Development Indicators.*
*** WHO, 2005, World Health Statistics.*
**** MOPH, 2005, Lebanon National Health Accounts.*

III.2.5 – DRUGS

Drugs are either produced in Lebanon or imported. In 2011, the share of local production in the market varied from 7% to 10%. Drugs need to be registered with the MOPH before being imported or sold. The number of registered drugs was over 5,000 (Ducruet, 2009) and the share of generic drugs did not exceed 2% of this market. The MOPH governs the opening of pharmacies and sets the prices and the profit margins but the importation, distribution and sale of drugs is the responsibility of the pharmacies themselves. There are also pharmacies within hospitals that are managed by pharmacists. With the exception of narcotics, most drugs can be bought in pharmacies without a prescription in spite of the existence of a law that imposes the use of a prescription for any purchase.

The cost of importing drugs has been continuously increasing since 2005. It is by far higher than the cost of exports. It should be noted however that between 2010 and 2011, the cost of exporting nearly doubled going from 16,811,000 USD to 36,488,000 USD.

Table 93

Pharmaceutical products imports and exports (2005-2011)

	Imports		Exports	
	(000 $)	(millions LBP)	(000 $)	(millions LBP)
2005	428,970	646,887	8599	12967
2006	511,075	770,701	8397	12663
2007	608,341	917378	10970	16543
2008	691657	1043019	15721	23708
2009	752614	1134941	16044	24195
2010	859461	1296068	16811	25351
2011	972800	1466983	36488	55024

Source: www.customs.gov.lb/customs/trade_statistics/early/search.asp, 2011.

Table 94

Number of cancer cases treated in 2009 according to the Drug Dispensing Center at the MOPH (n = 1136)

Cancer Incidence in 2009	n	%
Breast cancer	420	36.9
Prostate cancer	157	14.0
Lung cancer	136	12.0
Colon cancer	101	9.0
Bladder cancer	73	6.4
Non-Hodgkin Lymphoma	71	6.3
Pancreatic Cancer	40	3.5
Gastric Carcinoma	35	3.0
Multiple myeloma	33	2.9
Hodgkin's Lymphoma	32	2.8
Acute lymphoblastic leukemia	20	1.7
Chronic myelogenous leukemia	15	1.3
Colorectal cancer	3	0.2

Source: MOPH, 2009, Statistical Bulletin.

National Chronic Drugs Program (YMCA)[28]

The National Chronic Drugs Program was established in 1998. Since then it plays an important role in the public health sector in Lebanon. The MOPH contribution reached 4,875 billion LBP in 2010. The 435 free PHC/dispensaries that participate in the program delivered 1,528,738 healthcare services, 304,138 which were to patients with chronic diseases. The YMCA (a local NGO) implements the program on the behalf of the MOPH.

The program includes a list of 63 drugs among which 10 of different dosages. The number of physicians and staff working at the centers is 2513 and 2171 respectively.

Among the 435 centers adhering to the YMCA managed chronic medication program:

- 196 offer laboratory services
- 339 are equipped with electrocardiograms
- 197 have dental clinics
- 263 gynecology services
- 102 radiology centers
- 133 ultrasound equipped free clinics
- 3 offer tomodensitometry (CT scan)
- 49 offer audiometry
- 23 offer eye examinations (ocular tension)
- 1 MRI

Table 95

Geographical distribution of the YMCA center network and number of beneficiaries (2010)

Region	Number of centres	Number of beneficiaries
Beirut	38	25183
Mount Lebanon	177	40132
Bekaa	51	24928
North Lebanon	78	31088
South Lebanon	91	33888
Total	**435**	**155219**

Source: Ministry of Public Health -YMCA, (2010), the National Chronic Drugs Program.

Table 96

Percentage of chronic diseases according to beneficiaries of the YMCA network (2010)

Disease	Percentage
Cardiovascular diseases	49.8
Diabetes	14.02
Gout	4.35
Cholesterol	15.00
Ulcer	5.96
Nervous system	1.70
Asthma	1.38
Thyroid	1.60
Others	6.19

Source: Ministry of Public Health -YMCA, (2010), the National Chronic Drugs Program

[28] Ministry of Public Health -YMCA, (2010), the National Chronic Drugs Program.

Table 97

YMCA network patient distribution by age group and disease (2010)

Age	Cholesterol	Cardiovascular diseases	Diabetes
Under 25 years	0.19%	0.22%	0.24%
25-65 years	48.95%	36.66%	44.19%
65-80 years	39.29%	42.06%	41.22%
Above 80 years	11.57%	21.06%	14.35%

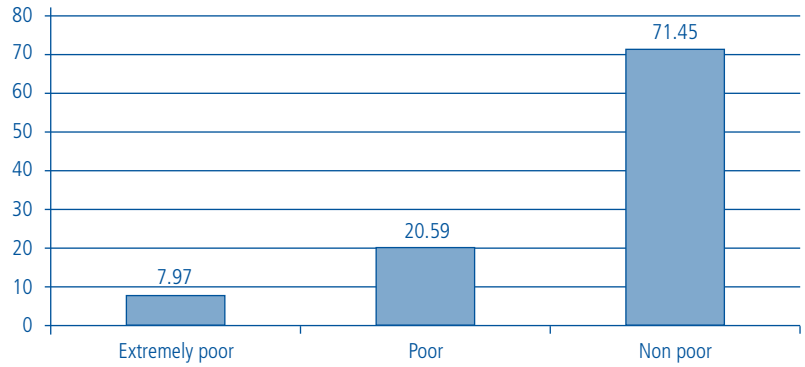
Source: Ministry of Public Health -YMCA, (2010), the National Chronic Drugs Program.

IV- The Determinants of Health

IV.1 – POVERTY[1]

The study carried out on poverty, growth and revenue distribution in Lebanon showed that between 2004 and 2005, 21% of the Lebanese population were classified as poor while 8% (300,000 individuals) were considered extremely poor. Moreover, the study highlighted the existence of regional disparities: these are insignificant in Beirut whereas they are significantly higher in Akkar, North Lebanon. Poverty levels are highest in South Lebanon.

FIGURE 17 **Distribution of the population by poor and non-poor categories (2004-2005)**



Source: Laithy, H. ; Abu-Ismail, K.,; Hamdan, K.; 2008, Poverty, growth and income distribution in Lebanon, Country study, International Poverty centre, number 13.

Expenditure level and inequality

- Mean per capita consumption was highest in Beirut (6,514,000 LBP) (more than one and one-half times the national average) and lowest in the North (3,975,000 LBP) (three-quarters of the national average).
- The distribution of expenditure among the population was relatively uneven. The bottom 20% of the population accounted for only 7% of all consumption in Lebanon while the wealthiest 20% accounted for 43% (over six times higher).
- Inequality within-Mohafazats accounted for most of the inequality in Lebanon (about 92% of aggregate inequality in consumption can be attributed to within-Mohafazats inequality).

[1] Laithy, H. ; Abu-Ismail, K.,; Hamdan, K.; 2008, Poverty, growth and income distribution in Lebanon, Country study, International Poverty centre, number 13.

Table 98

Average per capita and per governorate consumption (1000 LBP) (2004-2005)

Mohafazats	Mean nominal per capita consumption
	Average
Beirut	6514
Mount Lebanon	4512
Nabatieh	3924
Bekaa	3385
South	3007
North	2532
All Lebanon	3975

Source: Laithy, H. ; Abu-Ismail, K.,; Hamdan, K.; 2008, Poverty, growth and income distribution in Lebanon, Country study, International Poverty centre, number 13.

Regional disparities

Poverty measures indicated:

- A low prevalence of extreme poverty (<1%) and overall poverty (<6%) in Beirut.
- A low prevalence of extreme poverty (2-4%) and a below-average prevalence of overall poverty (close to 20%) in Nabatieh and Mount-Lebanon;
- A higher-than-average prevalence of extreme poverty in Bekaa and the South, an average prevalence of overall poverty in Bekaa (29%) and a higher-than-average prevalence of overall poverty in the South (42%).
- A high prevalence of extreme and overall poverty in the North (18% and 53%, respectively).

Table 99

Poverty measures per Mohafazats (2004-2005)

Mohafazats	Extremely poor	Poverty in the entire population
Beirut	0.67	5.85
Nabatieh	2.18	19.19
Mount Lebanon	3.79	19.56
Bekaa	10.81	29.36
South	11.64	42.21
North	17.75	52.57
Total	**7.97**	**28.55**

Source: Laithy, H. ; Abu-Ismail, K.,; Hamdan, K.; 2008, Poverty, growth and income distribution in Lebanon, Country study, International Poverty centre, number 13.

The North consisted of 20.7% of Lebanon's population as well as 46% of the extremely poor population and 38% of the entire poor population. The extremely poor households were also predominant in the South and Bekaa governorates. The moderately poor households were also over-represented in the South.

Table 100

Distribution of Poverty Groups across Mohafazats (%) (2004-2005)

Mohafazats	Extremely Poor (1)	Moderately Poor (2)	Entire Poor Population (1+2)	Proportion of Total Population
Beirut	0.9	2.6	2.1	10.4
Mount Lebanon	18.9	30.5	27.3	39.9
North	46.0	34.9	38.0	20.7
Bekaa	17.2	11.4	13.0	12.7
South	15.4	15.6	15.6	10.5
Nabatieh	1.6	4.9	4.0	5.9
Total	**100**	**100**	**100**	**100**

Source: Laithy, H. ; Abu-Ismail, K.,; Hamdan, K.; 2008, Poverty, growth and income distribution in Lebanon, Country study, International Poverty centre, number 13.

There were considerable differences in poverty within the North governorate with Tripoli and the Akkar/Minieh-Dennieh regions presenting the highest percentages of overall poverty. In contrast, the Koura Zgharta/Batroun/Bsharre areas had relatively low poverty rates.

Most of the poor population in the country was concentrated in Tripoli, Akkar/ Minnieh-Dennieh, Jezzine/Saida and Hermel/Baalback which absorbed less than one third of the Lebanese population, two thirds of the extremely poor and half of the entire poor population.

With respect to poverty, it is important to note that:

- Unemployment rates in Lebanon were high among the poor.
- Youth unemployment was aggravated by poverty.
- Households exposed to a combination of adverse factors faced the highest risk of poverty.
- Households headed by individuals with less than elementary education constituted 45% of all the poor.
- Poverty was closely associated with school participation. There was a lower likelihood of school enrolment, attendance and retention for poor children
- Widowed heads of households with children were more likely to be poor
- Poverty was affected by place of residence. Households in the North were four times more likely to be poor compared to households in Beirut.

IV.2 – EMPLOYMENT

Lebanese population increased slightly in the past seven years. The highest rates were found among the young population. Despite the fact that women represent half of the country's population, only 21% were economically active.
In general, the private sector absorbed a larger share of the employment. A quarter of the labor force is relatively unskilled while another quarter was highly qualified. Salaries differed by gender with the women's average salary lower than the men's. Regional disparities with regard to salaries were also apparent with Beirut ranking highest for both women and men while the South ranked the lowest. The same period also witnessed a decrease in the overall unemployment rates; however the rate remained high among young people and women. Highly qualified individuals suffered more from unemployment. Foreign labor contributed to the economy as 145,684 (11% of the labor force) work permits were delivered in 2009, 80% of which were given to domestic workers.

Table 101

Structure of the labor market in Lebanon (2009)

	N
Population 15 years and above	**2831**
Men	1377
Women	1454
Active population	**1229**
Men	922
Women	302
Employees	**1118**
Men	842
Women	276
Public sector	176
Private sector	931
Other sectors	11
Permanent job	1041
Casual job	77
Unemployment	**110**
Men	79
Women	31
Unemployment (15-64 years)	**108**
Men	77
Women	31
Inactive population	**1602**
Men	455
Women	1 147

Source: CAS, 2011, The Labour market in Lebanon.

The economic activity rate of the population aged 15 years and above, reached 48% in 2009. In other words approximately half of the population was working or available for work. More men were economically active (73%). Working women in Lebanon had a younger age profile than working men. Over 52% of working women were under the age of 35 years as compared to around 38% of working men.

The activity rate for men aged between 25 and 60 was considerably high (over 90%). The activity rate for women, however, was 47% for those aged 25-29 and declined gradually thereafter for each subsequent age group.

Clearly services had the biggest share of the economy (39%), followed by trade (27%) and manufacturing (12%). Men worked as much in the service sector (32%) as in the trade sector (29%) whereas the majority of women worked in the service sector (63%). Half (50%) of those in employment were employees paid on a monthly basis and 31% were self-employed. There were differences in these proportions between the genders. Around 79% of working women were employees (paid on a monthly, weekly or hourly basis) while only 55% of working men were employees. Conversely, only 15% of working women were business owners or self-employed compared to 42% of working men.

About 19% of the jobs in Lebanon were craft related, and 14% were dedicated to senior officials and managers in both the public and private sector. Although there were proportionately fewer women than men in employment in Lebanon, almost 26% of working women occupied professional positions (such as doctors, teachers, engineers ...) compared to only 8% of working men

Men received better salaries than women. The average monthly salary for women was 660,000 LBP as opposed to 702,000 LBP for men; As such, there was a low estimated gender based pay gap of 6.0%. This gap becomes much larger within the different fields.

Almost 30% of active people had little or no education while 43% of working women and 20% of working men had university degrees.

Table 102

Employment in Lebanon (15 years and above) (2009)		
Employment rates by gender (%)	**48**	
Men	73	
Women	23	
Economic activity rate by age group	**M (%)**	**W (%)**
15-19 years	28	7
20-24 years	63	35
25-29 years	94	47
30-34 years	97	33
35-39 years	97	27
40-44 years	96	23
45-49 years	94	25
50-54 years	92	19
55-59 years	90	15
60-64 years	72	9
65-69 years	49	6
70+	25	1
Employment by sector		
Agriculture	7	6
Industry	13	8
Construction	12	--
Trade	29	22
Transport and telecommunication	8	1
Services, finance and insurance	32	63
Employment status		
Employer	6	1
Owner	36	14
Monthly employee	44	73
Weekly, hourly employee	11	7
Family employment	3	5
Intern	1	1

Source: CAS, 2011, The labour market in Lebanon, Statistics in Focus, issue 01.

Unemployment is defined according to ILO as "all individuals aged between 15 and 64 years who were not working one week before the study but were actively seeking employment and were available for work". Considering this definition, the national unemployment rate in 2009 was 6% with a higher for women (10%) compared to men (5%).

The highest unemployment rates were recorded among young people, particularly women below the age of 30 years. Beirut and the North recorded higher levels of unemployment rates (around 8%). Lower unemployment rates were found in the South (5%), Baalbeck and Hermel (4%). Unemployment rates were high among highly skilled persons, 9% for those people who had already obtained a university degree and 8% for individuals with a secondary level of education. The unemployment rate was higher for women except among the uneducated.

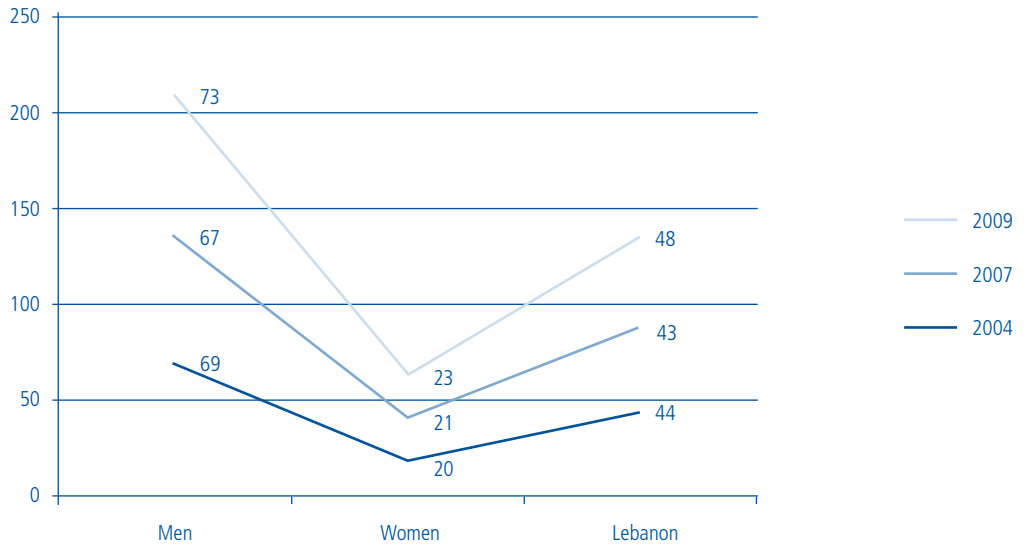
Table 103

Unemployment in Lebanon (2009)		
Unemployment rate (%)	**6.0**	
Unemployment rates by gender		
Men	5	
Women	10.0	
Unemployment rates by administrative sector (%)		
Beirut	8.0	
Beirut suburbs	8.0	
Mount Lebanon	5.0	
North Lebanon	8.0	
Akkar and Minieh Dennieh	7.0	
Bekaa	6.0	
Baalbeck and Hermel	4.0	
South	5.0	
Nabatieh	6.0	
Unemployment rates by age group	**M (%)**	**W (%)**
15-19 years	17	30
20-24 years	13	21
25-29 years	7	13
30-34 years	4	7
35-39 years	2	6
40-44 years	1	5
45-49 years	3	4
50-54 years	0	2
55-59 years	0	2
60-64 years	4	1
Unemployment rates by education level		
College	7	11
High school	5	14
Intermediate	4	11
Elementary	4	9
Pre-school	4	6
Illettrate	5	4

Source: CAS, 2011, The labour market in Lebanon, Statistics in Focus, issue 01.

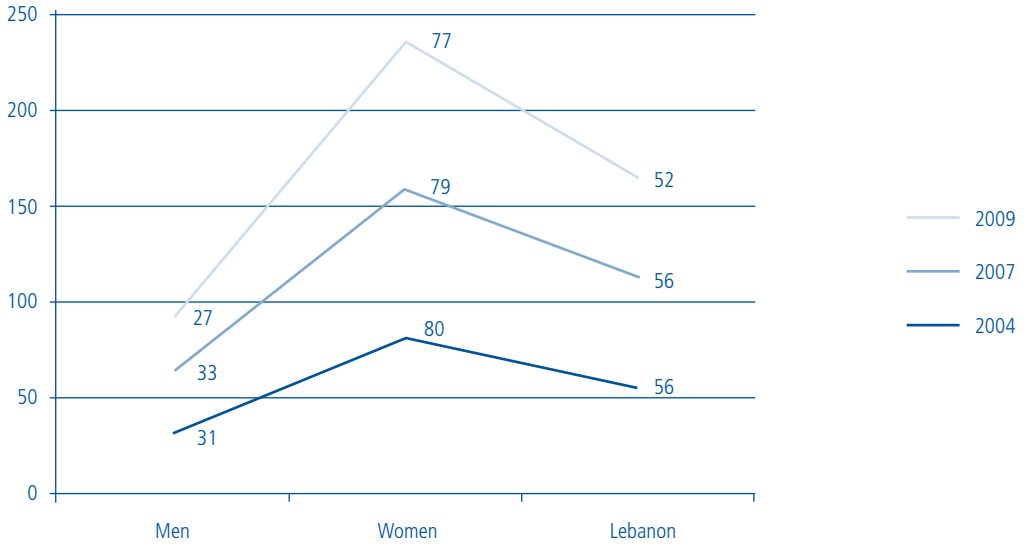
52% of individuals aged 15 years and above were considered inactive. Most of the inactive population was women (74%). Half of the inactive people were married (53%), a quarter of them had achieved at least a secondary level of education (25%) and 34% of them were below 25 years of age. Inactivity rates decreased as people got older; they dropped down from 22% before the age of 19 years to 5% by the age of 60 years.

FIGURE 18 Trend of the economic activity rate (15 years and above) (2004-2009)



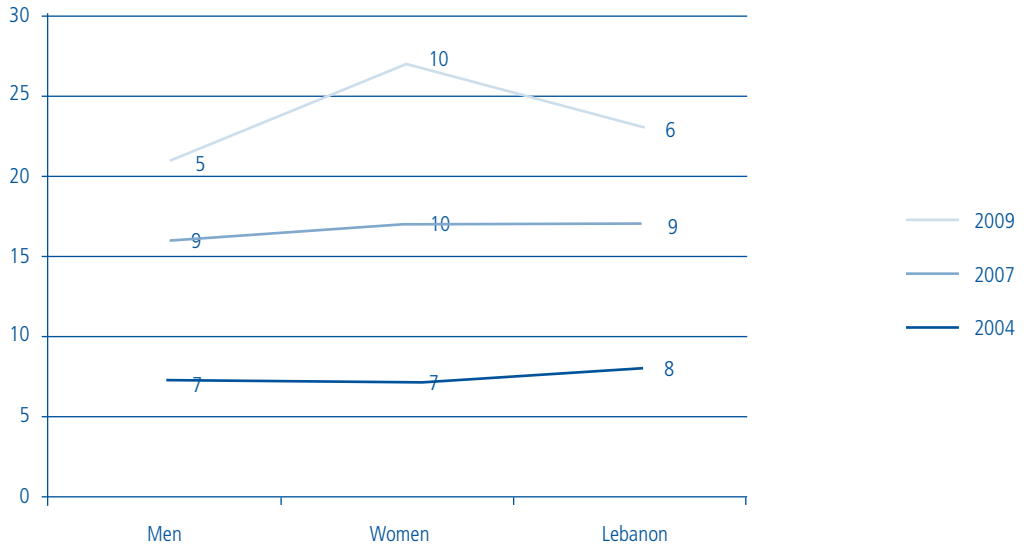
Source: CAS, 2011, The labour market in Lebanon, Statistics in Focus, issue 01.

FIGURE 19 Trend of the inactivity rate (15 years and above) (2004-2009)



Source: CAS, 2011, The labour market in Lebanon, Statistics in Focus, issue 01.

FIGURE 20 Trend of the unemployment rate (15 years and above) (2004-2009)



Source: CAS, 2011, The labour market in Lebanon, Statistics in Focus, issue 01.

Table 104

Employment: some comparative figures (2007)

Country	Economic activity rate (15 years and above)	Employment-to-population ratio (15 years and above)	Unemployment rate (15 years and above)	Youth unemployment rate (15-24 years)
Morocco	54	50	10	15
Egypt	51	46	9	48
Tunisia	50	44	14	31
Lebanon	48	30	8	21
Palestine	44	35	22	42
Algeria	42	37	12	31

Source: CAS, 2011, The labour market in Lebanon, Statistics in Focus, issue 01.

IV.3 – THE ENVIRONMENT[2]

Through a funding by the Ministry of Environment, ECODIT a Lebanese environmental consulting company was commissioned by the UNDP to prepare a report on the condition of the environment in Lebanon in 2010. Two versions of the report were previously prepared, the first in 1995 with a grant from the World Bank/ Mediterranean Environmental Technical Assistance Program (METAP), and the second in 2001 with the funding of the Ministry of the Environment in coordination with the Lebanese Environment and Development Observatory.

This report aimed at presenting a global, reliable, and scientific approach relevant to decision-making and at giving an update on the state of the Lebanese environment.

IV.3.1 – WATER

Water is one of the most precious resources in Lebanon. The driving forces affecting the quality and quantity of water resources in Lebanon are:

1. population growth and age structure,
2. recent urbanization,
3. economic growth,
4. climate change,
5. and, the increase in per capita income.

Other factors including the inter-annual variability in rainfall in the drier inland regions of Lebanon, the decline in snow coverage and density, the decrease in river flows and the decline in groundwater discharges affect water availability. Unsustainable water management practices, increasing water demand from all sectors, water pollution, and ineffective water governance are key obstacles facing Lebanon's water sector.

Water pollution is the contamination of water bodies including lakes, rivers, seas and groundwater. It is a major global environmental concern and one of the leading worldwide causes of deaths and diseases. (United Nations, 2010).

Lebanon's water resources are under stress. Available water including rivers and springs, storage dams and groundwater (estimated at 2,000-2,700 million m^3 per year) exceeds projected water demand (about 1,800 million m^3 in 2035) but widespread pollution and substandard water infrastructure are restricting the Government's ability to meet water demands in the future.

Currently, water in Lebanon is just over 1,100 m^3/capita/year, dangerously close to the international benchmark of 1,000 m^3/capita/year, below which it is considered that water resources are under stress (World Bank 2009).

Rivers

Lebanon has 16 perennial rivers and 23 seasonal rivers. The total annual river flow is about 3,900 million m^3, of which an estimated 700 million m^3 flows into neighboring countries.

Water storage

Lebanon has two dams, the Qaroun dam on the Litani River, and Chabrouh dam which captures rain runoff and runoff from Laban Spring. Their respective storage capacity is 220 million m^3 and 8 million m^3 (static storage capacity). Presently, only 30 million m^3 is being used from the Qaroun Dam for water supply and irrigation and the rest is used to generate electricity.

Springs

Most of the surface water used to secure supply comes from captured spring sources. Lebanon has some 2,000 springs. Their total yearly yield exceeds 1,200 million m^3 however, less than 200 million m^3 is available during the summer period. The total annual exploited volume is 637 million m^3. Lebanon also has a number of freshwater marine springs.

Groundwater
Over 50% of irrigation water comes from underground wells and boreholes while 80% of drinking water comes from groundwater sources.

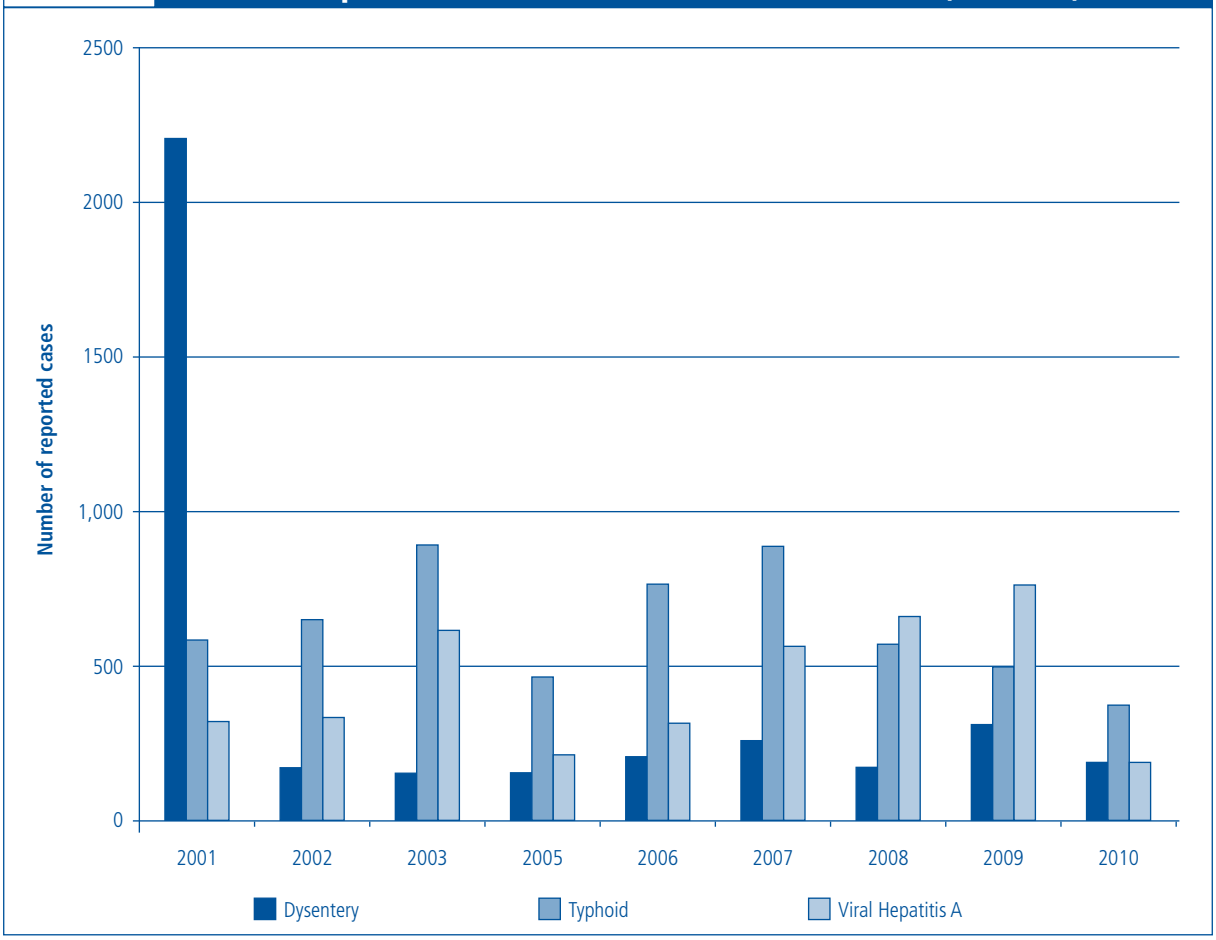
Wetlands
The most significant wetland in Lebanon is located in Ammiq (250 ha), just north of the Qaroun Lake, on a private land in the Bekaa Valley.

State of water resources
Rivers, springs and groundwater continue to be adversely impacted by raw sewage and other wastes, both domestic and industrial. All the water resources are exposed to environmental degradation resulting from bacteriological contamination of agricultural areas, runoffs and infiltration of residues from fertilizers and pesticides.

Rivers and springs
The majority of Lebanon's rivers have unacceptable levels of raw sewage contamination. The situation is identical in the coastal and inland rivers.

Groundwater
Since the main sources of drinking water are wells and springs, the result is a high incidence of waterborne diseases reflecting pollution stress in these sources.

FIGURE 21 **Number of reported cases of waterborne diseases in Lebanon (2001-2010)**



Source: MOPH, 2010, The Statistical Bulletin

Coastal marine water

Coastal waters in Lebanon receive untreated sewage from at least 53 major sewage outfalls (16 of which lie within the Beirut area). Coastal waters receive an estimated 65% of the total sewage load in Lebanon. About 70% of Lebanon's population, plus hundreds of thousands of tourists each year contribute to this sewage stream. Although Lebanon has made progress in building sewage treatment plants along the coast, none except for the Ghadir plant are operating at design capacity. In addition to outfalls, rivers also carry upstream pollutants from various activities and sectors including agricultural runoff, and sewage to the sea.

In addition to untreated sewage from cities and towns, coastal waters are also affected by large seafront dumpsites in Tripoli (still active but contained), Bourj Hammoud (closed but not rehabilitated), Beirut (closed and rehabilitated), Saida (active and causing severe environmental pollution) and Tyre (active). Additional pollution of coastal waters stems from coastline thermal power plants (Beddawi, Zouk, Jieh and Zahrani) and the overwhelming presence of heavy industries along the coast. The Biological Oxygen Demand load from industrial wastewater is estimated at 5,000 tons per year. Water near industrial sites shows high levels of heavy metals such as arsenic, lead, zinc and chromium.

Bathing water

Coastal erosion, mainly in north Lebanon, is also affecting beach quality and access. Bathing water is affected by the different sources of pollution mentioned earlier (sewage outfalls, thermal plants, industries, etc.).

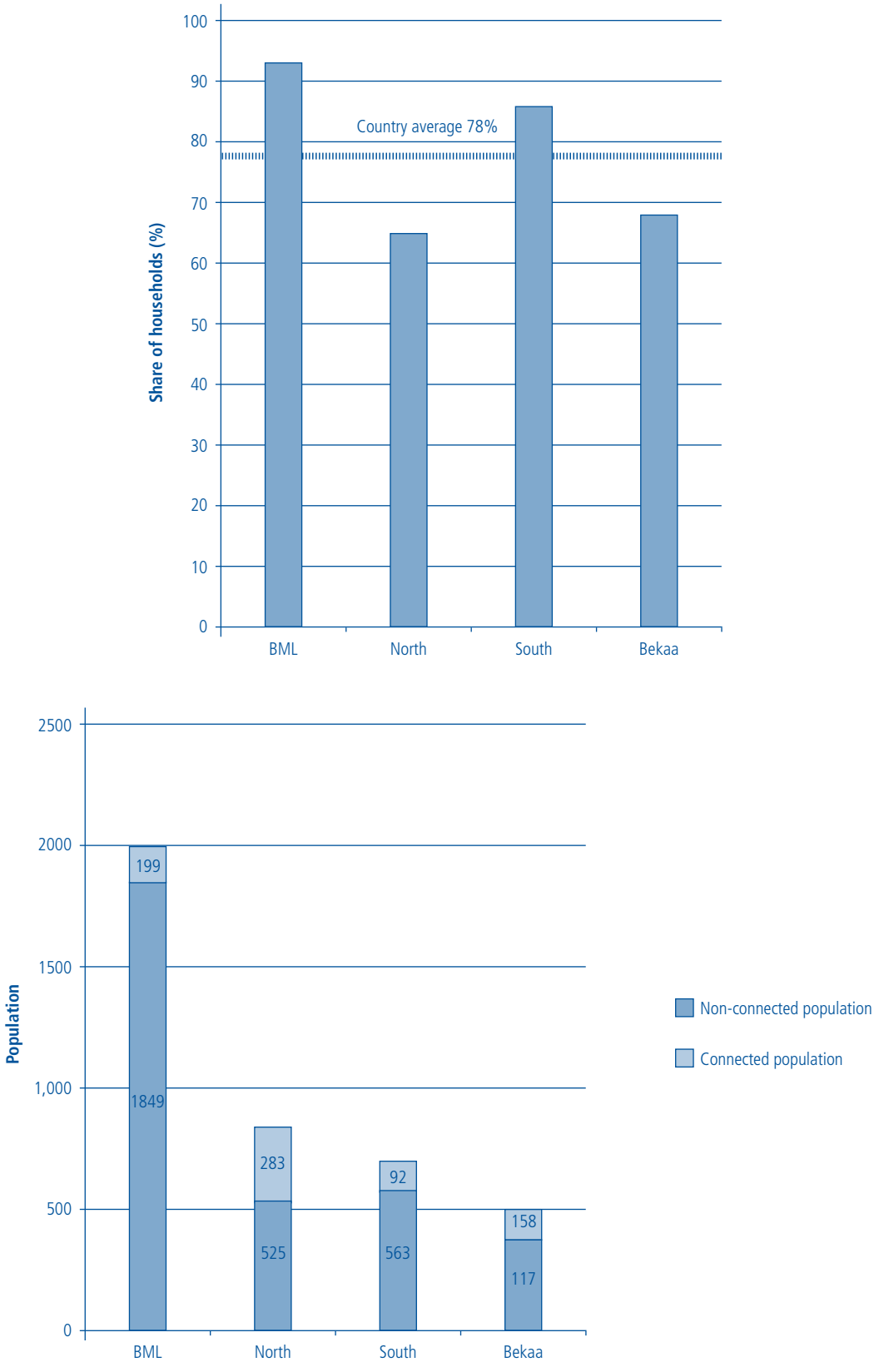
Current water demand

Current demand estimates vary depending on source and assumptions. The most critical input parameters for estimating water demand include population, per capita water consumption, network efficiency, total irrigated area, irrigation consumption and industry demand.

Socio-economic costs of intermittent water supply

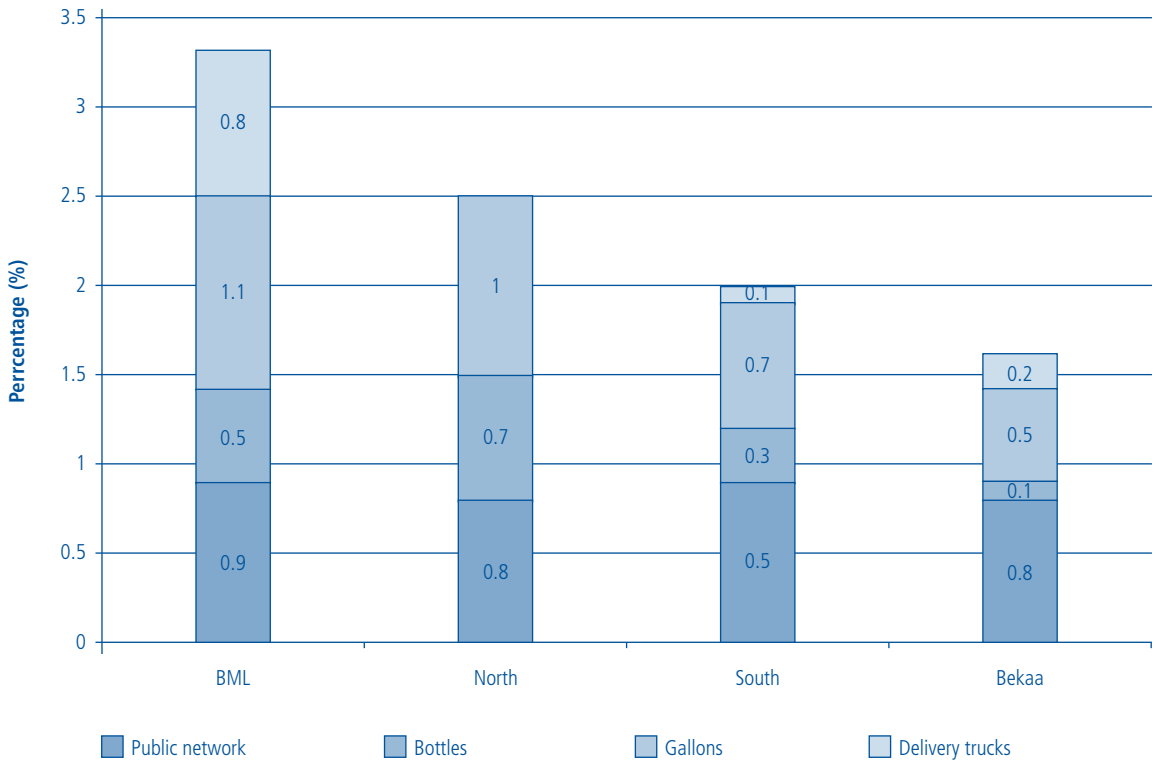
Many Lebanese households do not rely on the public water supply networks for their drinking water needs. About 22% of households (and 18% of the population) are not connected to public water supply systems. Yet, over 70% of total household expenditure on water goes to private suppliers of water.

FIGURE 22 **Household rates and population connected to water supply network (2009)**



Source: MOE/UNDP/ECODIT, 2011 State and trends of the Lebanese Environment, 2010.

FIGURE 23 Percentage share of household budget allocated to water (2009)



Source: MOE/UNDP/ECODIT, 2011 State and trends of the Lebanese Environment, 2010.

From a public health perspective, it is necessary to mention that not all the private providers of water are regulated, and so the risk to the public health is real. Moreover, the social and economic impact on the community, particularly the lower socio-economic groups, is quite severe. The annual cost to the community, above the water charges that are paid to the water establishments, is 307 million USD or 1.3% of annual GDP. This is higher than the total annual expenditure in the sector

Projected water demand

Lebanon has entered into a period of water stress whereby its total exploited resources (about 1,500 million m^3) do not meet current annual demand. Not only that but the projected demand after 2020 will start exceeding exploitable renewable resources by 2,000 to 2,500 million m^3.

Table 105

Annual water demand in mm^3 and share of total for the period 2010 -2030 (2009)

Sector	2010		2020		2030	
Domestic	467	31%	767	37%	1258	44%
Industrial	163	11%	268	13%	440	16%
Irrigation	900	58%	1020	50%	1120	40%
Total	**1530**	**100%**	**2055**	**100%**	**2818**	**100%**

Source: MOE/UNDP/ECODIT, 2011 State and trends of the Lebanese Environment, 2010.

Wastewater generation

According to CAS, only 52% of buildings were connected to sewage networks in 2004 and therefore at least 48% relied on septic tanks most of which were permeable or deliberately drained to prevent overflow. Nationwide, the highest rate of sewage connection was recorded in Beirut (96%), followed by Tripoli and Baabda (each 91%) and Zahle (83%). The lowest connection rates were in Batroun (1%), followed by Bent Jbeil (4%) and Byblos (10%).

Table 106

Estimated domestic wastewater generation

Mohafaza	Population	Domestic wastewater mm^3/year	BOD load (tons/year)
Beirut	361,366	25,1	10,040
Mount Lebanon	1,484,474	93,8	37,525
North Lebanon	763,712	50,2	20,092
Bekaa	489,865	33,6	13,428
South Lebanon	416,842	29,4	11,751
Nabatiyah	242,876	17,1	6,854
Total	**3,759,135**	**249,2**	**99,690**

Based on 2007 population.
Source: MOE/UNDP/ECODIT, 2011 State and trends of the Lebanese Environment, 2010.

IV.3.2 – POLLUTION

The degradation of air quality in Lebanon, estimated at 170 million USD per year (World Bank, 2004), is a growing environmental concern. The problem of urban air quality in Lebanon persists and has become a major source of concern to public health. Air pollution in Lebanon is affecting millions of people living in mostly urban and peri-urban areas where smog, small particles, and toxic pollutants pose serious health concerns. In addition to respiratory problems, long-term exposure to air pollution and to certain pollutants can cause cancer and damage the immune, neurological and reproductive systems.

What is air pollution?

Air pollution is the contamination of the indoor or outdoor environment by any chemical physical or biological agent that modifies the natural characteristics of the atmosphere (WHO 2011). It occurs when various gas droplets and particles are found in the atmosphere beyond their normal concentrations and/or introduced to the atmosphere by anthropogenic sources or natural phenomena.

Table 107

Annual cost of air quality degradation (2004)

Ambient/ Indoor air pollution	$M per year	% du GDP	Damages
Urban Air Pollution – Lead	28-40	0,20	Impaired neurological development in children
Urban Air Pollution – PM_{10}	26	0,56	Respiratory illnesses including chronic bronchitis, emergency room visits, respiratory hospital visits, restricted activities, etc.
Indoor Air Pollution	10-46	0,18	Respiratory illnesses
Total Costs from Outdoor/ Indoor Air Pollution & Loss of Quality of Life	112-225	0,02	Respiratory illnesses, hospital visits, general discomfort, etc.
Average Cost of Air Pollution	170	1,02	

Source: World Bank, 2004, Cost of Environmental Degradation, the case of Lebanon and Tunisia

Table 108

WHO and Ministry of Environment guidelines on air quality

Pollutant	Length exposure	WHO guideline	Lebanese guideline
O_3	1 h		150
	8 h	100	100
NO_2	1 h	200	200
	24 h		150
	annual	40	100
SO_2	10 min	500	
	1 h		350
	24 h	20	120
	annual		80
CO	15 min	100,000	
	30 min	60,000	
	1 h	30,000	30,000
	8 h	10,000	10,000
TSP	24h		120
PM10	24 h	50	80
	annual	20	
PM2.5	24 h	25	
	annual	10	
Lead	annual	0,5	1
Benzene	annual	[a] Risk of developing a cancer at any concentration: 6 x 10^{-6}	16

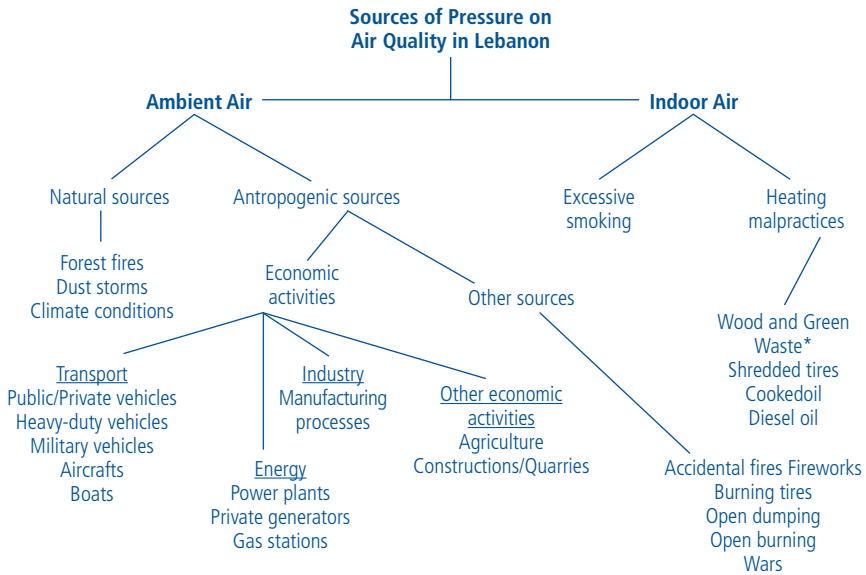
[a] Additional risk of developing a cancer during a lifetime (70 years), for a population exposed to an average concentration of 1 µg.m-3 of the considered compound in the air breathed. Ex. A person exposed to 1 µg.m-3 of benzene during all her life will have 1 + 6.10^{-6} = 1.000006 times more probability of developing a cancer than a person who has not been exposed to benzene.

Source: Afif C, (s.d), Pollution atmosphérique au Liban: état des connaissances and impact sanitaire, Département de chimie, Faculté des sciences, Université Saint-Joseph de Beyrouth, Liban

DRIVING FORCES

Many forces, acting together or in isolation, are affecting the air quality in Lebanon. These forces may change the ambient and/or indoor air, and may stem from natural phenomena or anthropogenic activities.

Figure 24 **Driving forces affecting air quality in Lebanon**



** Green wastes include grass cuttings, leaves, shrubs and tree trimmings.*

Source: MOE/UNDP/ECODIT, 2011, State and trends of the Lebanese Environment, 2010, chapter 4, p. 109.

Anthropogenic sources

The most significant sources of pollution from economic activities are the transport, energy and industry sectors.

Transport sector

In Lebanon, the transport sector (including land, air and maritime) was the main source of air pollution in the country (MOE/EU/NEAP, 2005). Alone it accounted for 59% of the national NOx emissions in 2005 (MOE/GEF/UNDP, 2010 unpublished data). The combustion of fossil fuels by the transport sector release pollutants that cause damage to (1) human health by inhalation and congestion of pollutants, (2) agriculture and sensitive ecosystems.

Air pollutants

Air pollutants are divided into two categories (gas and particles) and two sub-categories (primary and secondary). Primary pollutants are those emitted directly from the source; secondary pollutants are primary pollutants that undergo chemical and photochemical reactions in the atmosphere. The main air pollutants are listed below:

Table 109

Air pollutants by categories

Primary	Secondary	Can be Primary & Secondary
Gaseous pollutants		
Nitrogen Oxides NOx (NO & NO_2), Sulfur Oxides SOx (SO & SO_2), Carbon Oxides COx (CO & CO_2) Hydrocarbons (HC) Volatile Organic Compounds (VOC) Chlorofluorocarbons (CFCs) Hydro-chlorofluorocarbons (HCFCs) Persistent Organic Pollutants (POPs)	Nitrogen Dioxide (NO_2) Ground level Ozone (O_3) Peroxyacetyl Nitrate (PAN) (CH_3C (O) $OONO_2$)	Sulfuric acid (H_2SO_4) Nitric acid (HNO_3) Others
Aerosol, Particles, Particulates or Particulate Matter (PM)		
PM10 (with an aerodynamic diameter ad of 10 µm or less; ad≤10 µm; measured by mass - µg/m^3) are primary coarse particles usually formed by erosion of soils a/o adsorption of several small particles to form an aggregate.	$PM_{2.5}$ (ad≤2.5 µm; measured by mass -µg/m^3), PM1 (ad≤1 µm; measured by number – particle/m^3) and PM0.1 (ad≤0.1 µm; measured by number – particle/m^3) are secondary pollutants resulting from a conversion of gas/particle	PM_{10}, $PM_{2.5}$

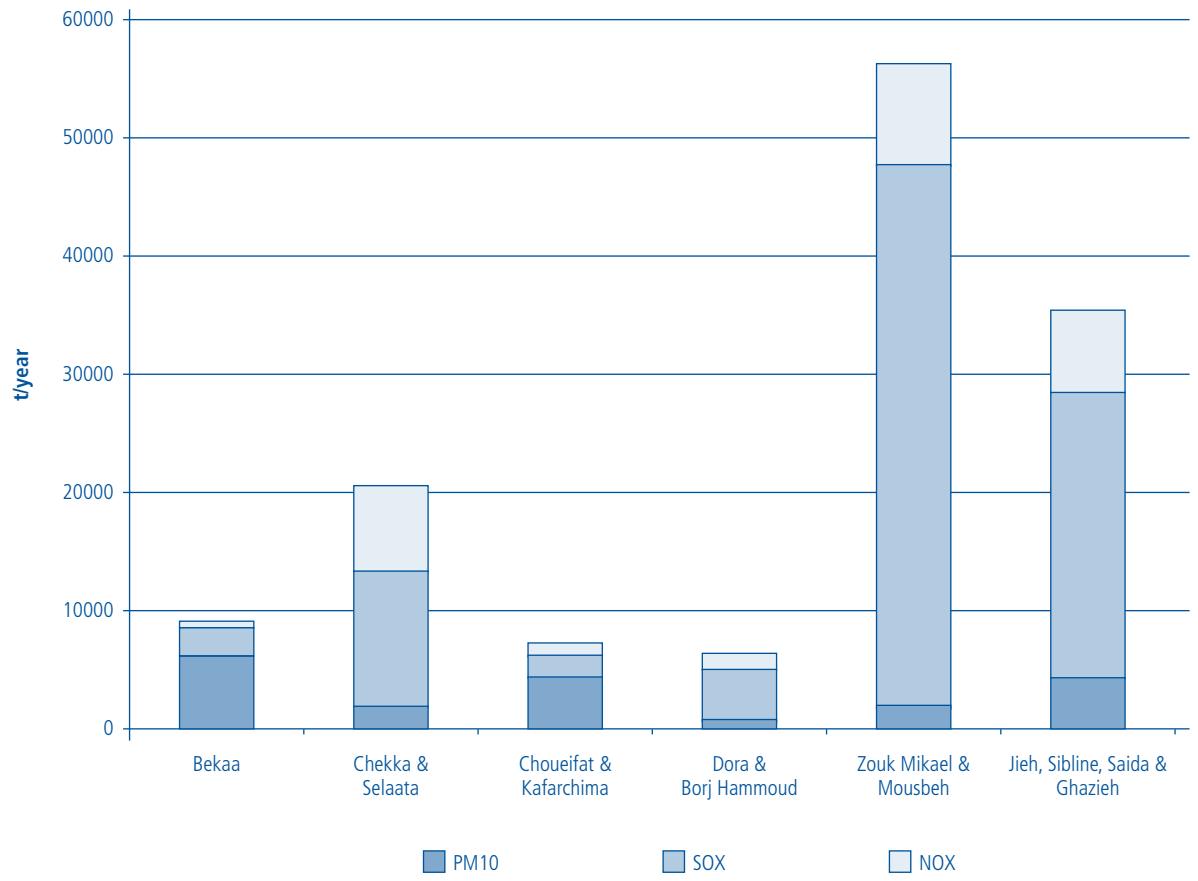
Source: MOE/UNDP/ECODIT, 2011 State and trends of the Lebanese Environment, 2010, chapter 4.

Energy sector

Energy industries (thermal power plants) were one of the largest contributor to air pollution in Lebanon emitting black plumes of HC, CO, CO_2, SO_2, NOx, soot, PM, and other pollutants (MOE/ EU/NEAP, 2005). They were the largest producers of CO_2 emissions, accounting for 39% of national CO_2 emissions in 2005.

Population growth and changing lifestyles increased the demand for electricity and other sources of energy. Because Lebanon's formal energy production did not meet demand, private backup generators produced an estimated 500MW, equivalent to 20% of the total production Industries in Lebanon were spread all over the country and the majority were small scale.

FIGURE 25 **Estimated air pollutants loads from industrial activities in Lebanon**



Source: MOE/UNDP/ECODIT, 2011 State and trends of the Lebanese Environment, 2010, chapter 4.

Table 110

Summary of pollutants from other anthropogenic activities

Activity	Generated air pollutants (incl. pathogens)
Farming Agriculture	Sprayed pesticides, NH_3, Odors, GES (CH_4, CO_2)
Open dumping	GHGs (CH_4), Bacteria, Viruses
Open burning	Products from incomplete combustion: CO, NO_x, SO_x, HC, PM and other hazardous substances including dioxins and furans (POPs)
Burning tires	CO_x, SO_x, NO_x, NMVOC, PAHs, dioxins, furans, HCl, benzene (C_6H_6), PCBs; Metals: As, Cd, Ni, Zn, Hg, Cr, and V
Quarrying, construction, open air storage sites	Targe dust plumes comprising PM_{10} and $PM_{2.5}$
Fireworks	CO_2, K_2S and N_2 – For every 270 grams of black powder (gunpowder, propellant) used,132 grams of CO_2 are created. Colors are generated by oxidized metals (e.g., the color red derives from strontium, blue from copper, gold from charcoal and iron).

Source: MOE/UNDP/ECODIT, 2011 State and trends of the Lebanese Environment, 2010, chapter 4.

Natural sources

In Lebanon, the following natural phenomena impact air quality:

- Forest fires
- Dust storms (reyah khamseenyah)
- Atmospheric and climatic conditions including temperature, humidity, atmospheric pressure, wind speed, wind direction and the height of the mixing layer

Indoor air

Indoor air quality is affected by several factors namely smoking. In Lebanon, tobacco smoke is one of the major sources of indoor air pollution.

Excessive smoking

Cigarette smoke contains an array of gaseous and particulate compounds that may cause long-term health. Some of these components are present in extremely high concentrations. For instance, cigarette smoke contains much higher concentrations of Carbon Monoxide [CO] (0.5-5% v/v) than the auto exhaust from a well maintained vehicle.

Heating malpractices

Whether burned in open fires or simple stoves that released most of the smoke into the home for heating their homes. The resulting indoor air pollution is a major threat to health, particularly that of women and young children, who spend many hours, close to the fire. Furthermore, the reliance on solid fuels and inefficient stoves has other, irreversible consequences on health (i.e., damages to the central nervous system), the environment, and economic development. Many health damaging pollutants, including PM, CO, SOx, NOx, Aldehydes, Benzene (C_6H_6), and HC are emitted. Inadequate ventilation, high temperature and humidity levels increase indoor pollutant levels.

Current situation

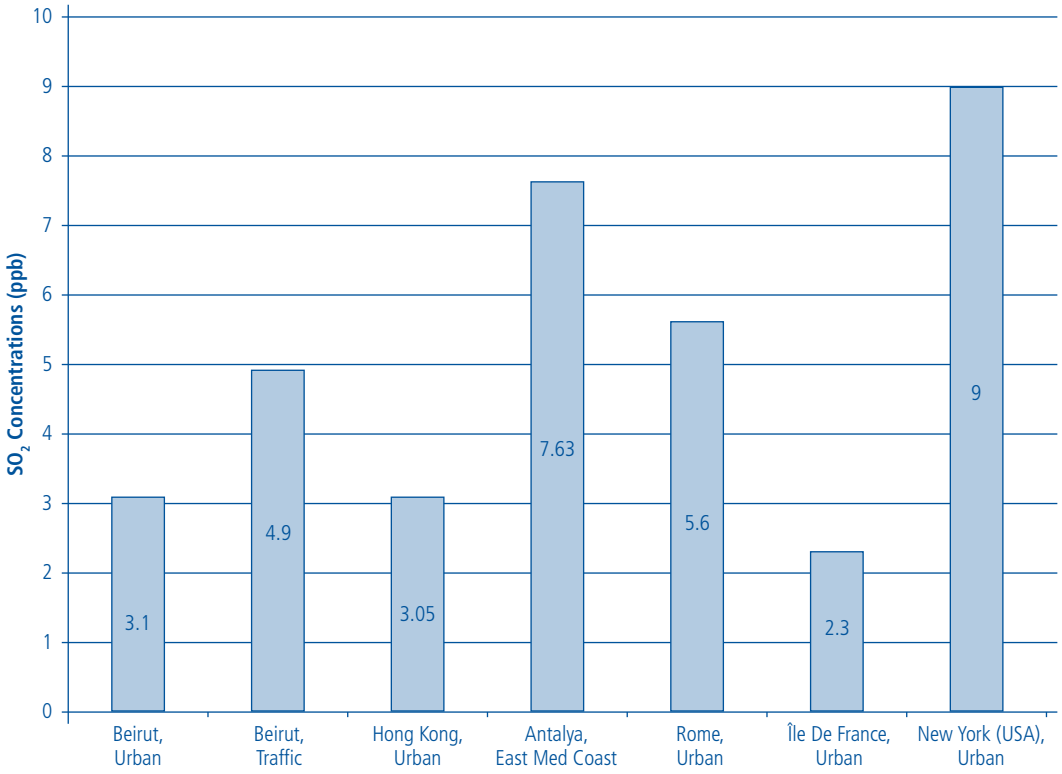
Since 2001, Lebanon's capabilities in air quality monitoring have vastly improved. Although the country still lacks a national, government-driven program for air quality monitoring, several universities and institutions have started to coordinate their air pollution related activities.

Concentrations and Composition of air pollutants

Sulfur Dioxide in Greater Beirut Area

SO_2 concentrations tend to peak in highly urbanized cities or areas affected by industrial activities, while rural or suburban areas tend to show lower levels.

Figure 26 SO_2 levels in different cities around the world



Source: MOE/UNDP/ECODIT, 2011 State and trends of the Lebanese Environment, 2010, chapter 4

Mean SO_2 concentrations in Beirut in 2005 and 2006 (3.1 ppb and 7.1 ppb) were below annual WHO guidelines (17.5 ppb) and MOE's environmental limit values (30 ppb).

Table 111

Mean SO_2 levels in Beirut

Locations	Sampling Period	SO_2 (ppb)
Beirut, Urban	Dec 2004-Jun 2006 (20 months)	3,1
Beirut, Traffic	Summer 2004	4,9
	Winter 2004-2005	9,4
	Mean concentrations (2004-2005)	7,1
WHO (2005)	Annual guidelines	17,5
MOE Decision 52/1 (1996)	Annual guidelines	30

Source: MOE/UNDP/ECODIT, 2011 State and trends of the Lebanese Environment, 2010.

Nitrogen Dioxide in Greater Beirut Area

Nitrogen Dioxide

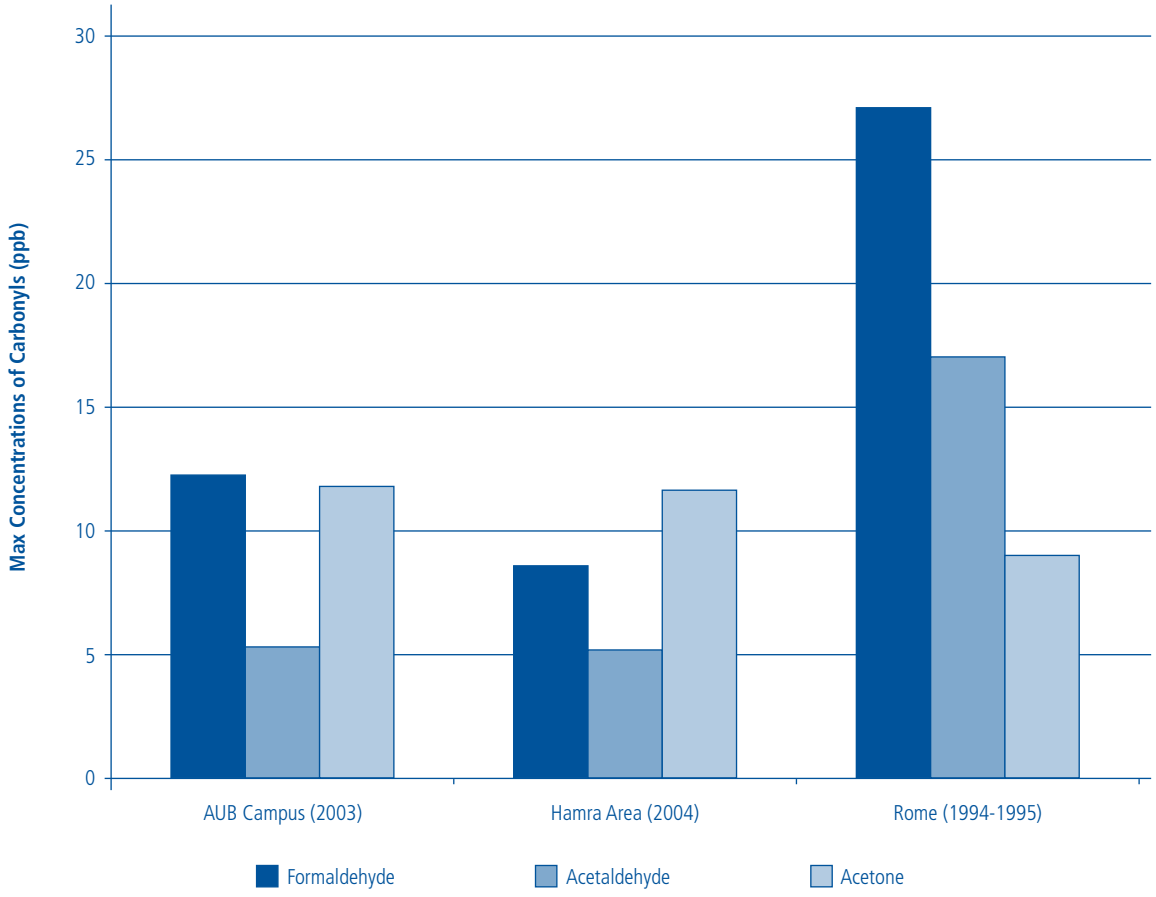
The main NO_x emission source in Lebanon is traffic. In 2009 and 2010, AQRU measured annual average NO_2 concentrations in GBA. Reported values for these two consecutive years were 53µg/m^3 and 58µg/m^3 respectively, exceeding the WHO standard (40µg/ m^3).

Thus 93% of the population in Beirut are exposed to NO_2 concentrations greater than 40µg/m^3. Chronic exposure to NO_2 can lead serious health effects.

Carbonyl compounds in Greater Beirut Area

Formaldehyde (C1), Acetaldehyde (C2), and Propanal/Acetone (C3) are three carbonyl compounds known to affect human health. The 2003-2004 urban levels of carbonyl compounds in Lebanon were lower than those recorded in Rome.

Figure 27 **Comparison of max carbonyl levels between Beirut and Rome**



Source: MOE/UNDP/ECODIT, 2011 State and trends of the Lebanese Environment, 2010, chapter 4.

Suspended Particles in Greater Beirut Area

Population density, the effect of the Mount-Lebanon range on the dilution of particulates, recurring dust storms in spring and autumn, as well as emissions from long-range transport, and limited rainfall with long spells of drought have a compounding effect on PM in the atmosphere.

Table 112
PM levels in Beirut city

Sampling site	Site description	Sampling period	Mean value during sampling period		Source
			PM_{10}	$PM_{2.5}$	
AUB	Location expoed to different sources of PM (natural & anthropogenic)	2/2003-6/2003 (4 months)	118,9 µg/m³	39,9 µg/m³	Shaka et al. 2003
Bliss Street	Urban area and coastal site	3/2003-6/2003 (3 months)	71,34 µg/m³	40,95 µg/m³	Saliba et al. 2010
AUB Seagate	Urban area and coastal site	11/2003-3/2004 (4 months)	86,9 µg/m³	-	Saliba et al. 2010
Abdel Aziz (Hamra)	Urban area and coastal site	9/2004-12/2004 (3 months)	55,1 µg/m³	-	Saliba et al. 2010
Borj Hammoud (Beirut suburbs, north)	Urban area, close to Beirut Harbor and a waste facility	1/2004-1/2005 (12 months)	103,78 µg/m³	38,525 µg/m³	Saliba et al. 2007
Haret Hreik (Beirut suburb, south)	Urban area affected by post-war reconstruction	12/2006-8/2007 (8 months)	77,1 µg/m³	28,14 µg/m³	Saliba et al. 2010
AUB	Urban areas	May 2009-May 2010	54,69 µg/m³	20,18 µg/m³	Saliba & co-researchers, publication in progress
Lycée Abdel Kader			60,77 µg/m³	20,70 µg/m³	
Grand Lycée Franco Libanais			74,69 µg/m³	20,33 µg/m³	
WHO Standards (WHO, 2005)	Annual average concentrations		20 µg/m³	10 µg/m³	

Source: MOE/UNDP/ECODIT, 2011 State and trends of the Lebanese Environment, 2010, chapter 4.

Table 113
Summary of air quality indicators in Lebanon

Pollutants	GBA	Source	Outside GBA	Source
Air quality				
NO_2	58µg/m³	AQRU Conference 2011	6.4-10.11 ppm	MOE-ECODIT 2002
SO_2	3.1 ppb	Afif and al. 2008	0.45-0.7 ppm	
O_3	-	-	115.5 µg/m³	TEDO 2009
PM_{10}	63.38µg/m³	Saliba & co-researchers (in progress)	81.4 µg/m³	
PM_{25}	20.4µg/m³	Saliba & co-researchers (in progress)	29.1 µg/m³	

Monitoring stations:
GBA 6 automatic stations (PM and gaseous pollutants) and 66 passive sampling stations (NO_2 and SO_2)
Outside GBA 3 Impactors (PM and TSP) and 13 passive sampling stations (NO_2, SO_2 and O_3)

Source: MOE/UNDP/ECODIT, 2011 State and trends of the Lebanese Environment, 2010, chapter 4.

Outside Greater Beirut Area

Outside GBA, air quality data becomes more sketchy and episodic. Most air quality studies outside Beirut have focused on Chekka and Selaata. Air pollutant levels in Chekka and Koura are presented in Table 114 and interpreted below:

- **CO:** Low levels were recorded in all monitoring locations which is an indication of the absence of inefficient combustion processes.
- **NO_2:** Relatively low levels were noted in all monitoring locations corresponding to normal transportation and industrial activities. Peak NO2 levels (from a few hours to a few days) occurred due to irregular industrial activities and were associated to a cloud of industrial emissions enveloping the Chekka neighborhood.
- **SO_2:** Measurements showed significantly high levels during the dry season in the three regions Chekka, Enfeh, and Fih probably due to the smoke plume of the cement factory. However, levels in Chekka were slightly lower than those of Fih and Enfeh.
- **PM_{10}:** Measurements in the Chekka and Koura region have shown significantly high levels in almost all sampling locations. Chekka, being the closest to all sources of emissions including quarries, showed consistently the highest PM_{10} values.

Table 114

Gaseous pollutants in Chekka and villages of Koura

Pollutant	Concentration range	Lebanese Standards MOE Decision 52/1 (1996)
CO (ppm)	0-2	9.00 (8hr)
NO_2 (ppm)	6.4-10.11	0.053 (annual)
SO_2 (ppm)	0-2*	0.14 (24hrs)
PM_{10} (µg/m^3)	10-450**	80 (24hrs)

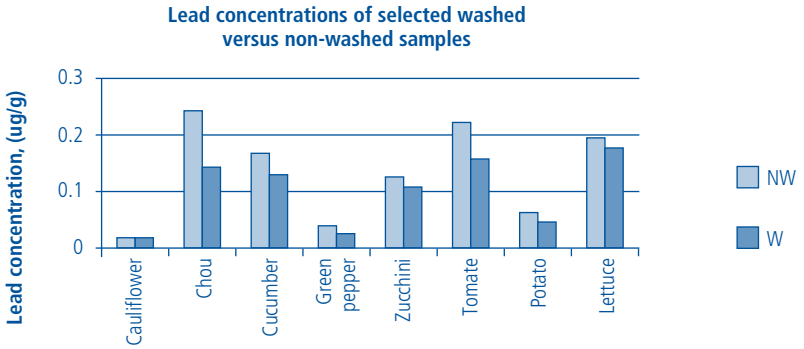
** Peaks recorded in Fih and Enfeh;*
*** Peaks recorded in Chekka.*
Source: MOE/UNDP/ECODIT, 2011 State and trends of the Lebanese Environment, 2010, chapter 4.

Contamination of agricultural crop

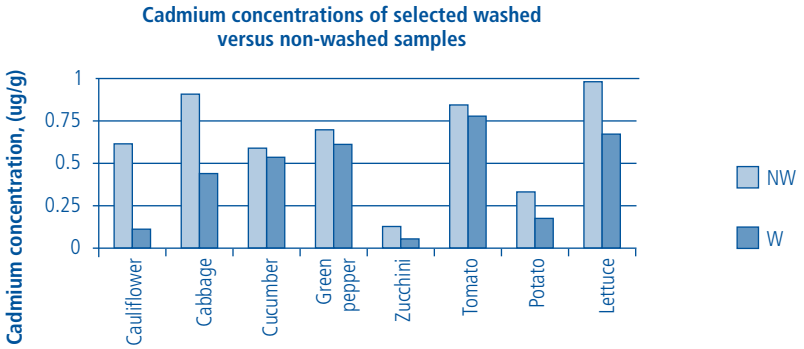
Air pollution can affect agricultural products and constitutes therefore a health concern. A study conducted in 2009 investigated the levels of four heavy metals in 181 samples of washed and non-washed vegetables collected from Beirut, Jounieh, Tripoli, and Koura. The results of the study were as follows:

Figure 28 Concentrations of four heavy metals in washed and unwashed vegetables

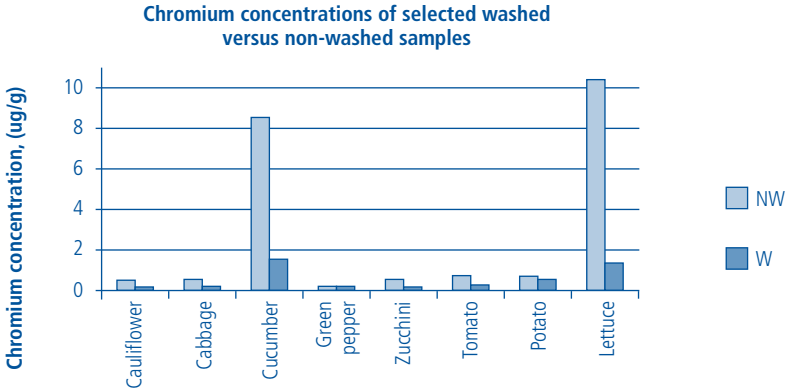
(a) Lead



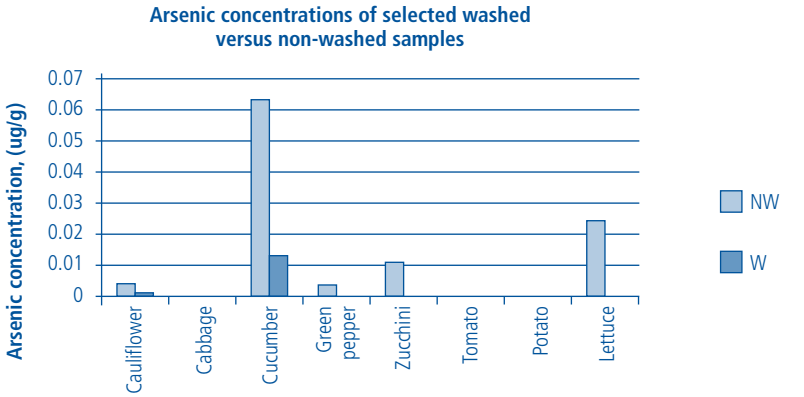
(b) Cadmium



(c) Chromium



(d) Arsenic



Source: MOE/UNDP/ECODIT, 2011 State and trends of the Lebanese Environment, 2010, chapter 4.

IV.3.3 – WASTE

Solid waste is one of the most acute and visible environmental issues in Lebanon, especially considering its impact on health and environment and its stranglehold on residential and natural space.

Environment legislation is still not well known and probably underestimated by Lebanese stakeholders (whether institutional or civil society) involved in solid waste management. The normative framework applicable to solid waste is really tenuous, scattered and, superficial. It does not allow for the establishment of a comprehensive, organized and harmonized system of solid waste management in Lebanon.

Population growth, urbanization and dwindling land areas are exacerbating solid waste management (SWM) issues in Lebanon to the brink of a national crisis. Nationwide, an estimated 51% of all municipal solid waste (MSW) is landfilled, with 32% dumped, and the remaining 17% recovered through sorting and composting (SWEEP-NET 2010). While government- and donor-funded studies and master plans related to municipal SWM have started to show modest results, very little has been achieved in terms of managing industrial waste, including hazardous waste, as well as other types of waste such as construction and demolition waste.

Driving forces

Waste generation is related to human activities, lifestyles, and environmental awareness. Rapid urbanization, growing consumption, and limited environmental awareness are having a compounding effect on waste generation.

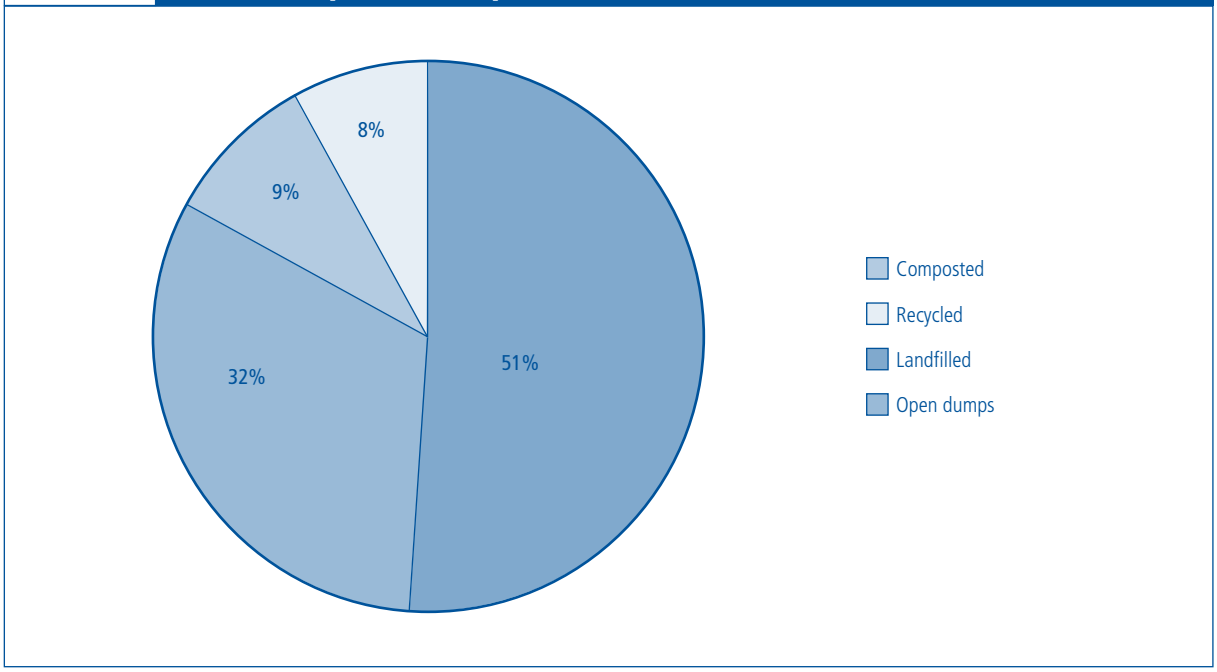
Lebanon has legislation related to SWM but these are often times outdated or incomplete. Several legal instruments do not address solid waste directly but approach solid waste concomitantly with other public issues including the protection of public health.

Current situation

- Key actors and stakeholders
- Ministry of Environment
- Ministry of Interior and Municipalities
- Ministry of Public Health
- Council for Development and Reconstruction
- Office of the Minister of State for Administrative Reform (OMSAR)

Lebanon has signed several conventions related to waste disposal (hazardous and non-hazardous).

FIGURE 29 **Solid municipal waste disposal sites of in Lebanon (2010)**



Source: SWEEP-Net, 2010.

Municipal Solid Waste Management

In Beirut and Mount Lebanon (excluding the district of Jbeil), SWM is still based on the 1997 Emergency Plan. Waste collection from curbside containers and other designated disposal areas is provided by Sukleen and transported to two sorting plants in Aamrousieh and Quarantina respectively. In 2010, waste collection capacity reached about 2,300 tons per day and waste recovery rates dropped to around 6-7 percent.

Overall Management outside Beirut and Mount-Lebanon

Outside Beirut and Mount Lebanon (excluding the district of Jbeil), municipalities continue to assume the responsibility for carrying out SWM operations (sweeping, collection and disposal), pursuant to Municipal Law No. 118 (dated 30 June 1977). Recycling and composting outside Beirut and Mount Lebanon is estimated at 5% and 13% of the waste stream, respectively.

Municipal Solid Wastes are mostly mixed (no source separation). Material recovery is therefore carried out at the end of the waste collection scheme.

Lebanon has two sanitary landfills (Naameh and Zahle) and one landfill for inert materials (Bsalim). Combined, the three landfills receive solid waste from about half of Lebanon's population.

Outside Beirut and most of Mount Lebanon, waste dumping and burning is prevalent. About 410,000 tons of MSW are dumped in the environment every year including household waste, bulky items, as well as medical, industrial, and slaughterhouse waste. The cost of environmental degradation from waste dumping and burning is estimated at 10 million USD per year.

Industrial waste

Generally speaking, industrial waste is all waste produced by industrial establishments classified according to Decree 5243/2001. Lebanon's estimated 22,000 industrial establishments generate a very diverse solid waste stream, and contribute about 6% to the total solid waste stream in Lebanon. A sizeable fraction of the industrial waste stream is non-hazardous (packaging, Styrofoam, wood pallets, food residues, etc.). The remaining fraction however is potentially hazardous, as defined by the Basel Convention. The composition of Lebanon's industrial waste is poorly documented and efforts to manage industrial waste are insignificant and inconsistent.

Non-Hazardous waste

Slaughterhouse Waste

Lebanon produces about 40,000 tons of slaughterhouse waste per year, most of which is generated in up to 10 centralized slaughterhouses located in Beirut: Karantina, Bourj Hammoud, Tripoli, Baalbak, Saida, Tyre, Jezzine and Nabatiyeh. None of the slaughterhouses currently provide adequate treatment of their waste (blood, internal organs, and bones).

Olive oil waste

There are 492 olive mills in Lebanon. The production of olive oil generates two types of waste: Olive Mill Wastewater (OMW) and pomace (a solid residue also known as olive cake). Although OMW is usually disposed of in streams and sewers, affecting water quality during the harvest season, both OMW and pomace are considered non-hazardous industrial waste. The improper management of OMW has adverse environmental impacts due to its high organic and phenolic content affecting soil and water resources.

Hazardous waste

Generally, hazardous wastes are materials that pose a substantial present or potential hazard to human health or living organisms. Such materials are considered hazardous because they have one or more of the following properties: explosive, flammable, reactive, oxidizing, irritant, harmful, toxic, carcinogenic, corrosive, infectious, teratogenic, mutagenic, and ecotoxic. Hazardous waste cannot and should not be disposed of in the municipal waste stream. It requires special handling, management and treatment.

Healthcare waste

Healthcare Waste (HCW) is waste generated from healthcare facilities such as hospitals, laboratories, and clinics. Decree 13389/2004 classifies healthcare wastes into four categories: (1) non-hazardous waste, (2) hazardous waste including infectious and non-infectious, (3) special waste including pharmaceuticals, chemical waste, cytotoxic and pathological, and (4) radioactive waste.

It is difficult to estimate the quantities of infectious hazardous waste HCW generated from all sources including laboratories and clinics. Focusing on hospitals only can produce meaningful estimates. Assuming 60% occupancy and an average generation rate of 1.0-1.5 Kg per bed per day, Lebanon's 164 public and private hospitals (about 15,342 hospital beds) produce daily about 9.2-13.8 tons of health care risk waste (about 3,358-5,000 tons per year).

In the last decade (2001-2010), Lebanon has made noteworthy strides towards improving the management of infectious hazardous HCW.

A local NGO and a private waste contractor started in 2003 to collect and treat infectious hazardous waste from hospitals and clinics. With grant funding and good management skills, the NGO was able to rapidly expand its service area and reduce the unit rate for waste treatment to 0.6 USD/kg. The private contractor went out of business shortly after.

Currently, about two percent of private medical laboratories, 33% of private hospitals and 20% of public hospitals treat their HCW in on-site and offsite units (inside and outside hospital premises respectively).

The NGO currently operates the national network for the treatment of the Infectious Healthcare Waste (IHCW), established in collaboration with the Ministry of Environment. IHCW are defined in the Public Health Code as "waste […] having an infectious risk […] that, due to its nature, quantity or metabolism causes sickness in humans and other living organisms; […] it falls into one of these categories:

- Sharp or skin cutting objects or materials.
- Blood products for therapeutic uses, not fully used or expired.
- Human anatomical waste, that is unrecognizable' body parts, tissue or organ.

The NGO offers a unique and complete specialized service that ensures the following:

- training staff in healthcare institutions
- collecting and treating IHCW all over the Lebanese territory

In 2010, the NGO treated 55% to 60% of the total IHCW flow (about 90% of the flow in Beirut) and collected waste from 81 public and private hospital.

The effects of untreated infectious hazardous wastes water, soil, air and public health are potentially harmful. Mercury is still used in some medical devices, such as thermometers, although efforts are underway to promote the use of mercury free devices.

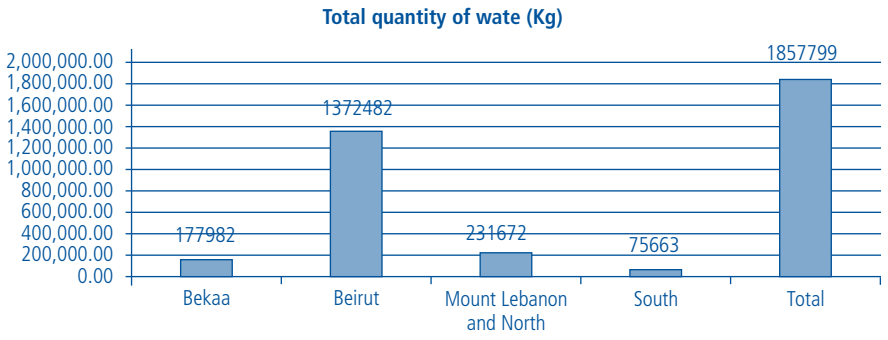
Table 115

Overview of the main healthcare waste treatment units in Lebanon (2010)

Location	Funding	Type of treatment	Treated HCW per day (kg/j)	Treated HCW per day (kg/d)*	Number of hospitals reached	Current number of beds reached	Remarks
Clemenceau Medical Center (Beirut)	Self	CMC & USM (private)	Microwave/ on site	315	1/-	94	Operational
Haykal Hospital (Koura, North Lebanon)	Self	Haykal hospital	Microwave & Autoclave/ on site	82	1/-	160	Operational
Hotel de Dieu de France à Beyrouth (Beirut)	Self	Arcenciel	Autoclave/ on site	385	1/3	343	Currently receives HCW from Hotel de Dieu de France
Zgharta (near Saydet Zgharta hospital)	AECID (Spain)	Arcenciel	Autoclave/ off site	783	22/-	1,889	Operational. Licence waiting for the approval of EIE
Jisr el Wati (within Arcenciel premises)	EU (LIFE)	Arcenciel	Autoclave/ off site	3,235	37/48	3,371	Operational. Licence waiting for the approval of EIE
Zahle (near sanitary landfill of Zahle)	Self	Arcenciel	Autoclave/ off site	332	12/-	929	Operational. Licence waiting for the approval of EIE
Saida (near old WWTP in Saida)	AECID	Arcenciel	Autoclave/ off site	1800	9/-	733	Operational. Licence waiting for the approval of EIE
Abbasieh HCW treatment center (south Lebanon)	UE-OMSAR	Mirage (private)	Autoclave/ off site	450	3/-	325	Operational

Source: Ministry of Environment, 2010.
Arc en Ciel, Environment Program, 2010.

FIGURE 30 **Arc en Ciel Data (hospitals, labs, free clinics, healthcare centers, NGO,…) (2011)**



Source: Arc en Ciel, 2011.

The infection risk of the healthcare infectious waste in Lebanon appears to be well managed. However, some health institutions dispose of their infectious waste without prior treatment despite the severe consequences that this action might have on public health. In spite of this, we realize that awareness exists.

V- Main partners in the Health Sector

V- Main partners in the health sector

The main partners in the health sector mainly include local NGOs and international bodies.

We cannot give the exact number of local NGOs. We estimate it to be around 1000. These organizations have a major role in the health sector and frequently do begin new and promising initiatives. Some NGOs expand their activity over all the Lebanese territory while other work within limited regions. However important their action is, there is a lack of coordination. Moreover, it is difficult to get to know and all their activities because of lack of communication and media coverage. Therefore, much can be done through more collaboration in order to encourage sharing experiences and transferring skills.

International organizations play an important role in this sector. They offer direct support, technical, administrative and financial to local bodies in order to improve the health of the Lebanese population and enhance the health system in the country. They develop new programs following based on specific priority themes and contribute a great deal to awareness campaigns. NGO action in the health sector is carried out in coordination with other UN agencies such as the FAO, UNESCO, UNDP and other international bodies such as the World Bank.

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Appendix 1- The MOPH Authorization Letter

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الجمهوريـــة اللبنـــانيـــة

وزارة الصحـــة العـــامـــة

الـــوزيـــر

Ref:279/07/SA/MK

رقم المحفوظات: ١/٢٠٠٣

رقـم الصـــادر: ٧/١/١٨٩١٤

بيـــروت فـــي : ١٤ كانون الأول ٢٠٠٧

لمن يهمـــــه الأمـــــر

وضع الدليل الوطني للإحصاءات الصحية

في إطار وضع دليل وطني للإحصاءات الصحية في لبنان، ليكون مستند يعتمد في رسم الخطط الصحية الوطنية،

وفي إطار التعاون بين وزارة الصحة العامة وجامعة القديس يوسف
-Institut de gestion de la santé et de la protection sociale-

نتمنى على كافة المؤسسات الصحية والتي تعنى بالأمور الصحية في القطاع الرسمي أو الخاص، التعاون مع معهد الإدارة الصحية في جامعة القديس يوسف في جمع المعلومات والمعطيات الصحية الخاصة بمؤسستكم الكريمة.

شاكرين لكم تعاونكم.

وزيـــر الصحـــة العامـــة

د. محمد جواد خليفة

الجمهورية اللبنانية
المديرية العامة
قلم المديرين
وزارة الصحة العامة

يبلغ:
المديرية العامة للصحة
مديرية الوقاية الصحية
أصحاب العلاقة
المحفوظات