

8. ANNEXES

ANNEX A - ENVIRONMENTAL & SOCIAL (E&S) SCREENING OF SUBPROJECT

This screening table is filled by the CDR PCU and submitted to the World Bank for approval.

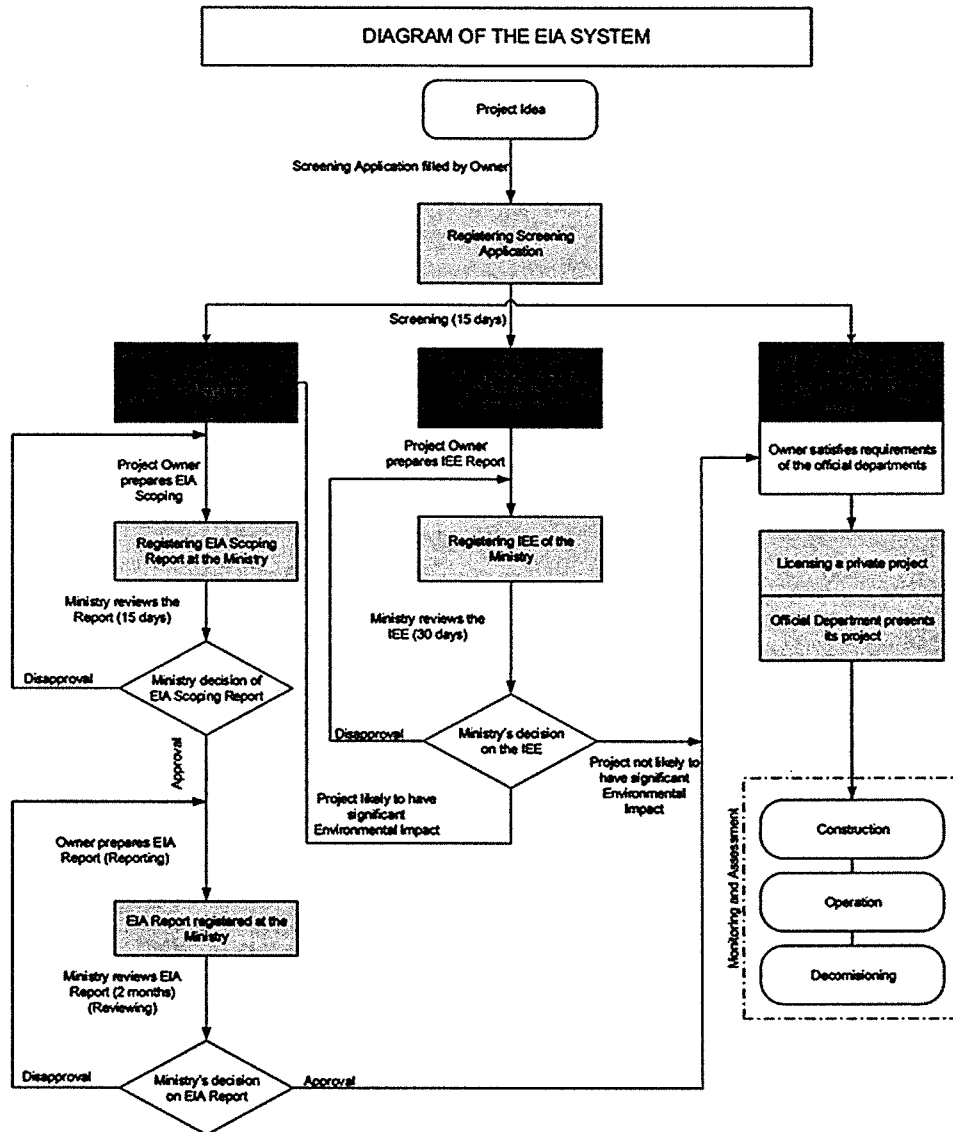
Screening factor	E&S Risk of the Subproject					Risk Rating				Remark / Suggestion
	Y	N	L	M	S	H				
1. Whether the subproject involves 'Associated Facilities'? (The 'Associated Facility' means a facility or activity which is not funded as a part of the project, and judged by the World Bank as: (a) Directly and significantly related to the project; (b) Simultaneously implemented or planned with the project; or (c) Constructed for the project and is necessary for the project.)										If so, then the relevant E&S requirements of the subproject are applicable to the 'Associated Facilities'.
2. Is the subproject located in nature habitats or reserves (existing or planned), scenic areas, forest parks, drinking water conservation areas or areas with high ecological or cultural value?										If so, the project will not be supported.
3. Does the subproject's cause pollution or increased water abstraction from international waterways?										If so, the project will not be supported.
4. Does the subproject's area intersect with important natural habitats? That is, is there any important, vulnerable or endangered species of plants or animals inhabiting in the area?										If so, the project will not be supported.
5. Does the implementation of the subproject affect common natural habitats (such as forest, river or wetland) out of nature reserves?										If so, it is required to provide the relevant impact assessment and mitigation methods in
6. Does the sub-project involve Land Acquisition, resettlement and/or economic displacement? Does the component involve restrictions on the use of land and resources including access to recyclables, so that the community or its internal group loses the traditional or customary right to use resources or recognized right of use? Does the component render any land unusable or any migrant unable to enter?										If yes, an RP and/or LRP should be prepared according to ESS5.
7. Does the sub-project impact (i) waste-pickers, (2) are any of the full or part time waste pickers are under 18 years old but over 14 years old; and (3) are any of the full or part time waste pickers under 14 years old										This age category will not be included in project activities given that Lebanese labor law ESS2 requirements prohibit child

Screening factor	Y	N	Risk rating				Remark / Suggestion
			L	M	S	H	
8. Does the sub-project expect any labor influx for the works and if the case does this labor influx cause potential impacts to Gender Based Violence?							If yes, then mitigation measures need to be defined to mitigate the GBV risks.
9. Is there any indigenous peoples/ethnic minority community in the component area, or is any indigenous peoples / ethnic minority community collectively attached to the component area?							Not applicable to the Project
10. Does the component involve reconstruction or expansion on any existing facility, or otherwise relate to it?							If yes, an environmental and social audit should be conducted according to ESS1-ESS10.
11. Is there any known archaeological, historical or other cultural heritage within the scope of the subproject?							
12. Do the public or non-governmental organizations around the subproject express strong opposition to the construction of the project?							
13. Will the subproject bring great safety and health risks to the surrounding communities?							If so, the risk rating of the subproject is classified as S or H.
14. Does the construction and operation of the subproject pose great health and safety risks to the workers?							If so, the risk rating of the subproject is classified as S or H.
15. Will the subproject cause social conflicts related to the recognition of community hazards or unfulfilled benefits to a certain extent?							If so, the risk rating of the subproject is classified as S or H.
Compliance of Existing Enterprises Related to the Project							
16. Does the subproject enterprise have legal business permission and license?							To review relevant documents and records.
17. Does the sub project enterprise comply with the relevant national environmental laws and regulations and discharge standards of 'the three wastes'?							To review compliance records (monitoring reports, certificates, etc.) and consult with relevant departments.
18. Is the subproject enterprise facing major unresolved environmental penalties or environmental responsibilities? (e.g. pending legal proceedings involving environmental issues)							To consult with relevant departments for data research.
19. Is the subproject enterprise facing environmental and social impact complaints from the surrounding residents or non-governmental organizations?							To conduct media search and consultation with the local communities and non-governmental organizations.
20. Has the subproject obtained the approval document or registration of EIA report issued by environmental protection department?							To review the approval documents through online audit of relevant departments' websites.

Screening factor	Y	N	Risk rating				Remark/ Suggestion
			L	M	S	H	
21. Has the subproject obtained the relevant land use certificate or land use approval document issued by the land department?							To review the approval documents through online audit of relevant departments' websites. For the existing enterprise, it is required to carry out Due Diligence on land acquisition.
22. Does the subproject need to be examined and approved by relevant departments such as safety, soil and water conservation, geological disasters, flood control and so on? If necessary, state the approval status.							
Overall environmental and social risks: (The overall level of E&S risk is determined by the highest risk rating of the issues above.)							Documents required:

ANNEX B - DIAGRAM OF THE NATIONAL EIA SYSTEM

As per Annex 9 of the EIA Decree 8633/2012:



ANNEX C - STATEMENT OF INFORMATION REQUIRED FOR THE INITIAL ENVIRONMENTAL EXAMINATION (IEE)

As per Annex 7 of the EIA Decree 8633/2012:

Statement of information required for the "Initial Environmental Examination (IEE)" report

The initial environmental examination report should include the following information (not necessarily in this order):

1. Executive summary.
2. Table of contents
3. Introduction: defining the project, the project owner, the person of office conducting the initial environmental examination, as well as a brief explanation of the type, size and location of the project.
4. Policy, legal and administrative frameworks: an investigation of the enforceable regulations, principles, and standards observed by the environment sector at the local and national levels, laws governing the sector under which the project is included. The information should address specifying the official department concerned, and its potential at the local and national levels.
5. Description of the proposed project: description of project components, the relevant maps according to the appropriate scale and photos, information of project location, comprehensive design, size, capacity, work program, services, the duration of operation, etc.
6. Description of the surrounding environment of the project: gathering and evaluation basic information of environmental characteristics of the study location (physical, chemical, biological, social and economic environment) taking into consideration any expected modifications before the commencement of the project or any likely changes in future.
7. Potential environmental impact of the project: identification, estimation, and assessment of all potential effects of the project on the environment (physical, chemical, biological, social and economic consequences) whether positive or negative, direct or indirect, over the short or long term.
8. Environmental management plan: this paragraph summarizes a group of impact mitigation measures, monitoring and control tools, and institutional procedures taken during building, operating, or decommissioning a project, with a view to eliminating or mitigating negative environmental effects to locally acceptable levels, if any, or to global standards. This paragraph should include the estimated cost of the environmental management plan.
9. Conclusion
10. Annexes:

ESMF

- o Summary of project documents.
- o Tables and information statements
- o List of scientific and non-scientific references used
- o List of the names of who prepared the initial environmental examination report (individuals and institutions).

Note: The Ministry of Environment has the right to modify items required in this annex in accordance with environmental essentials that are applicable to standards and role of the project. Special consideration is given to the application of article 12 "Information Publication".

ANNEX D - STATEMENT OF INFORMATION REQUIRED IN THE "ENVIRONMENTAL IMPACT ASSESSMENT (EIA) REPORT

As per Annex 7 of the EIA Decree 8633/2012:

Statement of information required in the "Environmental Impact Assessment (EIA)" report

The EIA report should include the following information (not necessarily in this order):

1. Executive summary.
2. Table of contents
3. Introduction
 - ✓ Objective and rationale of the project:
 - Definition of the project and the project owner
 - Brief description of the type, size and location of the project
 - Importance of the project to the country
 - ✓ The EIA scoping, which include the person or the agency that prepared the study
4. Policy, legal and administrative frameworks:
 - ✓ Official department concerned, its capabilities at local and national levels
 - ✓ Environmental legislation, other regulations related to the environment, the policy observed in the country
 - ✓ Environmental requirements for any of the parties participating in financing the project
 - ✓ Applicable Environmental agreements or treaties the country have joined
5. Public participation:
 - ✓ Official agencies
 - ✓ NGOs
 - ✓ Groups affected by the project
6. Description of the proposed project:
 - ✓ Type of the project
 - ✓ Location of the project: maps showing the project site and its impact
 - ✓ Size of the project, including the related activities
 - ✓ Proposed program for construction and operation
7. Description of the surrounding environment of the project:
 - 7.1 Physical and chemical environment:
 - ✓ Topographical and geological aspects, and the impact of earthquakes and other hazards

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- ✓ Study of surface and underground water
- ✓ Measuring sea and coasts
- ✓ Available means of discharging polluted water, and the quality of water
- ✓ Surround air quality, sources of air pollution
- ✓ Climate and weather service
- ✓ Noise

7.2 Biological environment:

- ✓ Vegetation and animal life
- ✓ Fish and water living creatures
- ✓ Rare or endangered species
- ✓ Sensitive areas (forests, protected areas, natural parks, etc.)

7.3 Socio-economic environment:

- ✓ Demographics (population, social fabric, employment, income distribution, customs and traditions, people expectations, etc.)
- ✓ Development activities (infrastructure, industry, agriculture, institutions, tourism, recreation, etc.)
- ✓ Land use
- ✓ Traffic
- ✓ Public health
- ✓ Historic and archaeological heritage
- ✓ Aesthetic values
- ✓ Culture and civilization values (customs and tradition, aspirations)

8. Potential environmental impact of the project:

8.1 Physical and chemical environments

8.2 Biological environment

8.3 Social and economic environment

9. Preliminary analysis of project alternatives:

- ✓ Non establishment of the project
- ✓ Alternative projects with same objectives
- ✓ Same project with different technologies
- ✓ Comparing various environmental and economic potentials

10. Environmental management plan:

a. Negative impact mitigation program:

- ✓ Summary of significant environmental consequences

- ✓ Technical detail of each mitigation measure (applicable to which impact, the conditions of their application, designs, detailed fittings and operational procedures)
- ✓ Potential environmental effects of these measures
- ✓ Linkage between these measures and other mitigation programs
- ✓ Cost of negative impact mitigation program

b. Monitoring and control program:

- ✓ Specific technical detail of control means (control standards, control techniques, periodicity of the required control, control location, measurement procedures, keeping and analyzing information, and emergency measures)
- ✓ Reporting and report submission
- ✓ Detailed budget, acquisition program and the required supplies
- ✓ Cost of monitoring and control program

c. Institutional capacity development program:

- ✓ Detailed description of institutional procedures required for the above environmental measures (responsibility for implementing mitigation measures and control/follow up procedures etc.).
- ✓ Technical assistance programs
- ✓ Acquisitions and supplies
- ✓ Organizational changes
- ✓ Cost of institutional capacity development program

11. Conclusion:

- ✓ Net profit justifying the establishment of the project
- ✓ Explanation of how to mitigate negative impact
- ✓ Prior preparations for following up control and supervision

12. Annexes:

- ✓ Minutes of public participation
- ✓ Summary of project-related documents
- ✓ Tables and information statements
- ✓ List of related reports
- ✓ List of scientific and non-scientific references used
- ✓ List of the names of who prepared the EIA report (individuals and agencies)

Note: The Ministry of Environment has the right to modify items required in this annex in accordance with environmental essentials that are applicable to standards and role of the project. Special consideration is given to the application of article 12 "Information Publication".

ANNEX E - INDICATIVE OUTLINE OF ESMP

An ESMP consists of the set of mitigation, monitoring, and institutional measures to be taken during implementation and operation of a project to eliminate adverse environmental and social risks and impacts, offset them, or reduce them to acceptable levels. The ESMP also includes the measures and actions needed to implement these measures. The Borrower will (a) identify the set of responses to potentially adverse impacts; (b) determine requirements for ensuring that those responses are made effectively and in a timely manner; and (c) describe the means for meeting those requirements.

Depending on the project, an ESMP may be prepared as a stand-alone document or the content may be incorporated directly into the ESCP. The content of the ESMP will include the following:

A. Mitigation	The ESMP identifies measures and actions in accordance with the mitigation hierarchy that reduce potentially adverse environmental and social impacts to acceptable levels. The plan will include compensatory measures, if applicable. Specifically, the ESMP: a. Identifies and summarizes all anticipated adverse environmental and social impacts (including those involving indigenous people or involuntary resettlement); b. Describes—with technical details—each mitigation measure, including the type of impact to which it relates and the conditions under which it is required (e.g., continuously or in the event of contingencies), together with designs, equipment descriptions, and operating procedures, as appropriate; c. Estimates any potential environmental and social impacts of these measures; and d. Takes into account, and is consistent with, other mitigation plans required for the project (e.g., for involuntary resettlement, livelihood restoration, Indigenous Peoples, or cultural heritage).
B. Monitoring	The ESMP identifies monitoring objectives and specifies the type of monitoring, with linkages to the impacts assessed in the environmental and social assessment and the mitigation measures described in the ESMP. Specifically, the monitoring section of the ESMP provides: a. a specific description, and technical details, of monitoring measures, including the parameters to be measured, methods to be used, sampling locations, frequency of measurements, b. detection limits (where appropriate), and definition of thresholds that will signal the need for corrective actions; c. monitoring and reporting procedures to (i) ensure early detection of conditions that necessitate particular mitigation measures, and (ii) furnish information on the progress and results of mitigation.

C. Capacity Development and Training	• To support timely and effective implementation of environmental and social project components and mitigation measures, the ESMP draws on the environmental and social assessment of the existence, role, and capability of responsible parties on site or at the agency and ministry level. • Specifically, the ESMP provides a specific description of institutional arrangements, identifying which party is responsible for carrying out the mitigation and monitoring measures (e.g., for operation, supervision, enforcement, monitoring of implementation, remedial action, financing, reporting, and staff training). • To strengthen environmental and social management capability in the agencies responsible for implementation, the ESMP recommends the establishment or expansion of the parties responsible, the training of staff, and any additional measures that may be necessary to support implementation of mitigation measures and any other recommendations of the environmental and social assessment.
D. Implementation Schedule and Cost Estimates	For all three aspects (mitigation, monitoring, and capacity development), the ESMP provides a. an implementation schedule for measures that must be carried out as part of the project, showing phasing and coordination with overall project implementation plans; b. the capital and recurrent cost estimates and sources of funds for implementing the ESMP. These figures are also integrated into the total project cost tables.
E. Integration of ESMP with the Project	The Borrower's decision to proceed with a project, and the Bank's decision to support it, are predicated in part on the expectation that the ESMP (either stand alone or as incorporated into the ESCP) will be executed effectively. Consequently, each of the measures and actions to be implemented will be clearly specified, including the individual mitigation and monitoring measures and actions and the institutional responsibilities relating to each, and the costs of so doing will be integrated into the project's overall planning, design, budget, and implementation.

ANNEX F - PRESENTATION, ATTENDANCE SHEETS, AND MINUTES OF PUBLIC CONSULTATIONS



Minutes of Meetings

CONSULTATION MEETING FOR BAALBEK-HERMEL AND BEKAA IN BAALBEK (YAHFOUFI AUDITORIUM) – FEBRUARY 15, 2023

The main points, recommendations and concerns can be summarized as follows:

LEBANON GREEN AGRI- FOOD TRANSFORMATION FOR ECONOMIC RECOVERY (GATE)

ESMF

Topic of concern	Representative	Description of concerns raised by participants	Answer
Transparent measures	Dr. Nizar Dandash, Democratic Movement for Culture and Development	Adopt transparent measures and apply lessons learned from previous experiences	
Organic farming	Dr. Nizar Dandash, Democratic Movement for Culture and Development	Encouraging organic farming, planting the unexploited agricultural lands, reducing the use of fertilizers, supporting the marketing of crops (cherries and Zaatar for expatriates), supporting the agro industries, constructing hill lakes, and increasing awareness among the various stakeholders	Technical Assistance will be provided on climate-smart agriculture practices
Municipalities role	Moustapha AlShall – Baalbeck President of Municipal Council	Municipalities are the main stakeholders in this project, especially for agriculture infrastructure	Projects will be identified and implemented on a participatory approach basis, including all relevant stakeholders
Solar-powered systems and agricultural refrigerators	Khodor Jaafar - Representative of Olive trees growers Union in Baalbeck El Hermel	Assist farmers in solar-powered systems and agricultural refrigerators (cold storages). Encourage the fishing (trout fish) sector in the Al Aassi river basin, promote forgotten crops (Figs, and pomegranates), chestnut and olive tree cultivations	
Poultry breeder sector	Rouhi Abou Faisal - Representative of the syndicate of poultry growers	To support the poultry sector because it is suffering from high cost of fodders and energy	
Feasibility studies	Abir Harika - Aalil Al Insan (Human's Association) عائلة الإنسان	Farmers need feasibility studies to lead them in planting new crops.	
Production of wheat and beet	Mohamed Al Farrou - Head of the National Peasants Union	The main crops that should be focused on are wheat and beet. A beet industry owned by the ministry of agriculture was closed in 2000 and can be reopened and operated, in addition to a waste of unused lands that can be planted	
Land reclamation	Mohamed Al Farrou - Head of the National Peasants Union	Land reclamation is an important activity that can increase the use of agricultural lands	

LEBANON GREEN AGRICULTURE TRANSFORMATION FOR ECONOMIC RECOVERY (GATE)

ESMF

Topic of concern	Representative	Description of concerns raised by participants	Answer
High cost of irrigation	Mohamed Al Farou - Head of the National Peasants Union	Most farmers rely on private wells as the source of water resulting in additional financial burdens. Supporting solar photovoltaic stations is the solution	
Improving the cultivation of imported crops	Yasser KhairEldine - Farmer from Majdloun and representative of Fruit Trees syndicates in Baalbeck El Hermel	Improving the cultivation of crops such as walnuts, raspberry and blackberry. Empowering Caper bush or Capparis spinosa (in Latin) and saffron cultivation which are promising.	Iranian ministry of agriculture proposed assistance for Saffron cultivation for Lebanese farmers
Focus on the quality of produced crops	Ahmed Al Hajj Hassan - Representative of Growth and Development association	It is important to focus on the quality of crops produced. Create access to new local and international markets for the small producers. Establish a cold storage unit for fruits and vegetable. Support extension programs, inputs, marketing for small farmers/ family farmers to keep them attached to their land. Control and monitor the quality of seeds (non-hybrid seeds) Encourage the local and authentic seeds	
Alternative crops	Rima Assaf - Representative of Al Najda Al Shaabiya (النادية الشعبية) in Baalbeck El Hermel	Support alternative crops, specifically the mushroom which can be used as a substitute for meat, being an easy cultivation process and convenient for the smallholder farmers. Empower the small farmers and cooperatives owned by women	
Protect the small farmers	Ali Sulaiman - Representative of the Grapes Growers Syndicates	Support and protect the small farmers from the monopolists, and facilitate provision of alternative energy	

LEBANON GREEN AGRICULTURE - FOOD TRANSFORMATION FOR ECONOMIC RECOVERY (GATE)

ESMF

Topic of concern	Representative	Description of concerns raised by participants	Answer
Health protection	Amira Taha - Representative of the Committee of Mother and Child association in Bekaa	Absence of health protection for peasants, farmers, and workers in agriculture which make them the most vulnerable group in society	
Interventions should be tailored to the needs	Representative of Central Bekaa Union of Municipalities	Agricultural interventions should be tailored to the needs of each region. The targeted areas can be divided into harmonious climatic zones	
Fruit trees challenges	Omar Al Khateeb - The head of fruit trees syndicates of in Bekaa	Fruit trees such as grapes, apples and other face permanent problems caused by country circumstances: road blocks, Beirut port explosion, and high production cost. It is recommended to support the transportation and establish cold storage for fruits, fruit drying centers, and agro-industries units to allow products to compete in the local and international markets. Focus on promising varieties of crops that resist diseases and dehydration	
Identifying the type of crops	Anwar Al Kazeh - Representative of the rural development Directorate in Baalbeck, Ministry of Agriculture	Climate, soil, geographic location, seeds, and seedlings are the main determinants of identifying the type of crops. Supporting small farmers, and smallholders are important to empower them to identify suitable practices preventing the use of harmful inputs. Supporting the forest sector, livestock, natural pastures, and fodder crops	Environmentally friendly projects will be elaborated and well-studied before being approved
Wheat cultivation	Fatima Hamiyeh - Representative of Mawaseem - Food and Crafts Manufacturing Cooperative (Taraya - Baalbeck)	Focusing on wheat cultivation is a strategic necessity for the country with the smart program for organic fertilizing	
Small producers	Rabaa Al Dirani - The Representative of the Productive Cooperative in	Empowering small producers with supplies to help them in food processing.	

Topic of concern	Representative	Description of concerns raised by participants	Answer
Assist the organic agro-food producers	Qasraba and its vicinity (خيرات البقاع) Ali Alaaw - Head of Bouzour Al Tanmiya (Seeds) of development - (بذور التنمية)	Assist the organic agro-food producers in transportation, cultivation and marketing. Increase tourist services such as Guest Houses (150 Guest Houses in Lebanon, more than 70 percent are located in rural areas). Grafting forest trees with new promising crops such as pistachio and chestnut is an opportunity and already tested by farmers	Climate-Smart Infrastructure and Services for Agri-food Development will be supported
Facilitate the testing of soil, products, and water	Yasser KhairElDine - Farmer from Majdoun and representative of Fruit Trees syndicates in Baalbeck El Hermel	Facilitate the testing of soil, products, and water to support farmers in reducing production costs and the quality of food. Hydroponics farms, aquaponics farms, and the expansion of greenhouses also are promising sectors.	
Opportunities in agriculture	Moustapha Jamal ElDine - Head of the Cooperative for Breeding and Marketing Bee Products in Tal Abyad	Opportunities are vast and promising	
Honey production	Moustapha Jamal ElDine - Head of the Cooperative for Breeding and Marketing Bee Products in Tal Abyad	Honey production is a promising sector, beekeepers need support in honey testing, more promotion in the media, and more awareness among the public on the quality of honey. Cultivation of Almonds, Sumac, and Sesame are also promising crops	Ministry of Agriculture is preparing a national conference for beekeepers and honey production
Trout fish production	Mohamed Amro - Head of the General Agricultural Cooperative in Hermel	Trout production can increase from 2,000 tons to 10,000 tons. Increasing areas and encouraging new farmers is a challenge. Support fishermen in photovoltaic stations and marketing are needed. Finding new markets for olive oil and empowering this sector are important	

LEBANON GREEN A GRI- FOOD TRANSFORMATION FOR ECONOMIC RECOVERY (GATE)

ESMF

Topic of concern	Representative	Description of concerns raised by participants	Answer
Empowering women who produce Mouneh	Roula Dagher Representative of The Women committee in the Catholics Archbishopsric in Zahle	Empowering women producing traditional Lebanese food (Mounen) in their houses in improving their access to modern marketing and quality control in smart ways	
Value chain of organic cultivation	Nicolas Haddad Representative of the Advancing Research Enabling Communities Center (AREC) – AUB;	All related studies and research about the incentive crops are available and accessible. The value chain of organic cultivation is a delicate process we need to be aware of all details	Capacity Building will be designed based on the farmers' needs
Find good markets for organic products	Houssain Drwish – Head of Greenhouses growers in Lebanon	Finding good markets for organic products on a sustainable basis. The traditional crops are still important, and it is also important to focus on the cultivation of figs, pomegranate, white cherries, gnarch (جنايك), quince (اسفرجل) and Hawthorns (قزبرج). New markets that connect the farmers with the consumers directly. Climate disasters are also constraints for Lebanese farmers. Farmers are suffering from the absence of Social and Health Security, and the Ministries of Agriculture and Health should take this issue into consideration	
Cooperatives culture concept	Douaa Ghali Representative of the Directorate of Co-operative in the ministry of agriculture in Badalbeck/AI Hermet	Focus on the cooperatives culture concept with the aim of facilitating work in the cooperative sector, investing in knowledge and establishment of cooperatives, and founding schools for farms management	
Support value chains for crops	Jean Fakhry – Head of the Union of Municipalities of Deir Al Ahmar	Support value chains that enhance self-sufficiency, at the same time exporting is very crucial for farmers who need to have sufficient foreign funds to buy imported inputs and fertilizers, therefore balancing between these two components to fulfill the consumer needs	

Topic of concern	Representative	Description of concerns raised by participants	Answer
Local employment and competition	Pauline Balaq - Representative of Zahle municipality	and focusing on conforming specifications to foreign markets is a necessary task. In addition, competition with the outside markets require improving the labeling and packing phases The problem of agricultural local employment and competition with foreign workforce. It is important to identify the role of municipalities during the execution of this project, to identify the farmers in lagging regions and preparing statistical data within the cadastral area of each municipality. In Zahle, supporting the solid Waste treatment facility (serving more than 15 villages) and the waste treatment plant with solar photovoltaic is an added value in protecting the environment caused by water, soil, and air pollution which it may cause	
Expansion of agricultural land	Najib Fares - Head of the syndicate of wheat and grain growers	It is crucial to expand agricultural lands for wheat cultivation to supply soft wheat for the local market, in order to protect the food security issue for Lebanon. Support the agricultural laboratory to assist farmers specifically the poultry growers with medications and food security. Increase agricultural guidance and good governance for farmers and co-operatives	
Supporting the beekeeping sector	Hamad Jaafar – Head of The United Cooperative of Beekeepers' Cooperatives in the Bekaa	Supporting the beekeeping sector specifically with medications and honey testing.	
Implementing hill lakes	Dr. Salem Darwish – Representative of the Ministry of Agriculture.	Implementation of hill lakes should be done by the Green Plan project in the Ministry of agriculture. The project should consider	

Topic of concern	Representative	Description of concerns raised by participants	Answer
		establishing public markets in different areas to improve the direct marketing of small farmers' products. The role of municipalities is very important for the infrastructure component.	

CONSULTATION MEETING FOR SOUTH LEBANON AND NABATIYEH IN NABATIYEH (AL MALAK RESORT, ANSARIYEH) – FEBRUARY 17, 2023

The main points, recommendations and concerns raised can be summarized as follows:

Topic of concern	Representative	Opinion / Suggestion	Answer / Clarifications
Targeted geographical areas.	Green Project – Ministry of Agriculture (Eng. George Chmali)	- Objection regarding the targeted areas that are limited to south, North, Bekaa and excluding Month Lebanon	Mr. Rouhana from World Bank clarified that the project will target all the Lebanese territory and each area will have its appropriate intervention, targets and projects, depending on its needs, capacity and characteristics.
Engagement of public sector in the identification process / reduce import and increase export of agricultural products.	Jihad al Binaa – Eng. Salim Mrad	- Emphasizing the importance of engaging the public sector as Ministries and parliament committees in the identification of needs and solutions in order to link the projects' interventions with the required legislations. - Prioritize the production of raw materials in order to reduce import from other countries.	
Enhancing Lebanese products and marketing productions	انقاد مراري الشيخ / Hassan Fakih	- The government should support the small-scale agriculture and industries. - The Lebanese embassies and the Lebanese diaspora could play a role in the marketing process of the Lebanese products.	
Clarification about the project	المحل البلدي المنطقة الاول – Mr. Ali el Zein	- Questioning the continuity of the project after the departure of the Syrian refugees? - Asking for a more elaborated plan for the project determining clearly the targeted area and beneficiaries.	Confirmation that the project will target the Lebanese population regardless of the presence or departure of the Syrian refugees, knowing that they highly contribute in the agriculture.
Transparency in the methodology of work / water strategy	Agricultural Cooperative in Azour / Eng. Joseph Rouhana	- To adopt transparency and avoid clientelism in the implementation of the project. - The importance of rationalizing water uses by implementing of dams and hill lakes...	Mr. Rouhana clarified that the work will be transparent and clear criteria will be adopted.

Topic of concern	Representative	Opinion / Suggestion	Answer / Clarifications
Fisherman sector	قائدات الصيادين في خيبران Ali Kawtharani	- The fisherman sector is the most deprived sector. - If this sector is supported it will create many jobs opportunities. - The importance of elaborating a national strategy to preserve this sector and to enforce the law to use legal fishing methods.	
Linkage between the crops to be supported and the channels of marketing	Representative of the Ministry of Agriculture	- To support crops that can be easily marketed.	
Women support and marketing ideas	Beit el Hiraf association – Jinan Bader el din	- Support women to work and to achieve self-sufficiency. - Suggestion to create a link between agricultural cooperatives and the Lebanese army so that the latter buys the products of the cooperatives.	
Capacity building	International Group for Humanitarian Assistance (BESME) / Mrs. Goulshan Saglam	- The importance of the capacity building sessions for farmers and women specifically.	Capacity building is within the project framework
Importance to support the energy sector	رئيس دائرة التربة الزراعية في جبل لبنان / Khalil Abou Rjeili	- To emphasize the energy efficient measure in the project.	
Canals 800 project	Head of Jabal Amel Union of Municipalities / Mr. Ali Taher Yassin	- A recommendation to continue the execution of the Litani irrigation project "Canals 800".	

Topic of concern	Representative	Opinion / Suggestion	Answer / Clarifications
. waste water treatment	Head of Sahel el Zahrani union of Municipalities / Eng. Ali Matar Association	- The importance to work on waste water treatment as preventing measure to preserve agriculture and to work on having production safe for consumption and suitable for exportation. - To work on protecting and extending the reserves in the regions in order to preserve the nature and to extend the agriculture lands.	
. Extension of the natural reserves	Mr. Amwaj al Biala / Mr. Malek Ghandour	- The manpower and the natural resources existing in Lebanon are the main resources that should be taken into consideration and supported to grow and to help in the economy growth and ensuring the self-sufficiency. - The main factors influencing the agriculture are: o The Syrian displacement working in agriculture. - The absence of a good and adequate water management system and plans causing the problem of water insufficiency.	
. Importance of the existing manpower and resources / factors influencing agriculture	International Group for Humanitarian Assistance (BESME) / Mrs. Goulshan Saglam	- The climate change is influencing the rain fed crops mainly and the beekeeping. - The importance of focusing on the good and rationalized water management, to avoid water scarcity. - The importance to define "the small farmers" that can benefit from the project.	
. Water management and rationalization / climate change influence	Agricultural Cooperative in Azour / Eng. Joseph Rouhana	<u>Suggestion for project:</u> - To establish an agriculture academy and link the benefit from the project with having a graduation from this academy in order to have the best practices and to succeed the project.	
. Agriculture academy / animal / production marketing	Eng. Salim Mrad – محمد السيد		

Topic of concern	Representative	Opinion / suggestion	Answer / Clarifications
		- Introducing new climate-friendly crops. - To work on ensuring animal feed. To help the farmer with the knowhow and the needed equipment and seeds that allow him to produce his needed quantity of animal feed. - One of the main problems facing the farmers in Lebanon is to sell their products, this is why the importance to work on ensuring markets and market strategy, in addition to the needed equipment for packaging and labeling...	
Production Marketing	Representative of Ministry of Agriculture in the south	- The importance to build on successful crops/projects as a model of intervention. Ex. Of REGIE and its management of the tobacco crops. - The success of any crop is linked to the marketing and selling of production.	
Coordination and collaboration with local Municipalities and local authorities / sectors of interventions	Mr. Kassem Hassan – كاسم الحسن	- To implement the project in close coordination with the Municipalities for being the close to the farmers and their needs. - To intervene in a group of sectors: - o The fish sector, since the Lebanese sea coast is wide and rich in resources - o The livestock sector, such as goats and sheep, is easy to raise with limited risks. - o The aromatic and medicinal plants. - o Ecotourism. - o Food industry, ameliorating the quality, the labeling and the marketing.	

Topic of concern	Representative	Opinion / Suggestion	Answer / Clarifications
		- Establishing of testing labs for food safety, in each cluster. - Developing crops according to the characteristics of each region.	
. Needs of laboratories	المجعية التعاونية لتربية النحل - الشهاده / Mr. Mahdi Tarhini	Establishing advanced laboratories in the regions.	محطة الأبحاث العلمية : 12 labs exist in Lebanon to test the agriculture products such as honey, but not all the product properties are tested.
. Harmony between plant and animal farming		Production must be harmonious between plant and animal farming in order to ensure animal feed and organic fertilizers.	
. Adopt the agriculture strategy prepared by the Ministry of Agriculture.	رئيس جمعية التربة / Mr. Ali Daoud	The importance to adopt and update the agriculture strategy prepared by the Ministry of Agriculture.	
. Green projects	المعمل البلدي للمنطقة الأولى / Mr. Ali el Zein	- The importance to implement green projects and to support solar power systems. - To work on projects that ensure food security and not only for exportation.	
. Marine farms / animal feed	Head of Sahel el Zahrani of Union municipalities / Eng. Ali Matar	- To support the establishment of marine farms and monitor the fishing process in order to protect the marine resources. - To support crops that complement animal farming and provide fodder.	
. Needs of laboratories / incubators for honey queens ...	مدير التسمية والبيئة - نقابة المحارون النصارين / Mrs. Amal Jaffal	- Empowering of human resources. - To Support university youth innovative proposals - To ensure laboratory for the genetic fingerprint of honey - To ensure Incubator for honey queens. - To rationalize the use of agricultural pesticides.	

Topic of concern	Representative	Opinion / Suggestion	Answer / Clarifications
. Needs for laboratories / crops development according characteristics of regions	اتحاد الوطني للفلاحين في الجنوب / Mr. Habib Yaghi	- The importance to support the rain fed agriculture. - The importance to Develop crops according to the characteristics of each region. - To ensure laboratories for soil testing	Dr. Farid Karam: evidence showing a decline in precipitations should result form an analysis over several decades. There is still no evidence showing that Lebanon is facing such a decline in precipitations.
. Support of agricultural extension centers	Head of Jabal Amel Union of Municipalities / Ali Taher Yassine	- To Support the agricultural extension centers in each region in order to offer the following services: - o Agriculture extension and support for famers in their lands. - o Soil analysis and product testing. - o Marketing, packaging of products	
. Projects proposals		<u>Suggestion for projects:</u> - To Increase solar energy projects - To ensure sufficient water to extend the agriculture lands. - Continue the implementation of the litani project (canal 800). - To implement projects in partnership with the private sector for the operation and management. - To support the plantation of conifers, for all the benefits that offers. - To benefit from the study prepared by Khatib and Alami regarding the precipitation in Lebanon.	
. Importance of COOPs	مدير عام مديرية العمل التعاوني / Mrs. Gloria Abou Zeid	- To implement hill lakes and agricultural ponds to collect water. - The importance to coordinate and support the active cooperatives and to encourage the creation of new active cooperative through a clear and efficient	

Topic of concern	Representative	Opinion / Suggestion	Answer / Clarifications
		modality that ensure the continuity of the coop in an efficient way. - To work on generalizing the concept of collaborative work.	

CONSULTATION MEETING FOR AKKAR (HALBA MUNICIPALITY) – FEBRUARY 16, 2023

The main points, recommendations and concerns raised can be summarized as follows:

Topic of concern	Representative	Description of concerns raised by participants	Answer
Marketing of production	Al Salam club- Halba (نادي السلام - حلبا)	Marketing of the agricultural production is one of the major concerns for many participants	Production, Marketing and management is part of the conceived activities to be adopted in the project
Involvement of Youth in agriculture	Akkar Network for Development Association	One of the participants proposed encouraging youth to be involved in the agricultural sector, noting that Youth are not motivated towards this promising sector. Moreover, it is advisable to encourage them and relate the sector to modern technology being one of the tools applied in modern Agriculture	Youth are one of the main categories to be targeted by the project
Supporting women in all stages of the project	Nadia Saba	One participant raised this concern, clarifying that Women do work in Agriculture but do not consider it as work. We should give them incentives and provide them with support during the whole cycle of the project	Women are part of the beneficiaries to be targeted in the project
High cost for Onions	Mohamad Youssef	Participants inquired about the high cost of onions sold in the markets	Several reasons lie behind the high cost of onions, according to the Minister: - High production cost - Low production - Exporting a voluminous amounts out of Lebanon. As for the proposed solution. The Minister referred to the mutual conventions in the agricultural sector. Accordingly, some agricultural productions such as onions, are among the products to be imported and soon available in the markets. In parallel, the ministry obliged exporters to issue a license to be approved by the ministry before exporting

Topic of concern	Representative	Description of concerns raised by participants	Answer
Nahr El Estwane needs earthy berm (ساتر ترابي) to avoid water	Union of Municipalities of Nahr El Estwane	A well-studied earthy berm (ساتر ترابي) is needed to avoid water expansion	The minister will follow up on this topic, via one of the ministry officers
Promoting Beekeeping sector	الجمعية الشعبية البيئية	Knowing the status of beekeeping, we need to promote the beekeepers and enhance this sector's production	As per the Minister, an invitation will be sent to hold a national conference for beekeepers who do not have a syndicate. The conference will be in collaboration with Arab Beekeepers Forum, connected with the League of Arab States. The Forum proposed the signature of a memorandum of understanding, but first we need to sign as a ministry a MOU with beekeepers. At the ministry we have a consultant in charge of this topic. Then we will sign a MOU to be able to export honey
Sustainable Agri-food transition	Dr. Kamal Khazaal	One participant suggested replacing Green Agri-food transition by Sustainable	The point from using Green Agri-food transition is to mitigate the overconsumption of natural resources which aggravates the climate and ecological crisis.
Supporting agricultural crops	Dr. Kamal Khazaal	We have 7 to 8 crops (milk, potatoes, apples, citrus fruits, olives, bananas...). Farmers cultivating these crops are financially losing or benefitting depending on seasons and climate. We should focus on essential agricultural crops, develop them and reduce production cost, instead of providing direct support or distributing fodder or cows	This goes with the scope of the project
Need for practical/ concrete results	Union of Municipalities Of Middle and Coast El Qayteh	Before 2019 Agriculture was not given full attention, even from farmers themselves. But the multiple crisis Lebanon is facing led most residents to work in agriculture. Even employees, military, public sector have all made a transition towards agriculture	Our consultative workshop aims to take into consideration all of the raised concerns to be included in the project planning, to achieve concrete results.

LEBANON GREEN AGRICULTURE TRANSFORMATION FOR ECONOMIC RECOVERY (GATE)

ESMF

Topic of concern	Representative	Description of concerns raised by participants	Answer
Need for materials and capacities	Union of Municipalities Of Middle and Coast El Qayteh	Available lands in Akkar are suitable for investment. Each region has its specific characteristics producing excellent products in case of affordable materials and capacities to the farmers	One of the project's components consists of providing technical support in this regard
High production cost	Hatem Ahmad Othman	Production cost is increasing due to cost of seeds which is in USD, in addition to fertilizers, medications, workers expenses, watering through canals or wells and the cost of fuels. We should seek a better system to enhance capacities for a better production, for example through the installation of solar system to reduce costs.	The WB is aware of these concerns and remarks are noted
Ensure funds for irrigation Supporting materials Securing markets	Mohamad Youssef	Funds are needed to be allocated for irrigation canals. In addition to providing support for the purchase of fertilizers and medications. In parallel, we should secure markets to sell agricultural production	Within the project framework
Weak milk production	Ard Maymounah Association (أرض ميمونة)	We should focus on milk production, being a weak sector and livestock breeders lack for know-how, experience, and green farms for breeding cows	The project focus on agri-food production and the means for enhancing it
Focus on specific sectors to achieve better results	Dr. Kamal Khazaal	It is recommended to focus on specific sectors. People are draining their energies and resources, while agricultural production is decreasing. We should decrease production costs and promote better production. We have small holdings but we should pay attention to what is more convenient environmentally	Taken into account
Infrastructure for irrigation canals	Moustafa Koucha	We encourage making an integrated plan for irrigation canals and avoid mixing canals' water with stagnant water	Taken into consideration
Overlapping of production	Mohamad Hablas جمعية أهالي الوان	In the time of potatoes harvesting, we find in the markets Egyptian potatoes	This is due to the lack of guidance to farmers, lack for agricultural calendar, and the mutual conventions made with other countries to exchange products

LEBANON GREEN AGRI- FOOD TRANSFORMATION FOR ECONOMIC RECOVERY (GATE)

ESMF

Topic of concern	Representative	Description of concerns raised by participants	Answer
Support cooperatives with small and alternative cultivations such as roses	Moustafa Koucha		Noted
Need for know-how for better production	Rima Rachid	Need know-how and awareness campaigns to know how to make better production. We need to decrease production costs while upgrading the production	Within the project framework
Need for Solar energy or alternative energy	Ahdaouna (Association)	Alwan Due to the increase of fuels, farmers need to install affordable energy outputs such as Solar energy systems or alternative energy producer	Within the project framework
Infrastructure for services	Rima Rachid	With the lack of Lebanese workers in agricultural lands, we need infrastructure for services, linked to human resources	Taken into account
Administrative procedures	Nidal Bey Merheb	Requested licenses from Lebanese official authorities is becoming tough. We need to mitigate the procedures in order to encourage Agriculture	Within the project framework
Lack for laboratory and bank for seeds	Suhail Kilani	The main problem lies in production cost. No laboratory is available for soil testing, or long distances need to be travelled for this purpose, resulting in additional burdens on farmers. No bank for seeds is available. We need to identify the available resources. Akkar can play a complete cycle in the agricultural and food production, example in animal production	Taken into account
Seed rooting bank	Khaled Taleb	We need seeds rooting bank بنك لتأصيل البذور	
Need for an agricultural plan for each area	Marwan Gauch	We need integrated agricultural plan, appropriate for each area depending on its characteristics. A general plan for farmers will assist them in deciding what and how to cultivate, what seeds are promising, what do local and international markets need to be reachable	Within the project framework

LEBANON GREEN AGRICULTURE FOOD TRANSFORMATION FOR ECONOMIC RECOVERY (GATE)

ESMF

Topic of concern	Representative	Description of concerns raised by participants	Answer
Orientation for farmers	Darb Akkar Association		Within the project framework
Establish syndicates	Union of Municipalities of Sahel Akkar	Agriculture sector must be organized through the establishment of syndicates for farmers especially those working in the food industry. In Akkar, there is no industry for food processing such as tomato paste like in Beqaa	Within the project framework
Establish industries	Union of Municipalities of Sahel Akkar	Need to encourage business men and investors to build industries	Noted
Rain fed crops such as thyme, sumac, carob...	Union of Municipalities of Sahel Akkar	Need support for rain fed crops	Within the project framework
Composting and work on production chain	Khaled Taleb	Need for guiding farmers on how to decrease production cost and improve quality	Within the project framework
Preservation and packaging of production	Khaled Taleb		
Absence of trust in governmental projects	George El Khadra	No trust in implementing project with the government, due to previous experiences which was unsuccessful	
Monitoring and Supervision	George El Khadra	Suggest cutting off 15% to 20% of the project' budget for monitoring and supervision	
Marketing productions	Food and Agriculture Organization	Need to market products	
Alternative cultivations	Khaled Taleb	Alternative cultivations especially medical plants. Due to the costs of medicines in Lebanon many people tend to use medical plants/ herbs to recover	
Organic production	Sira Hablas	Encourage organic production	In some areas it is not feasible to promote organic cultivations due to small holdings interfering with other ones
Impact of Communication cables on bees production	Al Najda Association (النجدة الشعبية اللبنانية)	Is there any impact from communications' cables or towers affecting bees and honey production?	No studies have been made

LEBANON GREEN AGRI- FOOD TRANSFORMATION FOR ECONOMIC RECOVERY (GATE)

ESMF

Topic of concern	Representative	Description of concerns raised by participants	Answer
Cutting off trees such as lizab	Suhail Kilani	Cutting off trees especially lizab should be prohibited	Noted
Soil and water tests	Tarek Seni (صندوق نقاضد عكار)	Soil test and water test should be secured to ensure the sound production in order to reach foreign markets	Soil test is very important: more than 80% of our soil is alkaline and the acidity degree is above 7.5, creating a negative impact on produced cultivations. In Abdeh there was an advanced laboratory but equipment and materials were stolen (including generator, cables...) Nearest laboratory is far for the residents especially with the high cost for transportation. We should have bacterial water analysis.
Incorporate medical herbs	Rawaa Jawhar	incorporating medical herbs into agricultural products knowing that most people diverted to this cultivation	Taken into account
Cosmetics products	Rawaa Jawhar	Providing support to the making of cosmetic products, since Women can make small scale production at home	
Aromatic plants	Rami Sakr	Recommended to be supported within the project activities	
Alternative production	meats Director of the Green project in the North	One participant is raising rabbits, stating that it is a very productive and easy project. Saying: we need alternative meats; knowing that cows need large farms to be raised and green spaces, water, lot of attention, medicines, supervision... while some alternatives are less expensive	
Milk sector	Dr. Kamal Khazaal	Milk production needs livestock, and high production cost due to expensive fodder. For milk production and red meat, we rely on importing fodder which becomes expensive. We should enable farmers to produce fodder. Grass are everywhere, so we can feed animals instead of burning it.	

LEBANON GREEN AGRICULTURE FOOD TRANSFORMATION FOR ECONOMIC RECOVERY (GATE)

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Topic of concern	Representative	Description of concerns raised by participants	Answer
		We need animals while ensuring food safety, such as cow, sheep... every farmer is able to work and market his own production within his area. Milk sector is monopolised by wholesale traders	
Local production units	Dr. Kamal Khazaal	we need local production units with marketing centres to sell our production	
Cutting off Eucalyptus (كينا)	Suhail Kilani	Cutting off this kind of trees which absorb stagnant water should be prohibited. Knowing that this tree grows quickly.	
Field management	Khaled Taleb	Field management is essential to separate fields	Each farmer having a surface can manage and cultivate it if properly informed. We should not leave fields without plantation. Under olive trees we can cultivate legumes. In addition to vegetative fertilization
Why some products are cheaper in the markets	Khaled Taleb (Darb Akkar)	We produce rose water, blossom water, pomegranate molasses and other handmade products. But we found in the markets similar products cheaper than ours.	Regarding the pomegranate molasses it is date molasses, giving it the brown colour, and costing less than pomegranates.
Funding Green Project	Elias Mesawmayi	Is there any support to the Green Plan to finance infrastructure projects	Not in the scope of the Project
How to reach small farmers having small holdings	Akkar Network for Development Association		The Minister will elaborate an agricultural register to know the potential beneficiaries
Provision of supplies	Rihab Hammoud	Is it possible to request agricultural supplies within the project?	Yes but based on special criteria set for project selection
How to reach persons in charge	Rihab Hammoud		All necessary contacts will be disseminated to all participants
Fish breeding	Mohamed Hafza	We need agricultural ponds for fish	

LEBANON GREEN AGRI- FOOD TRANSFORMATION FOR ECONOMIC RECOVERY (GATE)

ESMF

Topic of concern	Representative	Description of concerns raised by participants	Answer
Agricultural roads	Rihab Hammoud	We need to build agricultural roads in some areas to improve access to the cultivated lands. Relevant maps are available.	
Waste water	Lebanese Agricultural Research Institute (LARI)	We don't have waste water system	This is not in the scope of the project.
High exportation cost	Khaled Taleb	We worked on a production chain for potatoes and we exported items that have been accepted in the EU. But now it's expensive and the cost for exportation is very high. We don't have an atelier for packaging and refrigerating potatoes. And the transportation is expensive	
Reopening of Al Abdeh Laboratory	Lebanese Agricultural Research Institute (LARI)	We recommend re-opening Al Abdeh laboratory to allow employees resuming work, and reducing costs for farmers for testing soil and water.	
Water scarcity	Nadine Saba	Sometimes water is stolen by residents, making us deprived	Ownership by the beneficiaries will make them protect the project. In conclusion, your opinions will be taken into consideration. We will disseminate our phone numbers and all accessible means to stay in touch, in a way to express your concerns and receive appropriate replies.

ANNEX G – PEST MANAGEMENT PLAN (PMP)

In line with ESS3, Pesticides should only be used to the extent necessary as part of an Integrated Pest Management (IPM) or Integrated Vector Management (IVM) approach, and only after other pest management practices have failed or proven ineffective.

IPM refers to a blend of ecologically-focused and agriculture-focused pest management practices that aim to reduce reliance on synthetic chemical pesticides. This involves: (i) managing pests (keeping them below economically damaging levels) rather than seeking to eradicate them; (ii) rely, where possible, on non-chemical measures to keep pest populations low; and (iii) select and apply pesticides, where they are to be used, in a manner that minimizes adverse effects on beneficial organisms, humans, and the environment.

IVM refers to integrating both chemical and nonchemical interventions to manage disease vectors, the objective being to limit the reliance on chemical pesticides.

An effective IPM/IVM Plan shall:

- Select cultivars and varieties on an understanding of their characteristics, including response to sowing or planting time, productivity, quality, market acceptability, disease and stress resistance, edaphic and climatic, adaptability, and response to fertilizers and agrochemicals.
- Identify and assess pests, thresholds and control options and the risks associated with those control options.
- Rotate crops to reduce the presence of insects, diseases or weeds in the soil or crop ecosystems and maximize benefits of cultural practices that optimize biological prevention of pests and diseases, and where appropriate inclusion of non-host crops legumes to provide reservoir for natural enemies a biological source of nitrogen.
- Apply fertilizers, organic and inorganic, in a balanced fashion, with appropriate methods and equipment and at adequate intervals to replace nutrients extracted by harvest or lost during production.
- Support beneficial biological control organisms – such as insects, birds, mites and microbial agents – to achieve biological pest control (for example, by providing favorable habitat, such as bushes for nesting sites and other native plants that may harbor predators of pests and parasites).
- Maintaining vegetation cover of the soil to inhibit the build-up of soluble nitrogen by absorbing mineralized nitrogen and minimizing leaching during periods of rain; Prioritize manual, mechanical and/or selective weeding.
- Maximize the benefits to soil and nutrient stability by re-cycling crop and other organic residues.
- Consider using mechanical controls, such as traps, barriers, light and sound, to kill, move or repel pests.
- Use pesticides to complement these approaches, not to replace them.
- Integrate livestock into crop rotations and utilize the nutrient cycling provided by grazing or housed livestock to benefit the fertility of the entire farm.
- Before purchasing any pesticide, assess the nature and degree of associated risks and effectiveness, taking into account the proposed use and intended users.

In 2020, the MOA published the National Agriculture Strategy for 2020-2025. The strategy calls for the adoption of good agricultural practices (GAP), supporting and training farmers on the use of biological pest control and integrated control with the aim of decreasing the use of chemicals and pesticides and mitigating pollution³.

The MOA in collaboration with the Food and Agriculture Organization (FAO) has been implementing Projects with the objective of reduction of pollution through the promotion and application of IPM-Good agricultural practices by farmers. GATE project can build on the

³ MoE, UNDP, UNHCR, UNICEF, 2020

previous experiences and achievements of the MOA in collecting baseline data, developing IPM training curricula and technical capacities of MoA technical staff and farmers to promote and develop further the adoption of the IPM concept in Lebanon⁴.

Where the use of pesticides is justified, they should be stored, handled and applied in accordance with the recommendations for the management of hazardous materials presented in the General EHS and Agribusiness/Food Production Guidelines of the World Bank and the National regulations under the control of the Ministry of Agriculture. The objective being to prevent, reduce or control potential contamination of soil, wildlife, groundwater or surface water resources from accidental spills during transfer, mixing, storage and application of pesticides,

Pest control in Lebanon is regulated by:

- Law 728/2006: Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade.
- Law 432/2002: Stockholm Convention on POPs and classification of POPs according to their source as pesticides, industrial (IPOP) and unintentionally released (UPOP).
- Law 6/68: Regulation of trade of pesticides
- Various decisions by the Ministry of Agriculture (MoA) such as (i) MoA Decision 310/1-2010 that regulates the import, registration and use of agricultural pesticides in Lebanon and defines the requirements and conditions for registration and (ii) MoA Decision 311/1-2010 that requires that pesticide consignments be inspected at the port of entries and samples analyzed for active ingredient content and impurities that may have toxicological characteristics

Staff handling and applying pesticides should be appropriately trained. The staff shall:

- Ensure that all pesticides used are manufactured, formulated, packaged, labelled, handled, stored, disposed of and applied in accordance with the FAO International Code of Conduct on Pesticide Management.
- Not buy, store, use or trade pesticides that fall contain active ingredients that are restricted under the international conventions and protocol and under the World Health Organization (WHO) recommended classification of pesticides by Hazards and Guidelines to Classification 2019.
- Not use pesticides listed in WHO Hazard Class II (Moderately Hazardous), unless the project has appropriate controls established regarding manufacture, supply or distribution and/or the use of these chemicals. These chemicals should not be accessible to personnel without proper training, equipment and facilities to handle, store, apply and dispose of these products correctly.
- Preferably use selective pesticides with a low Environmental Impact Quotient (EIQ) where appropriate, rather than broad-spectrum products, in order to minimize impacts on non-target species.

Storage

In Lebanon, pesticides are predominantly stored by farmers in agricultural areas. However, some of the pesticides are stored in residential areas (10% of the pesticides in the South and 17% in northern Mount Lebanon) are stored in residential areas.⁵ Recommended practices for storing pesticides are summarized below:

- Store all pesticides in a lockable container or warehouse with a barrier that has enough space to collect any spills without contaminating the environment. Stores should be away from water sources, residential and built-up areas, and livestock and feed storage areas.
- Obtain spill kits and institute appropriate control measures in case of accidental spills.
- Store all pesticides in their original labeled containers and ensure that storage instructions are followed.
- Keep a record of all pesticides purchased, noting when they were received, the amount used, the amount left in store and their location.
- Keep product Safety Data Sheets (SDSs) in appropriate places in storage facilities.

⁴ FAO (2020) Briefing note on Integrated pest management. Retrieved March 2023, from <https://www.fao.org/3/cb1199en/CB1199EN.pdf>

⁵ MoE, UNDP, UNHCR, UNICEF, 2020

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- Warehouses should have adequate ventilation, secondary containment, showers and emergency kits.

Handling

- Operators must read, understand and follow product label instructions for safe mixing, application and disposal; use qualified personnel for critical operations (eg mixing, transfers, tank filling and application).
- Insist that the correct Personal Protective Equipment (PPE) (eg gloves, coveralls, eye protection) for each route of exposure listed in the SDS is worn at all times when handling and applying pesticides.
- Require that all mixing and filling of pesticide tanks be done in a designated filling area. It should be away from waterways and sewers. If on concrete, liquids spills should be collected and disposed of as hazardous waste and ensure spills are cleaned up immediately using appropriate spill kits; spills should not be washed into waterways or sewers.

Application

- Use the method of application with the lowest EHS risk and ensure that non-target organisms are not affected.
- Select pesticide application technologies and practices designed to minimize offsite movement or runoff (e.g., low drift nozzles, using the largest droplet size and lowest pressure appropriate for the product).
- Establish buffer zones around waterways, residential and built-up areas, and livestock and feed storage areas.
- Ensure all equipment is well maintained and properly calibrated to apply the correct dosage.
- Insist that applications take place under appropriate weather conditions; avoid wet weather and windy conditions.

Arrangement

- Any unused diluted pesticides that cannot be applied to the crop, as well as rinse water and pesticides that are obsolete or no longer approved, should be disposed of as hazardous waste, in accordance with FAO guidelines.
- The majority of farmers in Lebanon burn empty containers (87% in Akkar and 64% in the South) or throw them with the municipal waste (60% in northern Mount Lebanon and 50% in Central Bekaa). Other practices include throwing empty containers in fields or rivers, handing them over to municipalities or selling them.⁶ Empty pesticide containers, foil seals, and lids should be triple-rinsed, and washings used in the pesticide tank should be sprayed on the field or disposed of as hazardous waste in a manner consistent with FAO guidelines and according to the manufacturer's instructions. Containers should be stored safely under cover prior to safe disposal; they must not be used for other purposes.

Fertilizers

- Store fertilizers in their original packaging and in a dedicated lockable room clearly identified by signs, access to which is limited to authorized persons.
- Ensure that SDSs and inventories are available at fertilizer storage facilities and available to first responders if needed.
- Buy and store only the fertilizers that are needed need, and use older fertilizers first.
- Keep fertilizer stores separate from pesticides and machinery (fuels, ignition or heat sources).
- Know and understand the fertilizer needs of each crop and apply only what is needed, when needed, to minimize losses to the environment.
- Set up a suitable training program for personnel responsible for the transport, handling, loading, storage and application of fertilizers.

Any agricultural sub-project to be funded by the Gate project, shall submit an IPM Plan that shall contain the following components and activities:

- Technical plan on how IPM will be implemented
- Training and Awareness raising Plan. The sub-project proponent can seek advice from MoA professionals and trainers. Specific training and awareness raising activities on IPM shall be conducted based on need assessment.

⁶ MoE, UNDP, UNHCR, UNICEF, 2020

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- Safety and Storage of Pesticides Plan following the instruction of the MoA for the safe use, handling and storage of pesticides, and the proper use, maintenance and storage of pesticide spraying equipment and the provisions of this Annex on IPM and pesticide management
- Monitoring and Reporting: The sub-project shall have means to demonstrate implementation of the IPM.

ANNEX H FULL ENVIRONMENTAL BASELINE DESCRIPTION

This chapter presents the environmental and social baseline and settings related to the GATE project. This Chapter will present general background information about Lebanon.

1. ENVIRONMENTAL OVERVIEW

(a) GEOGRAPHICAL LOCATION

Lebanon is a Middle Eastern country located in Western Asia and bordered by the Syrian Arab Republic from north and east, Palestinian territories from the south, and the Mediterranean Sea from the west. The country extends over an area of 10,452 square kilometers only. Despite the small area of Lebanon, the country has been a host of civilizations and cultures throughout history, similarly to many other Mediterranean countries.

(b) CLIMATE AND METEOROLOGY

Lebanon has a typical Mediterranean climate characterized by a long, hot, and dry summer, and cool, rainy winter. Temperatures gradually decrease during winter season and precipitations either accumulate in groundwater reservoirs through infiltration, or run-off. When springs and water courses are revived again, the spring season begins.

The topography of the country, with an elevation gain that extends only about 40 kilometers, affects the climatic patterns. Along the coast, summers are hot and humid, with little or no rain.

Temperatures may vary from one area to the other, depending on the time during the day and the altitude. Temperatures may reach above 38° C in the daytime and below 16° C at night. The proximity of the sea to the coastal area acts as a buffer effect on the climate, making the range of temperatures narrower than it is inland.

Precipitation records vary from one year to the other, with major rainfalls occurring during the month of December and January. The influence of the Mediterranean Sea is abated by the altitude and, although the precipitation is even higher than it is along the coast, the range of temperatures is wider, and the winters are more severe. The Beqaa Valley and the Anti-Lebanon Mountains witness less precipitation and humidity levels than other parts of the country, as the Mount Lebanon Mountains Chain creates a microclimate for the former areas.

The average annual precipitation in Lebanon is reported to be between 8.6 billion m³ and 9.7 billion m³, of which 1 billion m³ is due to snow (MoEW/UNDP, 2014; Fayad et al., 2017).

Figures referenced by Ziad Hajjar (1997) and recorded at 105 stations spread throughout the different governorates registered average yearly precipitation ranging from 700 mm in the Beqaa to 1,210 mm over Mount Lebanon (Table B). Measurements were taken over several years ranging from 3 years in Terbol and Mayfouq stations to 51 years in the Tripoli station. The lowest level recorded for the country was 80 mm while the maximum observation reached 3,010 mm.

Table B Precipitation levels recorded by region

	NUMBER OF STATIONS	STATION ALTITUDE		PRECIPITATION (MM/YEAR)		
		LOW	HIGH	YEARLY AVERAGE	MIN	MAX
Beirut	4	15	34	891.75	393	1600
North	25	2	1925	1055	425	1890
Mount-Lebanon	36	45	1840	1210.16	421	3010
South	26	5	1150	933.27	342	2139
Beqaa	36	650	1510	705.42	80	2374
Lebanon	105	5	1840	787	80	3010

Source: Hajjar, 1997

The dominant wind direction is westerly from sea to land during the day, while it reverses at night (from land to sea).

Monthly and long term mean wind speed data at 10 m above ground level from the Météo Liban meteorological stations measurements showed wind velocities in the range of 1.6 to 9.1 m/s throughout the country (MOEW/UNDP, 2011)

(c) TOPOGRAPHY

The landscape of Lebanon is influenced by natural systems that extend outside the country. Thus, the Beqaa valley is part of the Great Rift system which stretches from Southern Turkey to Mozambique in Africa.

A major feature of Lebanese topography is the alternation of low lanes and high land running in a parallel manner with a north-to-south orientation. There are four longitudinal strips between the Mediterranean Sea and Syria, which are from west to east as follows:

- A flat and narrow coastal strip (maritime plain) parallel to the Mediterranean Sea
- The Mount-Lebanon chain
- The Beqaa Valley (Central plateau)
- The Anti-Lebanon Mountains Chain

The steepness in Lebanese mountains highly affects the climate and weather in the Beqaa Valley, and at high altitudes.

(d) GEOLOGY

The current geomorphological matrix of Lebanon is highly influenced by the historical geological events that occurred. The main tectonic events that happened are uplift, collision and changes in sea level, which have shaped the structural features and depositional environments of the country.

The uplift in the late Jurassic to early Cretaceous Eras was the first major tectonic event that is documented in the geological history of Lebanon (MOEW/UNDP, 2014). The second tectonic event is the closure of the Tethyan Sea in the early Tertiary Period. The first event led to the exposure, erosion and karstification of the Jurassic Limestone. The second event induced the formation of a collision zone, which has led to the first gentle uplift of Mount Lebanon and Anti-Lebanon Ranges (MOEW/UNDP, 2014). These events were separated by times of rise in sea level,

which has caused the deposition of thick limestone units mainly in the early Jurassic, late Jurassic and middle Cretaceous periods. The early Cretaceous period was characterized by the delta river deposits that were mainly sands and clay and that reach a thickness of 300 m in central Lebanon.

At the end of the Miocene epoch, the Messinian Salinity Crisis occurred, which is a major regional event. This event led to the deposition of thick salt layers and the development of karstification due to a major drop in sea level by about 1000 m following the closure of the Mediterranean Sea. The presence of these salt deposits has been well documented by the recent offshore seismic surveys conducted for oil exploration (Kosi et al, 2012). Moreover, the collision of the Arabian and Asian plates, during the Eocene and Oligocene epoch, led to the shaping the NNE-SSW trending features (MOEW/UNDP, 2014).

The main structural features are shaped by the major tectonic events that are recorded in the geological history of Lebanon (Figure H). These structures have an impact on controlling the groundwater flow directions; they can serve either as a preferential pathway or as a flow-restricting boundary. They are divided into primary and secondary structures. The Primary structures are divided into: 1) primary faults (Yammouneh, Rashaya, Hasbaya, Roum and Serghaya) 2) primary folds (North Mount Lebanon Anticline, Barouk-Niha Anticline, Beqaa Syncline/garben, North Anti-Lebanon Anticline and Mount Hermon Anticline) and 3) platforms (Akkar, Tyre and Saida-Damour) as per the MOEW/UNDP Study (2014). The secondary structures are divided into secondary faults, which are trending in a NW-SE, NE-SW, ENE- WSW and E-W direction, and secondary folds, mainly trending in an NNE-SSW direction parallel to the primary faults (MOEW/UNDP, 2014).

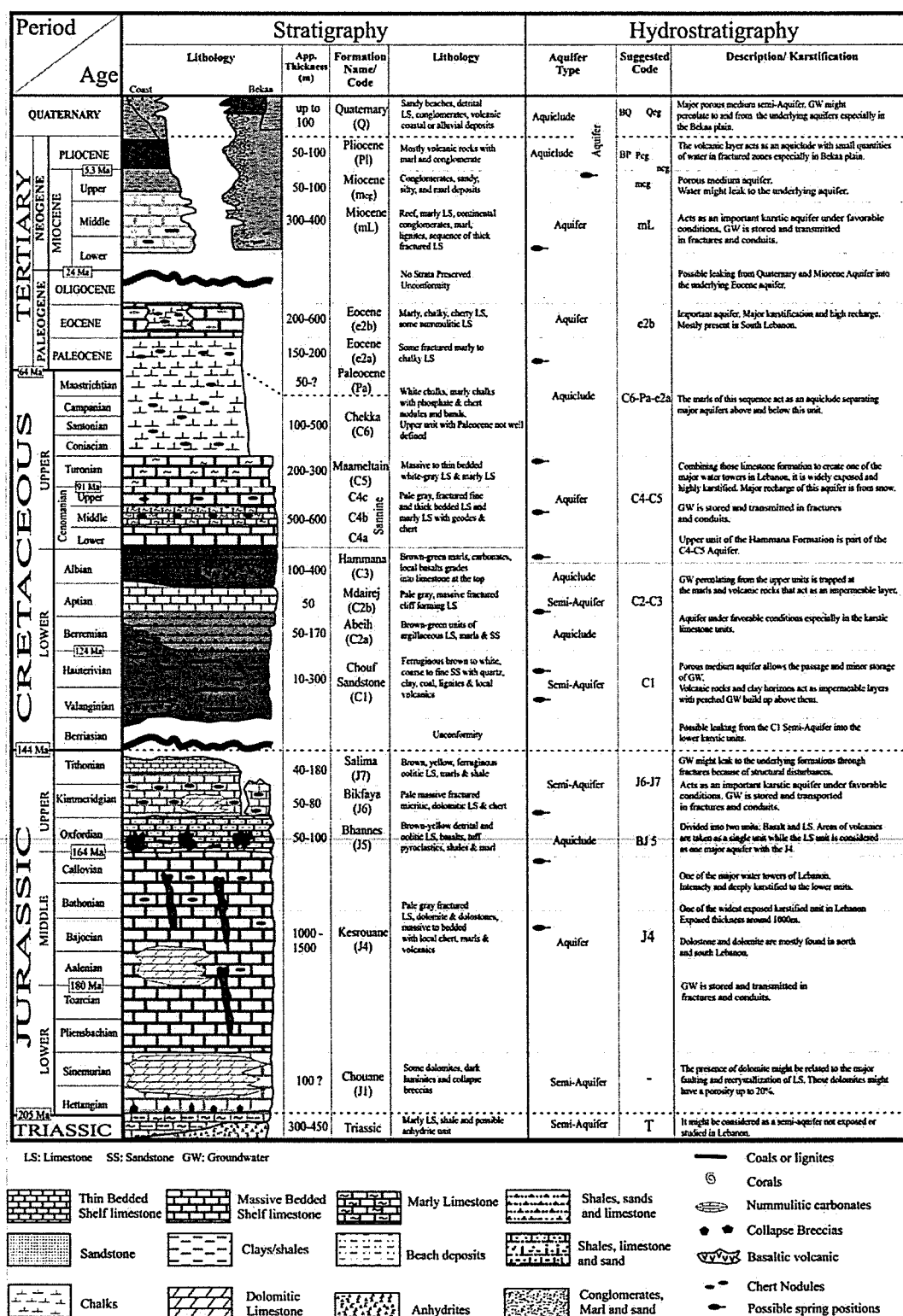


Figure H Stratigraphy and Hydro-stratigraphy of Lebanon (Source: MoEW/UNDP, 2014)

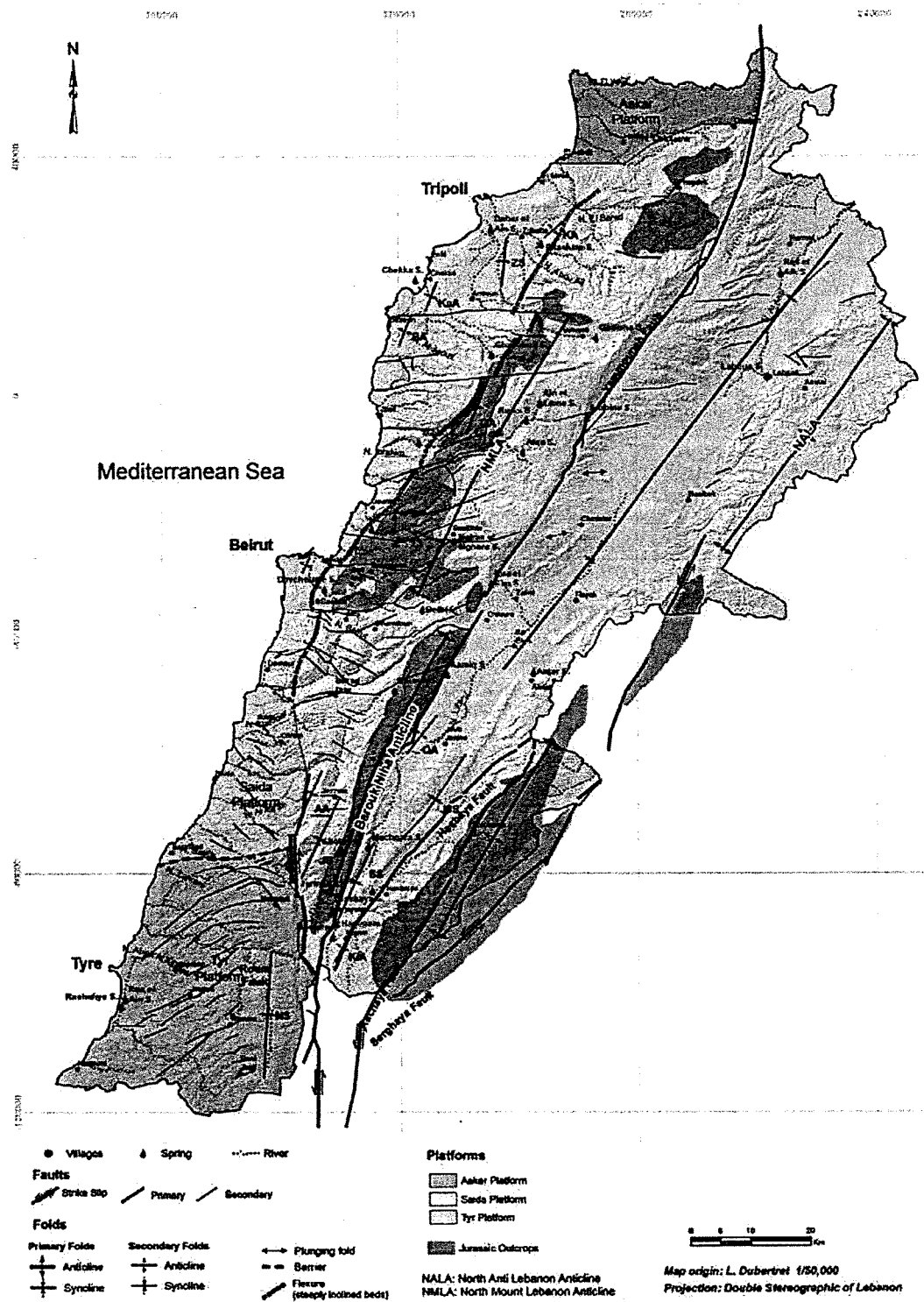


Figure I Major geological structural features of Lebanon (Source: MoEW/UNDP, 2014)

(e) HYDROGEOLOGY

The hydro-stratigraphic units of the country are classified into three (3) main groups: aquifers, semi-aquifers and aquicludes.

A total of three (3) hydro-stratigraphic units are considered as karstic aquifers in Lebanon, two (2) of which are considered the main aquifers of the country (the Kesrouane aquifer J4 aquifer) and the Sannine-Maameltein aquifer (C4-C5 aquifer). They are the two (2) water towers (Chateau-D'eau) of Lebanon and cover about 5590 km², which is about 54% of the country's surface area. The third aquifer is the Upper Eocene Formation (e2b). Given their highly karstified nature and extent that favor a high storage and recharge capacity, all three aquifers were considered to be karstic. The recharge of the aquifers in Lebanon mainly occurs through rainfall, snow and sometimes through losing streams. Infiltration in karstic aquifers is usually highest along high altitudes where precipitation increases. Groundwater tends to flow along preferential pathways enhanced by fractures and cavities in karstic limestone such as the e2b, C4-C5 and J4 aquifers making them highly vulnerable to groundwater pollution. Moreover, the presence of the Yammouneh Fault System and Roum Fault System along with other fault systems in Lebanon (Figure J), helps in enhancing the fractures and cavities in karstic aquifers (MOEW/UNDP, 2014).

Besides aquifers, several semi-aquifers are present in Lebanon. The semi-aquifers usually have medium vulnerability to surface water pollution. This is because some semi-aquifers such as the Chouf Sandstone (C1) and Quaternary/Neogene (Q/n including mcg and mL) have the tendency to filter the percolating water. However, some semi-aquifers (mainly Mdairej C2b) are considered as highly karstified, especially in the presence of nearby faults (MOEW/UNDP, 2014).

Aquicludes are considered to have very low vulnerability to surface water pollution. This is mainly due to the lithostratigraphic characteristics of an aquiclude that limits the groundwater interaction between the overlying and underlying geological formations (MOEW/UNDP, 2014).

Figure K provides a Simplified Stratigraphy and Hydro-stratigraphy of Lebanon (adapted from Walley 1995; Abbud & Aker, 1986).

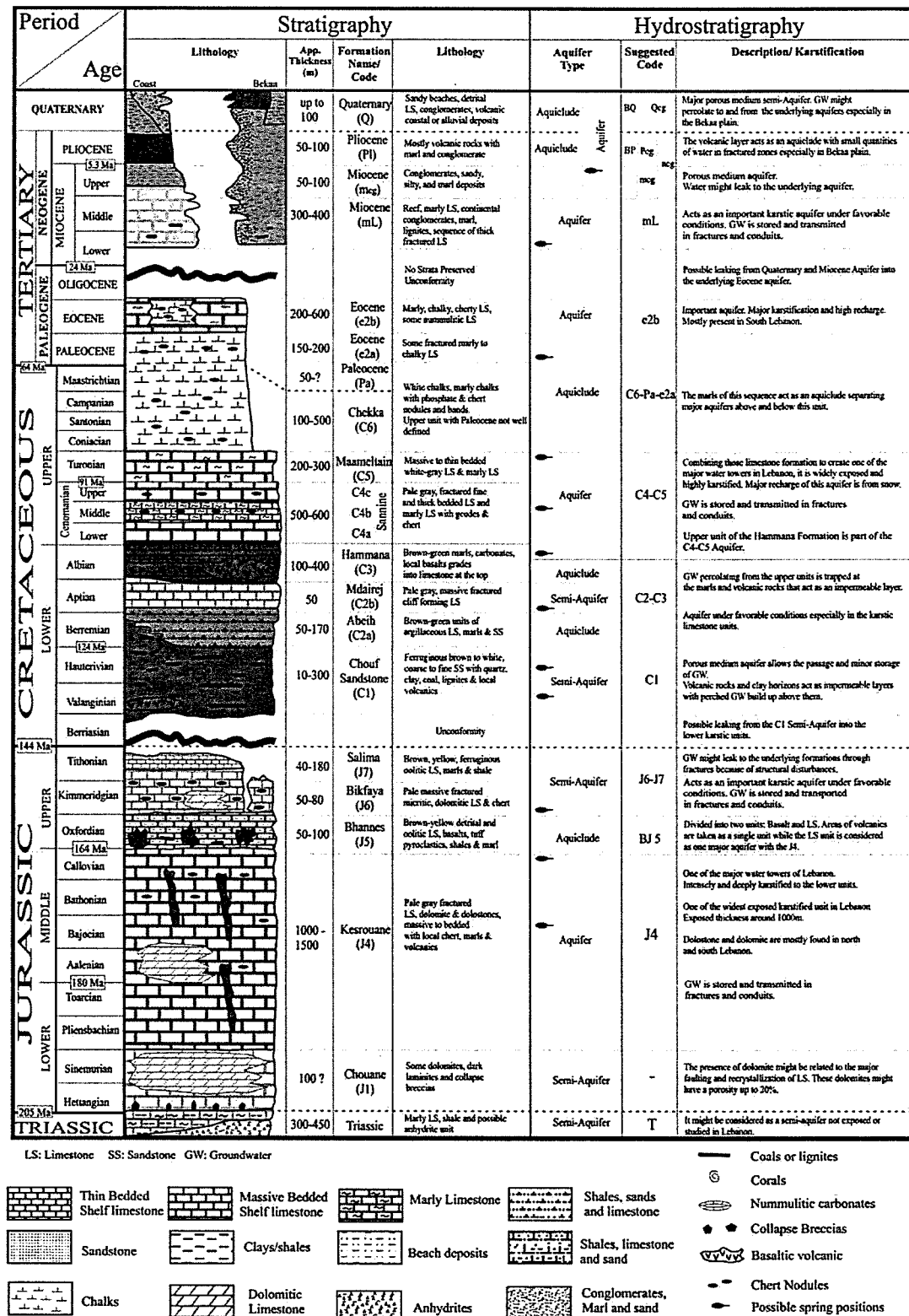


Figure J Stratigraphy and Hydrostratigraphy of Lebanon

Springs and Wells

Springs

A total of about 5,050 springs are depicted in the 1:20,000 topographic maps of Lebanon. The major springs in Lebanon are fed by either the Sannine-Maameltain (C4-C5) Aquifer such as Afqa Spring, Keserouane Aquifer (J4) such as Ain El Delbi, or both, which is the case in the Wazzani Spring (MOEW/UNDP, 2014).

Wells

The UNDP 2014 study revealed the presence of 841 public wells in Lebanon. The survey showed that the operational public wells are exploiting the various aquifers at an estimated rate of about 248.7 million m³/year. The water of the wells is mainly used for domestic purposes. As for private licensed wells, the UNDP, 2014 study revealed the presence of 20,537 wells. More than 50% of the private licensed wells are located in Beirut and Mount Lebanon areas. The estimated number of unlicensed private wells is almost three (3) times higher than the number of licensed private wells (about 55,000 to 60,000 wells). The water extracted from private wells is being used for agricultural, domestic, industrial and commercial purposes (MOEW/UNDP, 2014).

It should be mentioned that the Water Law 192/2020 that amends the Water Code (Law 77/2018), article 37, urges citizens who have an unlicensed well to settle their violation and legitimize their status within a period of two years, the consequence of not doing so being the closing of the well. A committee or unit should be established at MoEW to support the practical execution of this article that includes, at least, a hydrogeologist, a legal counsel, a representative from the concerned WE and evaluates the applications put forth by the public, the well's effect on aquifers and other sources, and the WE's capacity to supply water (MOEW, 2022).

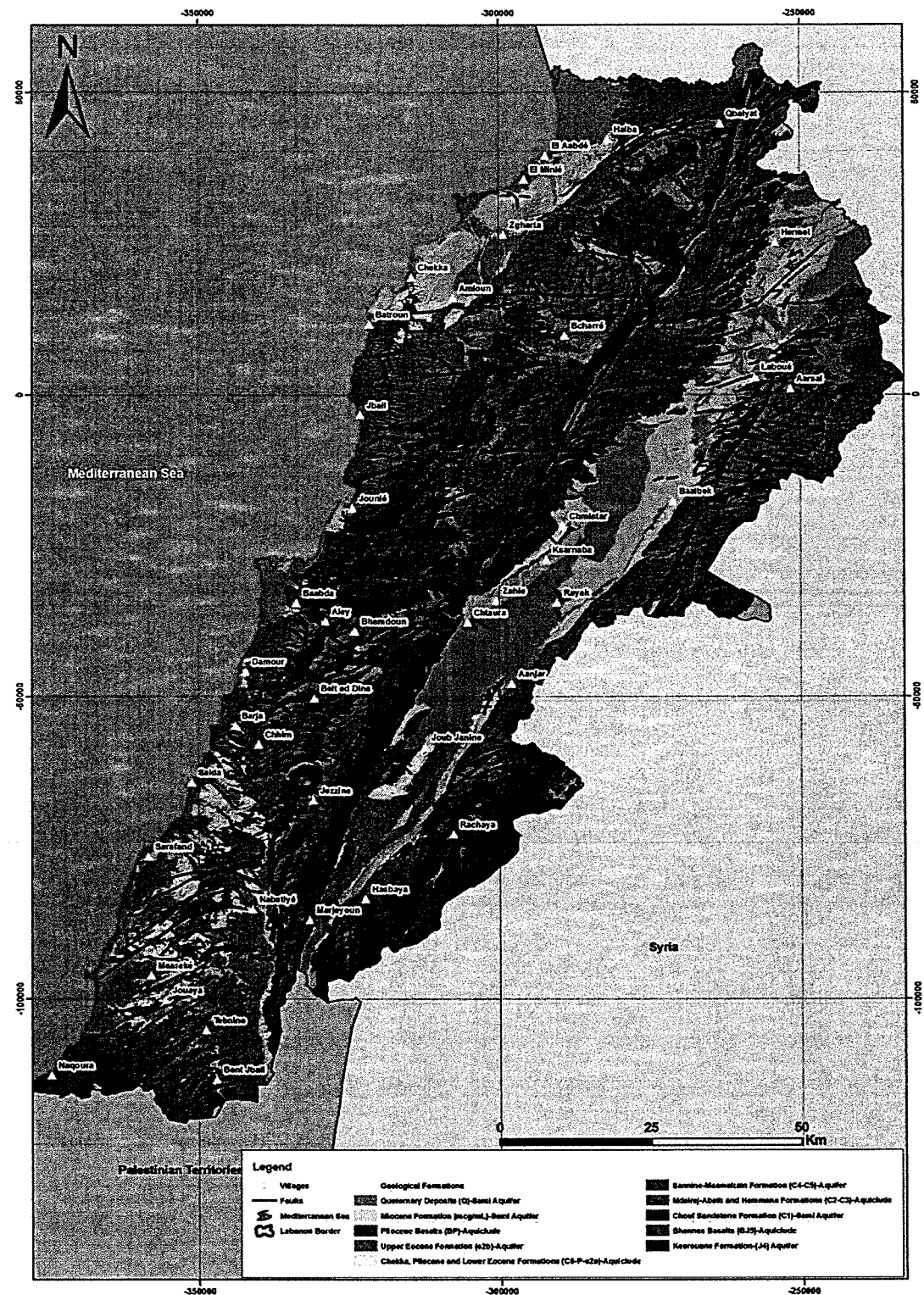


Figure K Simplified Geological Map of Lebanon

Source: Dubertret, 1953

(f) SURFACE HYDROLOGY

More than thirteen (13) rivers cut through Lebanon as shown in **Error! Reference source not found..** The main rivers with recognizable flow rates are the Litani River, Orontes (Assi) River, El Kebir River and Hasbani River. With the exception of the Litani River, which flows entirely within the country's borders, all other main rivers are Transboundary Rivers (MOEW/UNDP, 2014).

The Litani River originates from Baalbek Caza and flows south towards Zahle and West Beqaa where it is trapped by Qaraoun Dam. From Qaraoun Dam it flows toward South Lebanon and Nabatieh governorates before discharging into the Mediterranean Sea. Its total length reaches about 170 Km. The estimated average annual flow volume of the Litani River at Qillaya Gauging Station is around 51 million Cubic Meters (MCM). It is worth noting that the upper watershed of the Litani River is heavily polluted, more than the lower basin (MOEW/UNDP, 2014).

The Orontes River, also named as Al Assi River, is a transboundary river that originates in Lebanon, and flows into Syria to discharge into the sea in Antakya, Turkey. It initiates in Lebanon and is mainly fed by two major springs; Al Assi and Ain Ez Zarqa Springs. It also receives surface runoff from areas located at both sides of its course. Its average flow rate, estimated from the flow record collected between 2001 and 2013, is about 11 m³/s (MOEW/UNDP, 2014).

El Kebir River is a permanent river that flows along the Lebanese-Syrian country border in a west-northwest direction and discharges into the Mediterranean Sea. El Kebir River is gauged at the sea mouth, having an estimated yearly average flow of 474 million Cubic Meters (MCM).

The Hasbani River is a permanent river that flows south for about 40.2 km from its starting point before exiting the country and crossing into bordering nations. The Wazzani Spring emerges on the side of the Hasbani River and discharges into it. The estimated average annual flow volume of the Hasbani River (segment within Lebanon) is around 149 million Cubic Meters (MCM) (MOEW/UNDP, 2014).

Besides the main rivers, several small-scale rivers (such as Damour River, El Bared River, Ibrahim River, Nahr el Kalb, etc.) are present in Lebanon (**Error! Reference source not found.**). All those rivers tend to flow towards the west, eventually discharging into the Mediterranean Sea (MOEW/UNDP, 2014).

It is worth noting that inland wetlands are also present in Lebanon. The wetlands are located in Ammiq and Kfarzabad villages and are considered as Himas (protected areas) with high ecological value.

According to the Updated Water Sector Strategy 2020-2035, there are six operational dams/hill lakes in the country: Chabrouh Dam (Mount Lebanon), Ballout Lake (Mount Lebanon), Qaysamani Lake (Mount Lebanon), Kouachra Lake (Akkar), Yammouneh Lake (Baalbek-Hermel) and Qaraoun Dam (Beqaa) with a total dynamic capacity of around 314 MCM/year, mainly concentrated in Qaraoun and Chabrouh dams (MoEW, 2022). There are also other dams under construction, on hold or requiring repair, as shown in **Error! Reference source not found..**

Table C Total Dynamic Storage Capacity of Existing Dams

Dam	Static Storage (Mm³/y)	Dynamic Storage (Mm³/y)	Dam Height (m)	Status	Usage
BMLWE					
Chabrouh Dam	9	11	65	Operational	Potable/Irrigation
Ballout Lake	0.5	0.5	15	Operational	Potable/Irrigation
Qaysamani Lake	1	1	15	Operational	Potable
Janneh Dam	38	95	-	Under Const.	Potable/Irrigation/Hydropower
Boqaata Dam	6	12	71.5	Under Const.	Potable
Bisri Dam	125	125	73	On Hold	Potable/Irrigation
	180	245			
NLWE					
Kouachara lake	0.4	0.4	11	Operational	Irrigation
Brissa Dam	0.8	0.8	35	Needs repair	Irrigation
Mseilha Dam	6	12	71.5	Under Const.	Potable/Irrigation
Balaa Dam	1.2	2.2	35	Under Const.	Potable
	8.4	15.4			
BWE					
Yammounh Lake	1.45	1.45	7	Operational	Irrigation
Assi Dam - Phase I	-	63	10	On Hold	Irrigation
Qaraaoun Dam	220	300	62	Operational	Potable/Irrigation/Hydropower
	221.45	364.5			

Total storage capacity at country scale: Static = 410 Mm³/y - Dynamic = 625 Mm³/y

Source: MOEW, 2022

According to the Green Plan report of 2016, since 2012, Green Plan has been implementing Hill lakes for farmer groups. The Hill lakes designated for groups of farmers are shown in Map 1 and either have been completed or are being studied.

There are 33 lakes in total, with a 1,465,000 m³ capacity. The following assumptions should be noted:

- All hill lakes that were supposed to be built in 2016 were finished on schedule (funds are available and reserved)
- Each lake is efficiently exploited to 70% of its capacity (the rest is lost by evaporation and other factors)
- As supplemental irrigation from the lake, each beneficiary from the common Hill lake will irrigate 2.5 dunums (0.25 ha).
- 3000 m³/ha is the projected average water need.

The total irrigated area every year will be 342 ha, and there will be 1,367 beneficiary farms overall.

Green Plan helps beneficiary farmer groups to create water users groups (water user association), in collaboration with the municipalities where municipalities exist, in order to manage the lakes.

Error! Reference source not found. illustrates hill lakes that have been constructed, are under construction or were supposed to be executed in 2016-17 for famers groups by Green Plan.

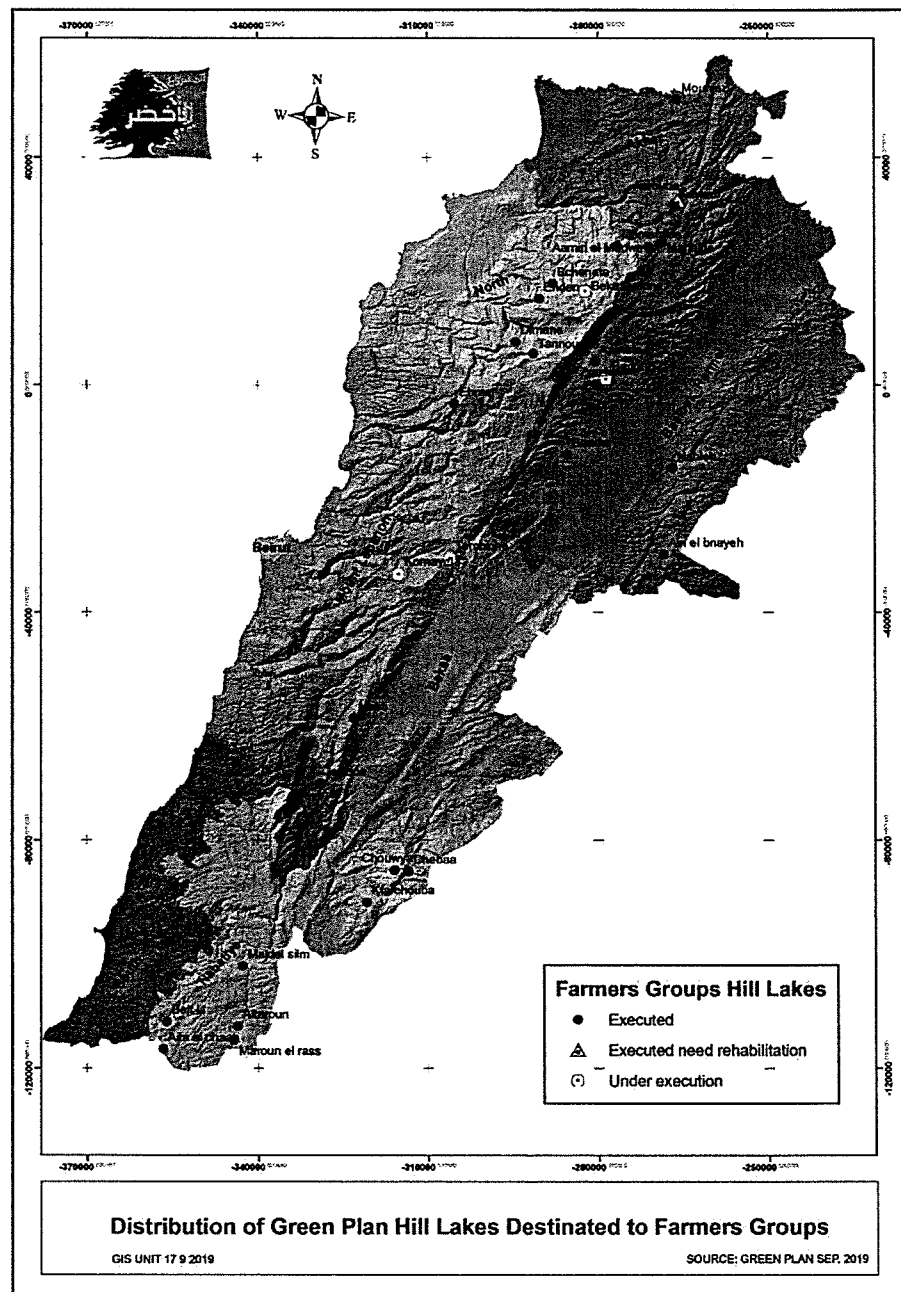


Figure L Distribution of Common Hill Lakes Executed and those that will be Executed in years 2016 – 2017 and Related to Farmer Groups

Source: Green Plan, 2019

Green Plan has received support from various international organizations to execute projects within its mandates, including the construction of hill lakes (Green Plan, 2016):

- The Hilly Areas Sustainable Agricultural Development Project (HASAD) project funded by the International Fund for Agricultural Development (IFAD) comprised the construction of a minimum of 18 small and a maximum of two medium size hill lakes for storing water from springs, runoffs and harvested water for irrigation by small groups of farms. Each hill lake has a capacity between 20,000 m³ and 100,000 m³. The total capacity of water that will be harvested through HASAD project will be around 800,000 m³.
- The Agriculture and Rural Development Programme (ARDP), funded by the European Union under the framework of the European Neighborhood Policy (ENP) comprised the construction of hill lakes with a total capacity of 160,000 m³ (8 medium-sized hill lakes), in addition to provision of support to farmers and cooperatives to manage irrigation networks and to adequately use modern irrigation systems, and development of their capacities.
- The Climate Smart Agriculture: Enhancing Adaptive Capacity of the Rural Communities in Lebanon (AgriCAL) project funded by IFAD aimed to increase community resilience and adaptive capacity to climate change in the Project Areas (Akkar-Donniyeh, North Baalbek-Hermel, South Litani (downstream of Qaraoun Lake). The project covered the following activities: rainwater harvesting from greenhouse roof tops, roads rehabilitation and water efficient irrigation systems deployment.

Error! Reference source not found. present the hill lakes executed/under execution by the Green Plan for groups of farmers between 2010 and 2019. Their total capacity is 1,293,000 m³; and the corresponding total irrigated area is 6,465 dunums.

Table D Collective Hill Lakes Executed by the Green Plan between 2010 and 2019

Nb	Name of the lake	Casa	Capacity m³	Financial source for execution	Status	Cost LL	Ystereo	Xstereo	Year of execution	Irrigated area (dunum)	Nb of beneficiaries
1	Ainata	Baalback	20,000	ARDP	Executed	339,486,495	4101	-280441	2019	100	33
2	Aamiri el Madwe	Hermel	55,000	Hassad	Executed	749,674,500	24264	-271018	2018	275	92
3	Aarouba	Hermel	120,000	National budget	Executed need rehabilitation	2,940,374,150	32400	-265816	2013	500	167
4	Ain el Beniye	Baalback	30,000	Hassad	Executed	668,571,000	-29772	-268304	2015	150	50
5	Alta Chaab	Bint jbeil	18,200	Hassad	Executed	443,842,500	-116647	-356745	2016	91	30
6	Aitaroun	Bint jbeil	12,300	Hassad	Executed	179,890,500	-112659	-343530	2015	61.5	21
7	Barka	Baalback	40,000	Hassad	Under execution	429,861,000	1010	-278573	2019	200	67
8	Bchenata	Minyeh Daniyeh	75,000	ARDP	Executed	265,823,205	17768	-287945	2019	375	125
9	Beit Leif	Bint jbeil	28,000	Hassad	Executed	544,942,500	-111860	-356053	2016	115	38
10	Bekoasafine	Minyeh Daniyeh	100,000	Hassad	Under execution	805,347,000	16454	-282198	2019	500	167
11	Boudai	Baalback	47,000	Hassad	Executed	731,605,500	-12174	-285355	2016	235	78
12	Chebaa	Hassbaya	30,000	Hassad	Executed	469,764,000	-85495	-313420	2015	150	50
13	Chouwaya	Hassbaya	15,000	ARDP	Executed	288,275,025	-85218	-315864	2019	75	25
14	Deir Moukhalles*	Shouf	55,000	NA	Executed	US\$ 257,392	NA	NA	NA	NA	NA
15	Dimane	Bcharreh	100,000	National budget	Executed	2,948,758,943	7559	-294362	2013	600	200
16	Ehden	Zgharta	25,000	National budget	Executed	573,579,026	15104	-290277	2014	102.5	34

Nb	Name of the lake	Casa	Capacity m ³	Financial source for execution	Status	Cost LL	Ystereo	Xstereo	Year of execution	Irrigated area (dunum)	Nb of beneficiaries
17	Ehmej	Jbeil	30,000	Hassad	Executed	390,981,000	-3342	-305154	2016	150	50
18	Hadath el Jebbeh*	Bcharreh	34,000	NA	NA	US\$ 372,947	NA	NA	NA	NA	NA
19	Jezzine	Jezzine	27,000	ARDP	Executed	384,998,355	-70024	-328985	2019	135	45
20	Kaykab	Hermel	67,000	Hassad	Under execution	659,358,000	31457	-266300	2019	335	112
21	Kfarchouba	Hassbaya	45,000	Hassad	Executed	737,934,000	-90840	-320702	2018	300	100
22	Komayel	Baabda	20,000	Hassad	Under execution	358,168,500	-33337	-315067	2019	325	108
23	Majdel Sitrn	Marjeyoun	24,000	Hassad	Executed	529,248,000	-102078	-342692	2018	90	30
24	Makneh*	Baalbek	28,900	NA	Executed, temporary handover	US\$ 394,233	NA	NA	NA	NA	NA
25	Marjhine	Hermel	16,500	Spanish grant	Executed	621,385,470	25045	-268582	2013	202.5	68
26	Maroun el Ras	Bint jbeil	25,500	Spanish grant	Executed	558,099,113	-115069	-344221	2012	127.5	43
27	Medwl*	Hermel	53,500	NA	Executed	US\$ 53,500	NA	NA	2019	NA	NA
28	Mounjez	Akkar	46,000	Hassad	Executed	614,116,500	50164	-265965	2019	250	83
29	Mristi	Chouf	50,000	National budget	Executed	1,533,216,443	-58555	-323023	2012	250	83
30	Nahle	Baalback	20,000	Hassad	Executed	477,183,000	-14619	-266790	2016	100	33
31	Gemamine	Minyeh Daniyeh	18,500	Spanish grant	Executed	508,345,583	24438	-276612	2013	102.5	34
32	Tannourine	Batroun	20,000	National budget	Executed	658,590,000	5486	-291266	2016	150	50
33	Tarchiche	Baabda	38,500	ARDP	Under execution	491,906,100	-30508	-306047	2019	192.5	64

Nb	Name of the lake	Casa	Capacity m³	Financial source for execution	Status	Cost LL	Ystereo	Xstereo	Year of execution	Irrigated area (dunum)	Nb of beneficiaries
34	Zrazir	Boalback	45,000	Hassad	Under execution	333,672,000	107	-280114	2019	225	75
	Total		1,379,900			LBP 21,236,997,408 US\$ 1,078,072				6,465**	2,155

* Added based on an update by the Green Plan

** Excluding the lakes of Deir el Moukhalles, Hadath el Jebbeh, Makneh, and Medwi.

Source: Green Plan, 2019

Green Plan's objectives are to:

- Increase the irrigation water harvesting and storage capacity by 2.35 million cubic meters through supporting the construction of 400 individual hill lakes and 30 collective hill lakes, as well as 1,500 tanks.
- Improve the efficiency of irrigation water use of Green Plan constructed lakes through reaching 5,000 farmers, connecting 30 collective hill lakes to a distribution network down to the parcel level, and enhancing their cooperative management, rehabilitating 16 small springs' canals, and supporting the conversion of 425 ha to more efficient irrigation systems.

(g) OVERVIEW ON IRRIGATION

There are currently about 100,000 hectares of irrigated land in the country, according to an inventory of irrigation schemes (MOEW, 2022).

Irrigation efficiency is between 50 and 60% under the current irrigation conditions, taking network losses and irrigation practices into account. At the national level, a representative hectare's (ha) average annual irrigation water need is presently 8,400 m³/ha. Current irrigation water demand is illustrated in

Table 2-2.

Table E Present irrigation water demands

WE	Irrigated area (ha)	Commonly used rates in Lebanon (m ³ /ha/year)	Total needs Mm ³ /year
NLWE	23,600	7,500 (most of the area is coastal)	177
BMLWE	5,835	6,500 (most of the irrigated area is at high altitude)	38
BWE	66,115	9,000 (most of the irrigated area is inland/dry weather)	595
SLWE	4,210	7,500 (most of the area is coastal)	32
TOTAL	~100,000	8,435 (Average irrigation water requirement for one representative ha at the country level)	842

Source: MOEW, 2022

According to the Agricultural National Census (MoA, 2010), only 50% of the area that is irrigated is supplied by natural surface water, with the remaining 50% coming from either "expensive" subsurface water or hill lakes. Additionally, 35% of the irrigated areas are only partially irrigated, while 65% of the irrigated areas are permanently irrigated. It is therefore estimated that approximately 75% of the current irrigation water requirement, or about 630 Mm³, are currently supported by available water for irrigation and reflect the actual irrigation water consumption figure throughout the nation. Out of these 630 Mm³, 315 Mm³ are thought to be covered in surface water and the remaining by groundwater.

According to calculations of the water balance at the distribution system level, the dynamic seasonal variation of the population and the irrigable land assumptions, the total annual

ESMF

demand for the year 2020 is estimated to be 1,505 Mm³ (1,837 Mm³ for a network efficiency of 50%).

A rough estimate of the water demand for irrigation is 842 Mm³ per year, or around 55% of the overall water demand (MOEW, 2022).

Future irrigation development is dependent on:

- Executing new projects
- Securing new sources of water (storage structures & water wells).

At the national level, the development of the proposed projects would enable the irrigation of an additional 38,000 acres (

Table F Irrigable land in Lebanon

	Presently irrigated area		Proposed irrigation projects		Total
	(ha)		(ha)		(ha)
NLWE (18 schemes)			Noura el Tahta & Dar Baachtar dam	4 200	
			Hill lakes	730	
				4 930	
BMLWE (15 schemes)		5 835	Hill lakes	540	6 375
BWE (36 schemes)			Aassi dams	6 000	
			Massa dam	1 600	
			Younine dam	1 200	
				8 800	
SLWE	Qasmieh Ras El Ain Saida Jezzine Small local projects	3 200 430 580 4 210	Conveyor 800	13 250	
			Khardale dam	1 300	
			Choumaryeh dam	4 000	
			Ibl es Saki dam	3 800	
			Hill lakes	1 235	
				23 585	
Total		104 760		37 855	142 615

Source: MOEW, 2022

(h) TOTAL WATER SUPPLY

The yearly renewable accessible water volumes are projected to be around 2,050 Mm³ from springs, 1,475 Mm³ from rivers, and 700 Mm³ from wells (public and private). Regarding supply, they vary depending on the types of sources and the extracted resources. It is important to note that groundwater is overexploited by about 300 Mm³ annually and that dams are typically topped off with surface water, primarily from rivers. These numbers are summarized in Table 2-4.

Table G Available and exploited water resources for 2020

Source	Available Resources (Mm ³ /year)	Exploited Resources (Mm ³ /year)
Rivers	1,475	14
Springs	2,050	594
Public and Private wells	700	990
Dams (Static)	-	314 (232)
Total Water Supply	4,225	1,912

Source: MOEW, 2022

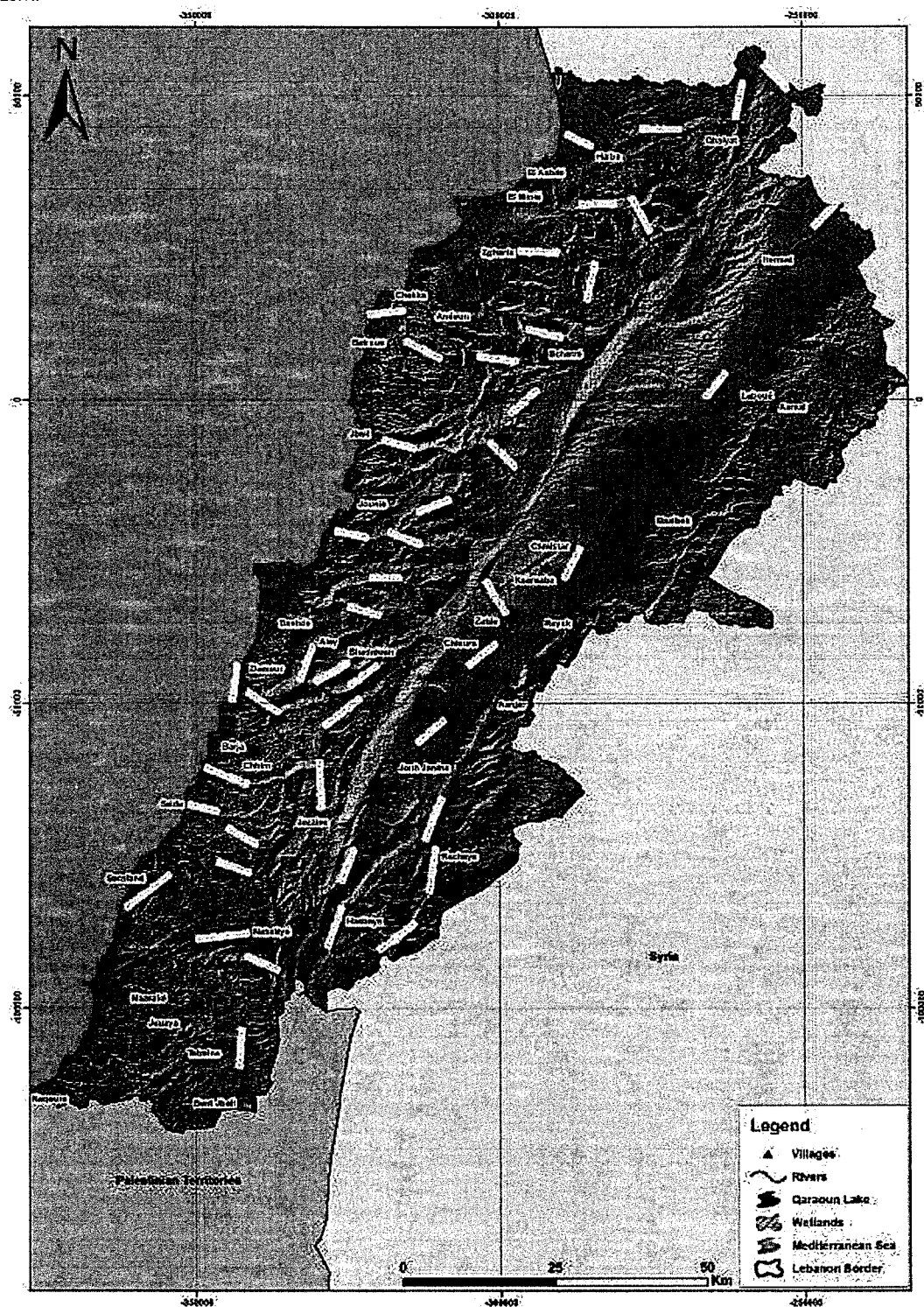


Figure M Map Showing the Major Surface Water Bodies in Lebanon (mainly Rivers and Wetlands)

(i) SOIL

Based on the soil map of Lebanon, there are twelve (12) soil types in Lebanon. The extent of the soil cover layer is shown in Figure N. Leptosols tend to cover the largest surface area out of the twelve soil types. Soil cover characteristics are described in the paragraphs below (Encyclopedia Britannica, no date).

- Cambisols are developed in medium and fine-textured materials (mostly colluvial and onalluvial deposits) which justifies their presence in the Beqaa valley. Cambisols are good for agricultural usage and can be one of the most productive soils in terms of agriculture if the climate is appropriate.
- Leptosols are shallow soils overlying calcareous rocks. Leptosols are unattractive for rainfed agricultures because of their inability to hold water. However, they allow shrubs and small trees to grow over the rocky terrain, which gives them their importance in sustaining such terrestrial ecosystems.
- Fluvisols are mainly composed of river sediments and are genetically young soils within the alluvial deposits. Those soils can be found around water courses.
- Gleysols are wetland soil that is saturated by groundwater. They are usually found in depression areas and low landscape positions. Within Lebanon, they are mainly found at Ammiq and Kfarzabad Wetlands.
- Luvisols are present usually in forested regions. Such soils are characterized by their high content of clay minerals; thus, they do not bear water.
- Regosols are shallow soils with low-humus surface horizon overlying directly the weathering rock in an actively eroding landscape. Such soils allow orchards to grow and thus are important in sustaining such terrestrial ecosystems.
- Anthrosols are formed from heavily modified soils due to long term human activities related to irrigation and cultivation.
- Arenosols are sandy-textured soils that lack any significant soil profile development. Such soils have high permeability and low nutrient content, making their agricultural usage problematic.
- Calcisols are characterized by a layer of calcium carbonate. They are well drained soils and relatively fertile soils given their high calcium content.
- Andosols are dark colored soils of volcanic origin (ash, tuff...). Such soils tend to form good agricultural soils given their richness in nutrients and their water-bearing characteristics.
- Lixisols are soils with "low levels of plant nutrients and a high erodibility, making agriculture possible only with frequent fertilizer applications, minimum tillage, and careful erosion control".
- Vestisols contain high levels of plants with high clay content. Hence, they are not well suited to cultivation without careful management.

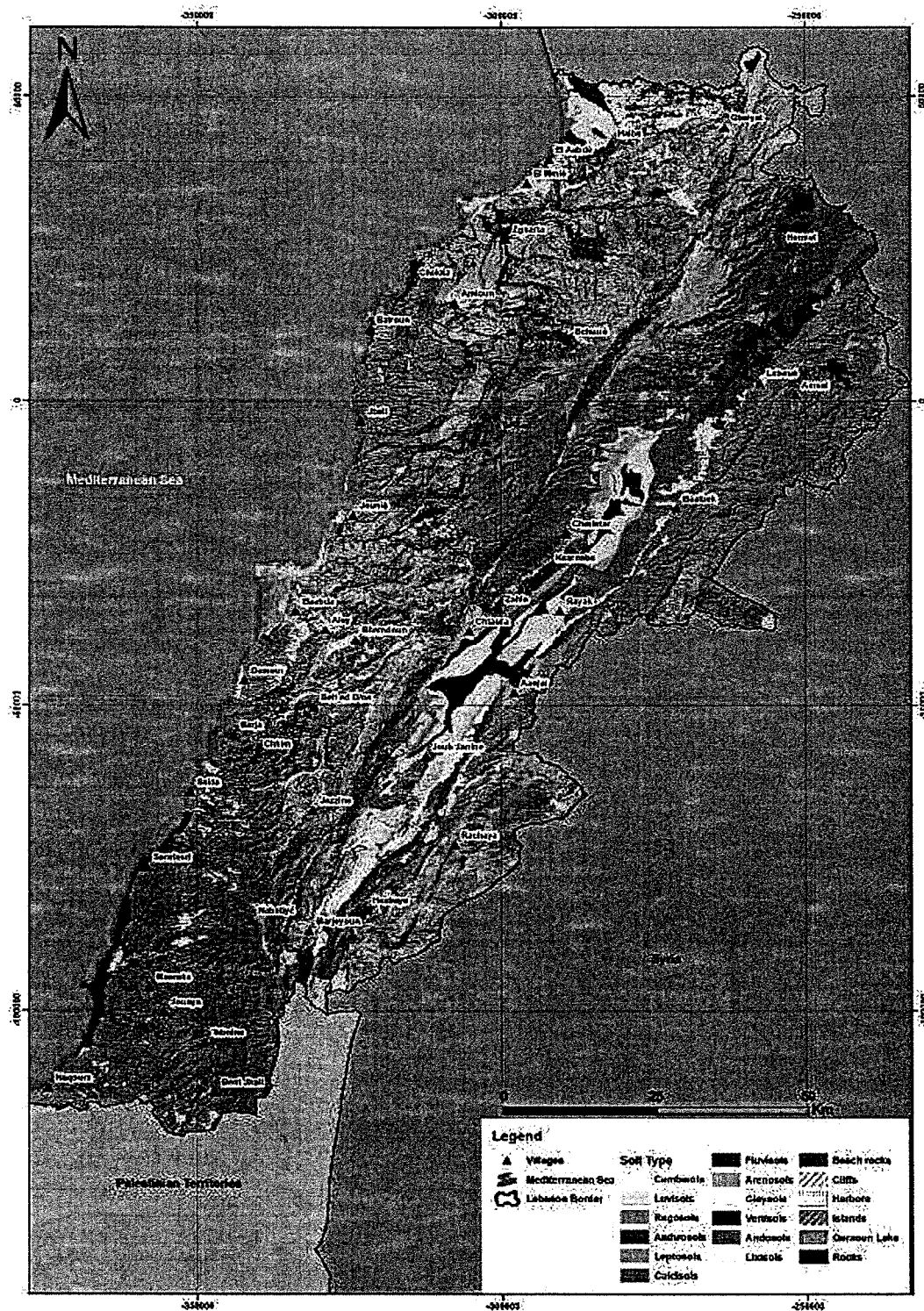


Figure N Soil Types in Lebanon (Source: CNRS-L, 2005)

Many improper human practices are leading to loss of natural resources including soil through erosion and mismanagement. In 2018, the Final National Report on Land Degradation Neutrality (LDN) Target Setting Programme was published, giving an insight about Land Productivity Dynamics (LPD) in Lebanon, and the most vulnerable areas to land degradation and soil erosion (Figure O). The standard LPD classification is used, made of five distinct classes as follows:

- LPD 1: Declining productivity;
- LPD 2: Early signs of decline;
- LPD 3: Stable, but stressed;
- LPD 4: Stable, not stressed; and
- LPD 5: Increasing productivity.

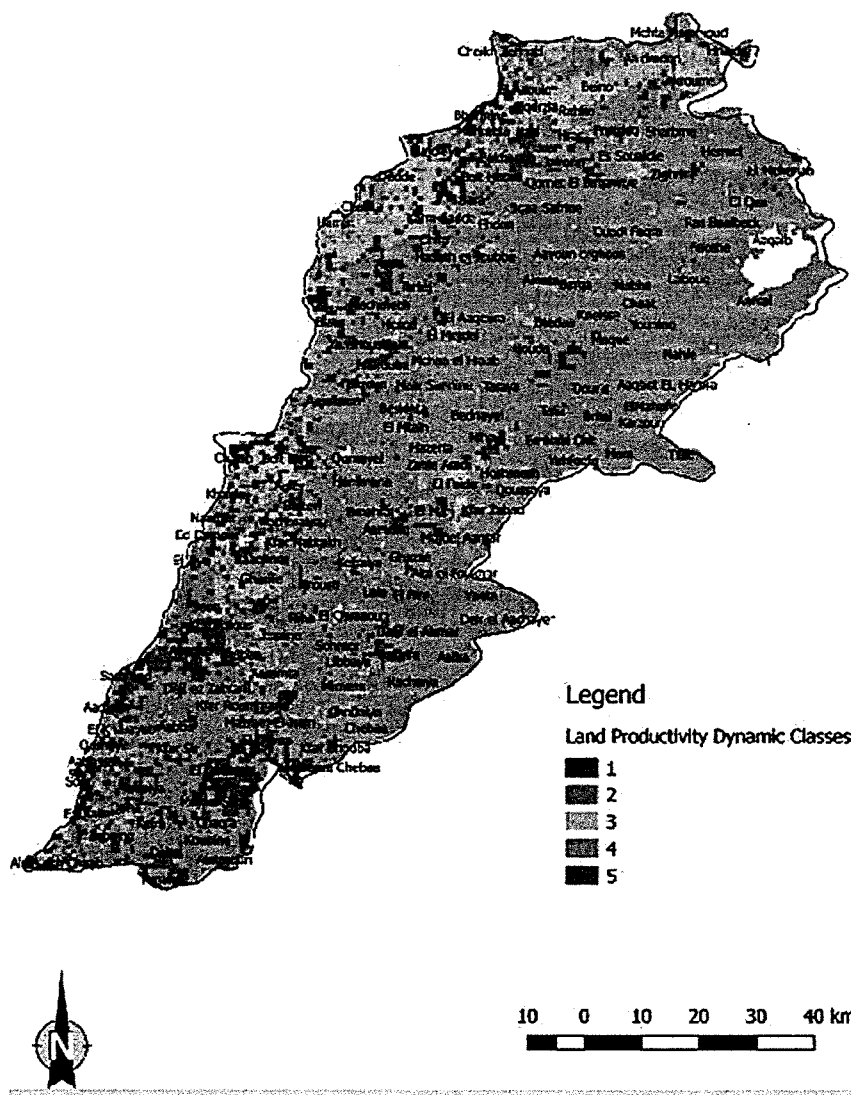


Figure O Land Productivity Dynamics trends of Lebanon (Source: Lebanon LDN TSP Country Report)

(i) LAND RESOURCES

Land usage in Lebanon can be classified into four main categories: agricultural areas, urban areas, natural areas, and mixed rural areas. Natural and agricultural areas, with the latter expanding mostly over the Beqaa Valley, the South, Nabatiyeh, Akkar, Zgharta, Koura, and Minieh-Dannieh as shown in Figure P, are the most prominent land use/cover in Lebanon. The main agricultural crops comprise fruit trees, vineyards, olives, bananas, citrus fruits, and field crops. Most of the agriculture in Lebanon is subject to fertilizers and pesticides (agrochemicals). It is generally known that many farmers do not abide by the correct dosage of fertilizers and pesticides usage, which find their way into the soil and into groundwater by leaching down due to irrigation, and into surface water through runoff. On the other hand, the highest concentrations of urban areas are found in Tripoli, Beirut and the coastal line of Mount Lebanon to the North of Beirut, Saida, Nabatiyeh, Tyre, as well as Zahle and Baalbek (CDR, 2005). Soil nutrition and plant protection are mismanaged with Lebanon showing some of the highest per hectare use of fertilizers (331 Kg/ha) and pesticides (7 Kg/ha) in the world (MOA, 2020).

Akkar is known to have many assets that allowed it to be the third major area of agricultural production after the Bekaa and Baalbeck/ El Hermel. Its lower plain is one of the most productive agricultural regions of the country. The main reason for Akkar's high potential is due to the fertility of the soil and gentle slopes, water abundance, and agro-climatic zones diversity. The FAO estimates that 42,000 hectares, or around half of Akkar's total surface area, consist of arable land, with 43% of that area irrigated. Agriculture is Akkar's second-largest economic sector, providing a source of income for 30% of families (UN, 2011). The plain's high concentration of agricultural activity provides 47% of household income (Mouchref, 2008). According to IDAL, around 38% of cultivated lands are used for the cultivation of cereals, followed by 25% for vegetables. More than 18% of olive oil production in Lebanon takes place in Akkar, making it a prominent location for agro-food processing.

The North's main advantage is access to resources. 15% of the governorate area is considered to be an agricultural area, whereby 62% of its area is dedicated for the cultivation of olives and hence makes up around 50% of total olive groves in Lebanon.

Baalbek's soil texture provides great possibilities for agricultural development. The area owns the largest portion of Lebanon's total arable land (25%). **Hermel**, on the other hand, benefits from the Assi River's presence, making the district Lebanon's principal hydrographic zone.

Bekaa is known to be an agricultural land in its three districts, which is crucial for the local economy and culture. Arable fields in the Bekaa Governorate make up around 18% of all arable lands in Lebanon, according to the Ministry of Agriculture's Census (MOA, 2010).

The South is a significant agricultural region of Lebanon as well. In South Lebanon, greenhouse agriculture has an area of 6,277 dounoum (2010), 78% of which is planted with fruit trees. A total of 201,539 dounoum are utilized for permanent agriculture, 38.9% of which is planted with olives, and 31.6% with citrus crops.

Nabatieh can take advantage of the resources available because of its fertile soil, moderate climate, and water resources. To begin with, 18% of olives cultivation in Lebanon is situated in Nabatieh, which is considered to be the 2nd concentration in Lebanon, only preceding it North Lebanon and Akkar. In addition to that, Nabatieh has a growing livestock sector with a high number of cattle and goats.

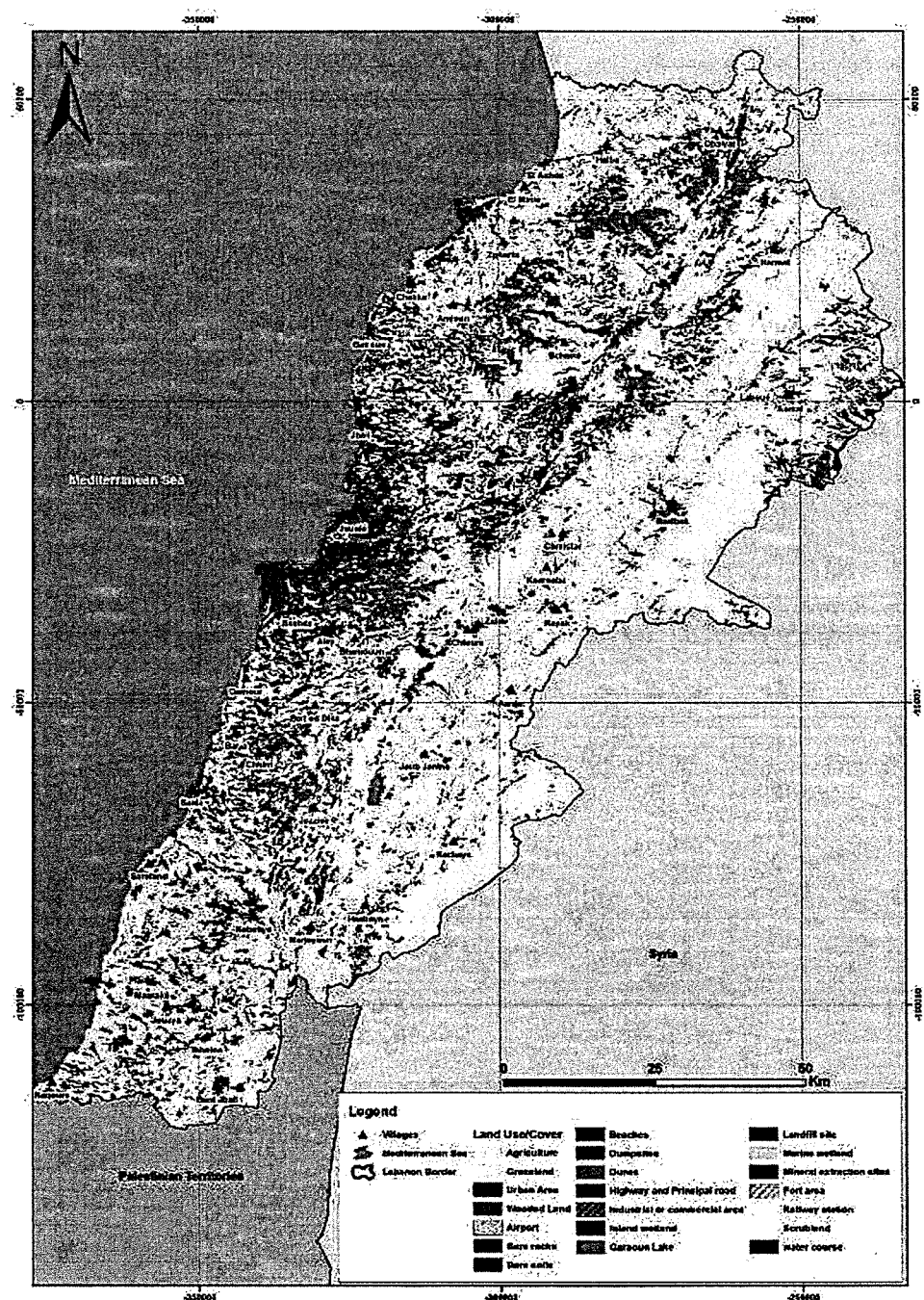


Figure P Land Use/Cover of Lebanon (Source: SDATL, 2013)

(K) ECOLOGICAL ENVIRONMENT STATUS*i. Overview of the Ecological Context*

Due to its location in the Mediterranean Basin, Lebanon has a rich biodiversity and is a biodiversity "hotspot". The country hosts around 9,116 known species distributed over its different geomorphologies. Given its diversity and significant ecological profile, 4 Ramsar sites, 15 Important Bird Areas (IBAs) (under Birdlife International), 24 Important Plant Areas (IPAs), and 20 Key Biodiversity Areas (KBAs) have been designated in Lebanon so far (Figure Q) (MOE/UNEP/GEF, 2016).

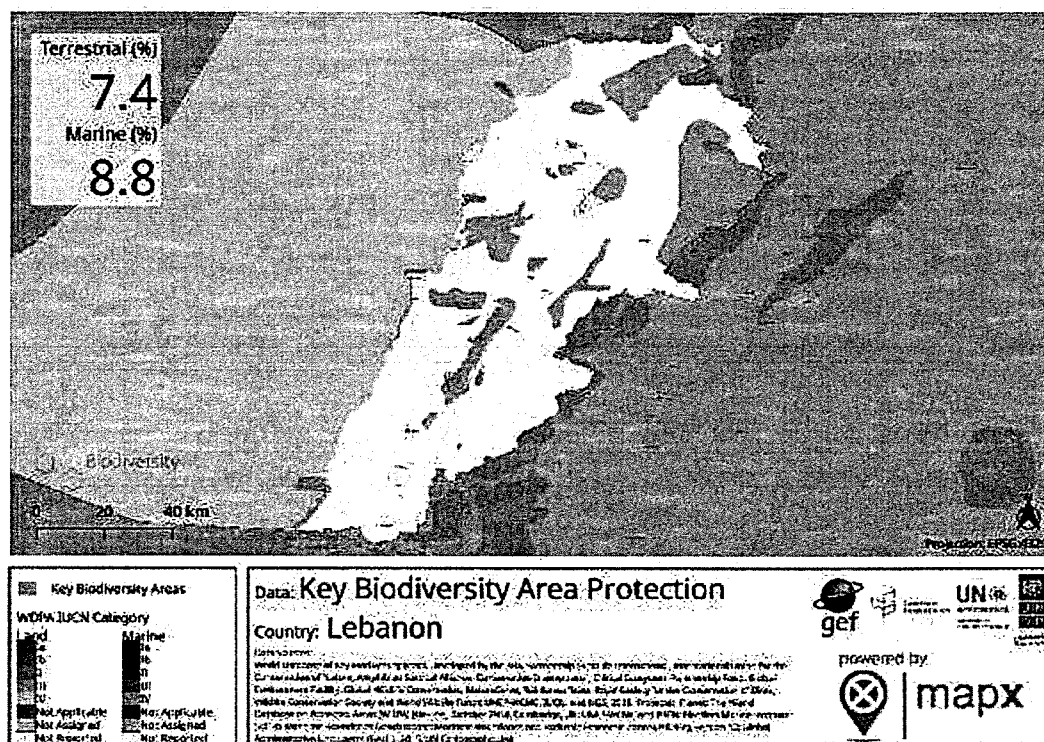


Figure Q Key Biodiversity Areas (KBAs) in Lebanon

As shown in the figure above, with regards to the targeted project areas, the KBAs are mainly located in Akkar, Baalbeck-Hermel and the Bekaa.

Akkar is known for its exceptional landscape and heritage features and hosts a rich biodiversity and three major eco-zones and embraces four Mediterranean vegetation zones. In addition to that, the presence of plains and mountains explains the diversity of the climate, hydrology, soil, and vegetation; all three eco-zones play a crucial role in agricultural production and tourism.

The Akkar-Hermel Cazas region has 21% forest cover, which is thought to be the largest continuous forest cover in Lebanon. Most of the Lebanese flora is also found in this region, which is home to a few distinct ecosystems. These ecosystems include the Mount Tabor oak (*Quercus ithaburensis*) woodlands in Dreib and the Qammouaa Fir Forest, which is the habitat of several species that are uncommon in other natural ecosystems in Lebanon. Additionally, the region is home to 69 different kinds of animals and 294 different bird species. One of the

main forest hotspots is the wetland of Cheikh Zennad that has important bird areas and bottlenecks in addition to the ecological corridors that include the riverine corridors that go from the northern Lebanese mountain system, forest corridors such as the Lebanese Cedar, coastal corridors, and migratory bird routes.

North

Most of the forest species found in Lebanon can be found in the forests of North Lebanon, which make up about 21% of the northern governorate. These species include the Palestine oak *Quercus calliprinos*, the Aleppo oak *Quercus infectoria*, the Turkey oak *Quercus cerris*, the Greek juniper *Juniperus excelsa*, the Syrian juniper *Juniperus drupacea*, the Lebanon cedar *Cedrus libani*, the Ci (Mediterranean cypress).

The **Hermel** region is characterized by its nature reserves especially cedar trees and perennials. Cultivated land area (3 km²) is equivalent to 5.38% of the total area, which is very little in relation to the area of arable land (15 km²). It is mainly composed of agricultural areas such as terraces, fallow lands, and cultivated trees, in addition to grasslands whereby some are degraded and others are used for grazing, agriculture and forage.

The **Bekaa** region comprises several mountains that reach around 2,740 m above sea level, plains, valleys that reach down to around 600m in altitude, rivers such as the Litani River that is the longest river in Lebanon, wetlands, and an artificial lake, Qaraoun. Bekaa's unique topography and diversity in climate justifies the diversity in its habitats and ecosystems; this leads to the richness in its wildlife, offering unique species to the area. Henceforth, this allows it to be characterized as an important and rich natural heritage.

The forests that are on the eastern slopes of Mount Lebanon are mainly Calliprine Oak, Aleppo oak, Grecian Juniper. As for the western slopes of Anti Lebanon, they are dominated by Calliprine and Aleppo oak. Unfortunately, the forests only represent a small portion of the area compared to pastures due to land degradation and deforestation that have taken place throughout the years.

The **South** is mainly covered by Aleppo Pine Forests. The cultivated land area is 11% and mainly consists of citrus fruits trees, tropical fruit trees, bananas, sumac, carob and sesame (UNDP 2016).

The presence of natural sites in the Governorate is an important location for the conservation of flora and fauna species, providing opportunities for eco-tourism. The sandy beaches of Tyre and the historical ruins of Sidon and Tyre attract numerous visitors (IDAL, 2018).

Nabatieh represents 6% of the total forests in Lebanon (SOER, 2020). The cultivated land area is 11% and mainly consists of citrus fruits trees, tropical fruits trees, banana, sumac, carob and sesame (UNDP, 2016). Nabatieh is the second olive producing region in Lebanon after North Lebanon and Akkar; furthermore, its richness in natural and archeological attractions endow it with a strong touristic potential (IDAL, 2018).

Most of the wildlife consists of livestock-rearing animals like sheep and goats (IDAL, 2018). Common species, however, might also exist, mostly in the nearby natural environments. Moreover, despite the governorate having the third-highest percentage of goats in Lebanon (IDAL, 2018).

ii. Overview of Protected areas

In addition, the Government of Lebanon has designated 17 sites across the country as nature reserves under the responsibility of MOE. Most recently was the designation of Mount

Hermon as a nature reserve in December 2020; and the Abbassiyeh coast, South Lebanon nature reserve in May 2020. Table 2-5 presents the nature reserves and Himas located in the targeted project areas. These are two categories of protected areas (PAs) as per the latest PAs Law, Law 130/2019. The other two categories are 1) natural sites or monuments, and 2) natural parks. These four categories were created in order to meet Lebanon's commitments arising from the relevant international conventions ratified by Lebanon (the United Nations Framework Convention on Biological Diversity - Rio de Janeiro 1992, the UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage, the Ramsar Convention on Wetlands of International Importance Especially as Waterfowl Habitat, and the Euro-Asian/African Migratory Waterbird Agreement), and to make sure all categories of natural and cultural heritage are covered and protected.

Table H List of Nature Reserves and Himas in Targeted Project Areas (adapted from SOER, 2020)

Governorate	Nature reserve	Hima
Akkar	Karm Chbat	Qammouaa forests, Bazbina zone, Andket, Menjez, Rouaime, Al Maabour Al Abyad
North	Horsh Ehden and Tannourine Cedars Forest designated as IBA Hamat/Deir El Nouoriyeh Cliffs of Ras Shaqaa as Ramsar site	Anfeh
Baalbeck-El Hermel	Yammouneh	Hima of West Baalbek, Charbine and Fakiha
Bekaa	The communal lands of Niha, Jbeih, Mrousti, Khraibe, Maasser, Barouk, Bmohreh, Ain Dara, Ain Zhalta villages, Shouf Biosphere Reserve and Mount Hermon Nature Reserve.	Hima Anjar, Hima Kfar Zabad (Zahle district) Hima Kherbet Kanafar, Hima Ain Zebde, Hima Qaraoun, and Hima Aitanit.
South and Nabatieh	Tyre Coast Ebel Es Saqi area designated as an Important Bird Area (IBA) Wadi Al Houjeir, Kafra, Ramya, Beit Leef, Debel, Abbassiyeh Coast, Mount Hermon, Nmayrieh Abbassiyeh, Jabal el Rihan Biosphere reserve	Ebel El Saqui ; Arnoun, Qaytoui, Roum, Qoleileh and Mansouri

Moreover, Lebanon hosts a variety of unprotected natural important ecological areas such as grottos, mountain tops, natural bridges, forests, valleys, rivers, and holes. These areas are however threatened by anthropogenic and natural threats such as fragmentation, unsustainable exploitation of natural resources, pollution, and climate change.

Local communities in Lebanon have also implemented initiatives for community-based approaches for the protection and conservation of ecologically important sites across the country, such as those established in Anjar-Kfar Zabad (Beqaa) and Jdeidet el Fekha (Baalbek) (UNDP/MOE, 2019).

2. SOCIAL BASELINE

(a) SOCIOECONOMIC PROFILE

i. Demography

With a population density of 669 inhabitants/km², Lebanon ranks in the top 20 list of the most densely populated countries (World Bank Group, 2021). With the start of the Syrian war, millions of Syrians fled their home country and settled in different regions in Lebanon, which lead to an increase in the total number of population (Table 2-6). The growth of the population led to an over-exploitation of natural resources, and resource depletion intensified to cater for a larger population. Mismanagement of natural resources has led to exacerbated environmental degradation, and pressure was added on an already resource-strapped management infrastructure.

Table I Population Number and Density (2011-2018) (Source: World Bank, 2021)

Year	Total Population (including Refugees and displaced)	Total Population Density in Lebanon (inhabitants/km ²)	World Population Average Density (inhabitants/km ²)
2018	6,848,925	669	60
2017	6,811,873	665	59
2016	6,711,121	656	58
2015	6,532,678	638	58
2014	6,262,410	612	57
2013	5,914,621	578	56
2012	5,538,634	541	56
2011	5,202,343	508	55

Roughly, 65% of the population in Lebanon is between 15 and 64 years old (Figure R). 51.6% of the total population are women, and 48.4% are men (EU/CAS/ILO, 2019).

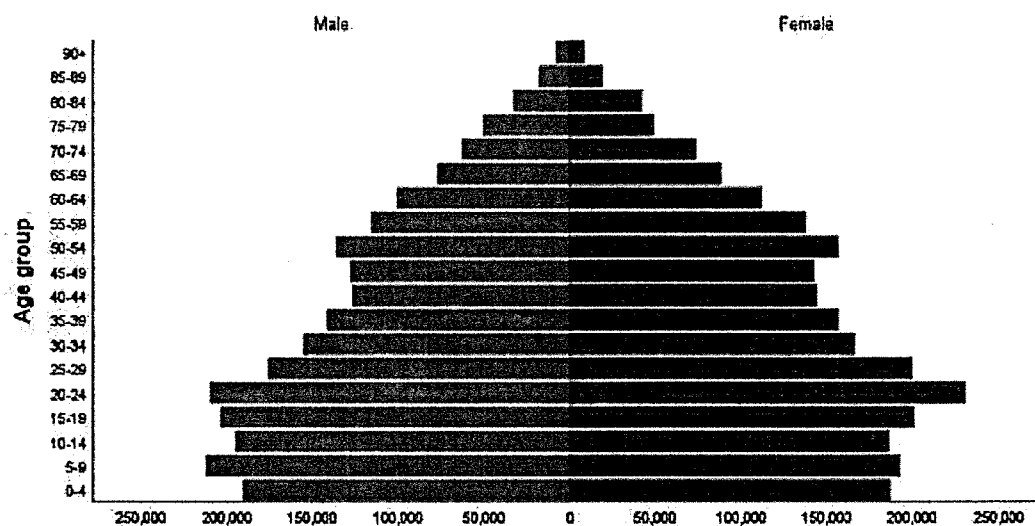


Figure R Age Pyramid of the Lebanese Residing Population (Source: EU/CAS/ILO, 2019)

The segregation of the Lebanese population located in the targeted project areas is shown in Table 2-7.

Table J Population Distribution by Governorate and Caza (Source: EU/CAS/ILO, 2019)

Governorate	Caza	Population per Caza	Percentage from Total Lebanese Population
Akkar	Akkar	324,000	6.7
Baalbek-Hermel	Baabek	214,600	4.4
	Hermel	30,500	0.6
Bekaa	Rachaya	33,800	0.7
	West Beqaa	86,400	1.8
	Zahle	177,400	3.7
Nabatieh	Bint Jbeil	96,200	2.0
	Hasbaya	28,700	0.6
	Marjaaoun	74,000	1.5
	Nabatieh	180,200	3.7
North Lebanon	Batroun	58,900	1.2

Governorate	Caza	Population per Caza	Percentage from Total Lebanese Population
	Bcharre	22,100	0.5
	Koura	84,600	1.7
	Minieh-Dannieh	140,800	2.9
	Tripoli	243,800	5.0
	Zgharta	87,700	1.8
South Lebanon	Jezzine	32,100	0.7
	Sidon	296,600	6.1
	Tyre	255,700	5.3
TOTAL		4,842,500	50.9

Note: Excludes people living in non-residential units, such as army barracks, refugee camps and adjacent gatherings, and informal settlements.

ii. Persons with Disability

Based on the guidelines of the Washington Group on Disability Statistics, about 4 per cent of Lebanese residents suffer from a disability, or have difficulty functioning, which restricts their participation because of difficulties in one or more of the following six core functional domains: seeing; hearing; walking or climbing steps; remembering or concentrating; self-care; and communicating (EU/CAS/ILO, 2019). Table K below provides details about people with disabilities based on their gender.

Table K Disability status of the Lebanese population based on their gender (Source: EU/CAS/ILO, 2019)

Disability status	Percentages		
	Women	Men	Total
Person with a disability	4.1	3.9	4.0
Person without a disability	94.4	94.5	94.5
Not applicable (infants and newborns)	1.4	1.5	1.5
Total	100.0	100.0	100.0

The total percentage (4%) of Lebanese residents with a disability can be divided into two groups:

- Persons with only one disability (2.5%); and

- Persons with more than one disability (1.5%).

Several types of disabilities are reported in Lebanon, as shown in Figure S

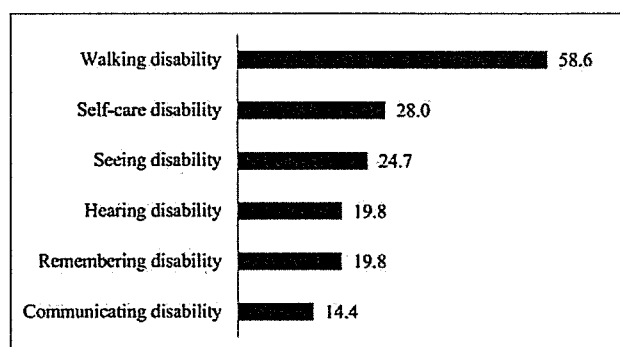


Figure S Percentage of Each Type of Disability in Lebanon (Source: CAS/EU/ILO, 2019)

Table 2-9 presents the percentage of persons with disabilities in the targeted project areas.

Table L Persons with Disabilities in the targeted project areas (Source: CAS/EU/ILO, 2019)

Governorate	Persons with Disability (%)
Akkar	6.1%
North	6%
Baalbek-El Hermel	4.9%
Bekaa	4.7%
South	4.4%
Nabatieh	3.7%

iii. Female-headed Households

Lebanese heads of households represent 85 per cent, while non-Lebanese heads of households made up the remaining 15 per cent before the economic crisis. Around 18 per cent of households were headed by women and 82 per cent by men (EU/CAS/ILO, 2019). Figure T presents the percentage of heads of households by age group and sex.

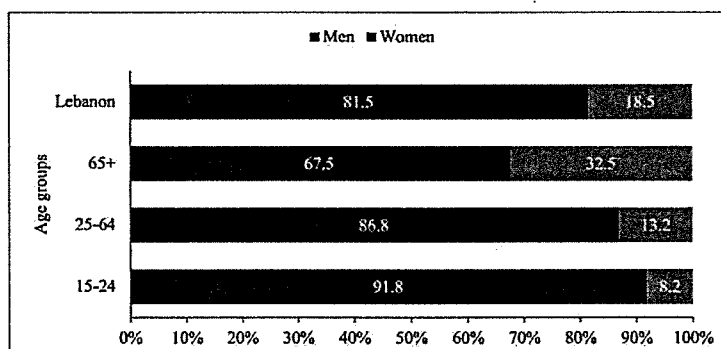


Figure T Distribution of Heads of household by age group and sex

(Source: CAS/EU/ILO, 2019)

Table M Percentage of Female headed Households in the Targeted Elderly.

While the information relating to elderly is limited, it is worth noting that single-person households make up to 10.2 per cent of total households; half of them older adults, mostly elderly women who are generally widows (CAS/EU/ILO, 2019). People aged 65 years-old and above make up to 12.5% of the total Lebanese population, and half of those reported with a disability in Lebanon. Roughly one third of elderly people do not benefit from any health insurance coverage.

Table 2-10 presents the percentage of elderly in the project targeted areas.

Table N Percentage of Elderly in targeted areas)

Governorate	Percentage of Elderly
Akkar	5.4%
North	5.8%
Baalbeck el Hermel	8.8%
Bekaa	N.A.
South and Nabatieh	13.5%

(Source: CAS/EU/ILO, 2019)

iv. Sexual Exploitation and Abuse / Sexual Harassment

69% of gender-based violence (GBV) incidents reported through the GBV information management system (GBVIMS) in 2020 were incidents of domestic violence. The GBVIMS is an inter-agency partnership between the United Nations Population Fund (UNFPA), the International Rescue Committee (IRC), and the United Nations High Commissioner for Refugees (UNHCR), in consultation with the Inter-Agency Standing Committee Sub-Working Group on Gender and Humanitarian Action and the Gender-Based Violence Area of Responsibility Working Group of the Protection Cluster. The system enables those providing services to GBV survivors to effectively and safely collect, store, analyze and share data related to the reported incidents of GBV.

Numbers were reportedly increasing due to the cumulative effect of both lockdown and economic collapse (UNFPA, 2020).

Women and girls with intellectual disabilities are particularly vulnerable to sexual violence and are often prevented from accessing a range of services and face un-adapted facilities, poverty, inadequate behavior of service providers. Elderly women are the most at risk due to their suffering from disparities that they experience throughout their lifetime (UNFPA, 2020).

In 2021, UNICEF reported that one in two children in Lebanon is at serious risk of physical, emotional, or sexual violence, as families struggle to cope in the country's deepening economic crisis.

v. Poverty

Due to the financial crisis facing the country, the poverty rate increased exponentially with time starting in 2019. According to a study prepared by the UN-ESCWA titled Poverty in Lebanon: Solidarity is vital to address the impact of multiple overlapping shocks (UN, 2020), the portion of Lebanese households living in multidimensional poverty was estimated at 82% of the total

population, out of which 40% live in extreme multidimensional poverty. Only 18% of the population is not poor. Roughly 1.8 million children (more than 80 per cent) are now experiencing multidimensional poverty – up from around 900,000 in 2019 (UNICEF, 2021).

The financial crisis is disproportionately affecting lagging and under-served rural areas. According to the Lebanon Multidimensional Poverty Index (MPI) for Lebanon (CAS & World Bank, 2019), the governorates of Akkar (69.6%) and Bekaa (67.0%) have the highest levels of MPI and incidence of poverty. Out of a total population of 1.1 million people in Northern Lebanon, 708,000 live under the poverty line. Vulnerable Lebanese households face challenges accessing food, healthcare, education, and other basic services. The unemployment rate reached 30% in 2022 – up from 11% in 2019 (ACAPS, 2022) and as a result demand for employment opportunities across the country is high. The highest concentration of displaced populations is found in the Bekaa region (UNHCR, 2022). This has put strains on already fragile services in the Bekaa and increased the vulnerability of host communities, as they compete over employment, accommodation, access to public services, and infrastructure.

vi. Displaced Populations

Lebanon, a small country of 5.2 million people (July 2021 estimate), hosts the highest per capita concentration of displaced populations in the world.

Roughly 1.5 million Syrians had fled their country since 2011 and resettled in Lebanon. Only 879,529 displaced populations are registered as of 2020. The highest concentration of displaced populations is found in the Bekaa region (UNHCR, 2022).

The Bekaa valley and Akkar have been most heavily affected by the Syrian crisis. In fact, the agri-food sector is one of the three sectors where Syrian displaced populations are legally allowed to work, and agriculture is the second-highest employer of displaced Syrians. Child labor among displaced populations is the highest in agriculture in rural areas; a 2019 UNICEF survey in the Bekaa Valley, where migrants are concentrated, showed that around 75 percent of children from displaced populations engaged in labor worked in agriculture.

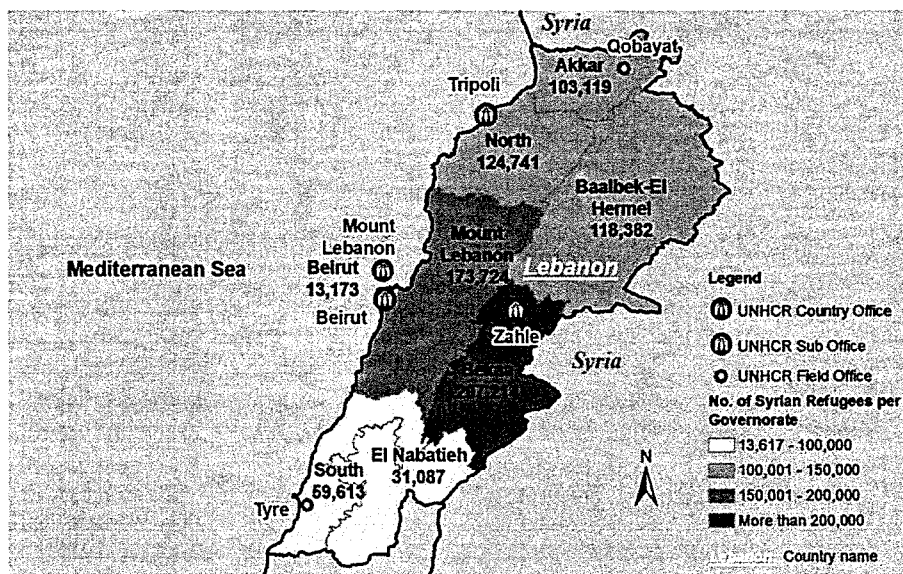


Figure U Number of Syrian refugees per Governorate

Source: UNHCR, 2022

vii. *Basic Services and Utilities*1. Access to Solid Waste Management Services

Municipalities are responsible for collecting and transporting solid waste from collection points to designated facilities in a manner that does not harm the environment, in accordance with the standards and conditions set by and subject to approval of MoE, as per Decree No. 118 of 1977 and Law 80 of 2018.

Small-scale facilities in remote areas of the North, South and Bekaa regions provide those areas with Solid Waste Management (SWM) services. These facilities are managed by the Office of the Minister of State for administrative Reform (OMSAR) in coordination with local authorities.

Community-run systems in some regions consist of basic sorting, composting, and final disposal of MSW.

Approximately 2 million tons/year of Municipal Solid Waste (MSW) are generated in Lebanon. Daily MSW generation is estimated at 1.05 kg/capita/day (CDR, 2019). MSW is mainly composed of 51% of organic waste, while the remaining is comprised of recyclables like paper and cardboard, plastic, glass, textiles, metals; demolition/construction waste and others (CDR, 2019). Most of this waste is collected and disposed of by landfilling/ dumping, while some of the waste is being treated at Solid Waste Management Facilities (SWMF) which are distributed all over the country.

Many of the remaining rural areas that are unserved by SWM facilities collect municipal solid waste and dispose of it by open dumping and burning.

Dumpsites and open dumping and burning are frequent in Lebanon. Two types of dumpsites are identified in Lebanon: 1) MSW dumpsites and 2) Construction and Demolition Waste (CDW) dumpsites.

Table 2-11 presents the number of operational MSW dumpsites by governorate according to the Updated Masterplan for Closure and Rehabilitation of Uncontrolled Dumpsites (UNDP, 2017).

Table O Operational MSW Dumpsites by Governorate

Governorate	Operational Dumpsites
Akkar	19
North	19
Baalbeck	39
Hermel	3
Bekaa	54
South and Nabatieh	127

Source: UNDP, 2017

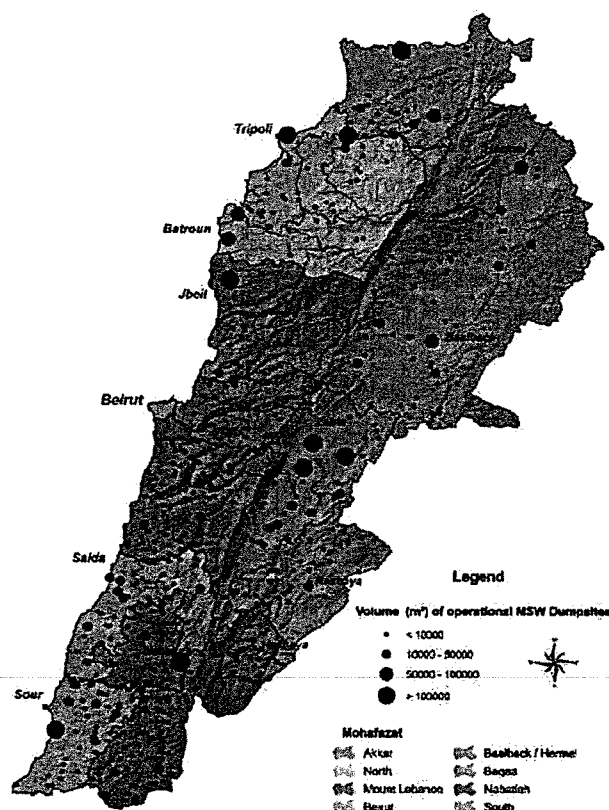


Figure V Map showing the MSW dumpsites locations and volumes

Source: UNDP, 2017

The operational SWMFs are mainly located in Akkar (1), North Lebanon (4), Bekaa (7), Nabatieh and South of Lebanon (13). None exists in Hermel, while one facility is operational in Baalbek.

Error! Reference source not found. presents the operational SWMFs in the project areas while Figure W, Figure X and Figure Y show the distribution of operational SWMFs in addition to the non-operational and planned ones.

Table P Summary of SWMFs by Governorate

Governorate	Caza	Location	Type of operational SWMF
Akkar			1
Akkar	Akkar	Michmich	Sorting and Composting
North Lebanon			4
North Lebanon	Batroun	Chekka	Sorting
	Koura	Bsarma	Sorting
		Bichmezine	Sorting
	Minieh-Dannieh	Minieh	Sorting and Composting

Governorate	Caza	Location	Type of operational SWMF
Bekaa & Baalbek-Hermel	7		
Bekaa	Zahle	Barr Elias	Sorting and Composting
		Barr Elias	Sanitary landfill
		Qabb Elias	Composting
		Qabb Elias (SICOMO)	Thermal treatment
		Zahle (arcenciel)	Autoclaving
		Zahle	Sanitary landfill
		Zahle	Sorting
Nabatieh & South Lebanon	13		
Nabatieh	Bent Jbeil	Aaitaroun	Sorting and composting
		Bent Jbeil	Sorting and composting
		Khirbet Selm	Sorting and composting
	Hasbaya	Rachaya El Foukhar	Sorting
	Marjeyoun	Khiyam	Sorting and composting
		Meiss Ej Jabal	Sorting and composting
		Qabrikha	Sorting and composting
		Qlaiaa	Sorting and composting
		Taybet Marjeyoun	Sorting and composting
	South Lebanon	Saida	Saida/ Arc en ciel
Saida Zahrani / IBC			Sorting, composting and RDF
Zrariyeh/ Green Ecotech			Sorting and thermal treatment
Sour		Ainbaal	Sorting and composting

Source: UNDP, 2017

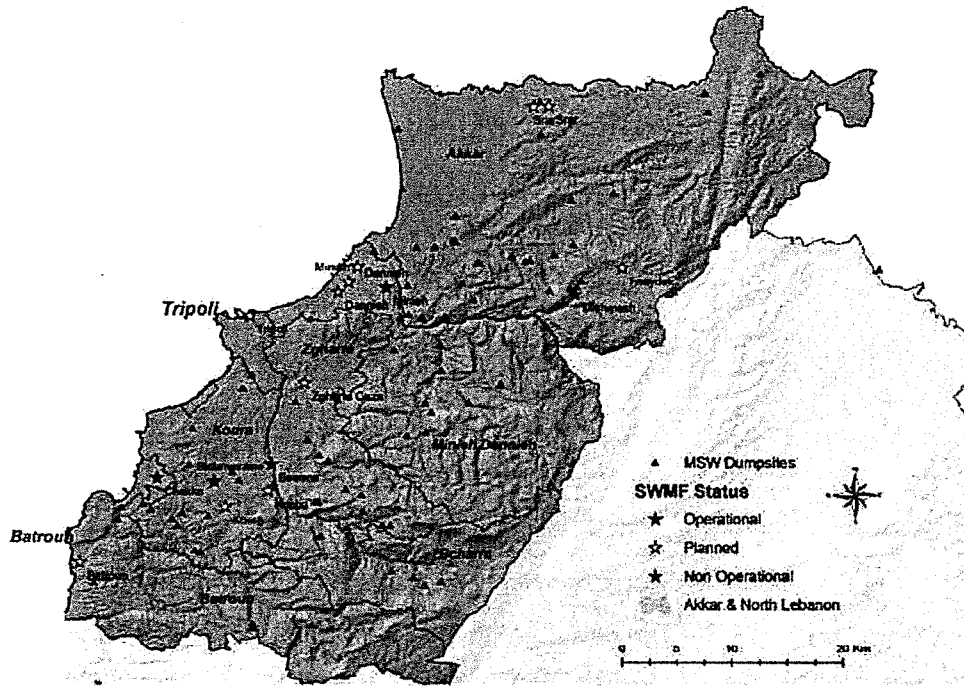


Figure W Akkar & North Lebanon SWMFs distribution

Source: UNDP, 2017

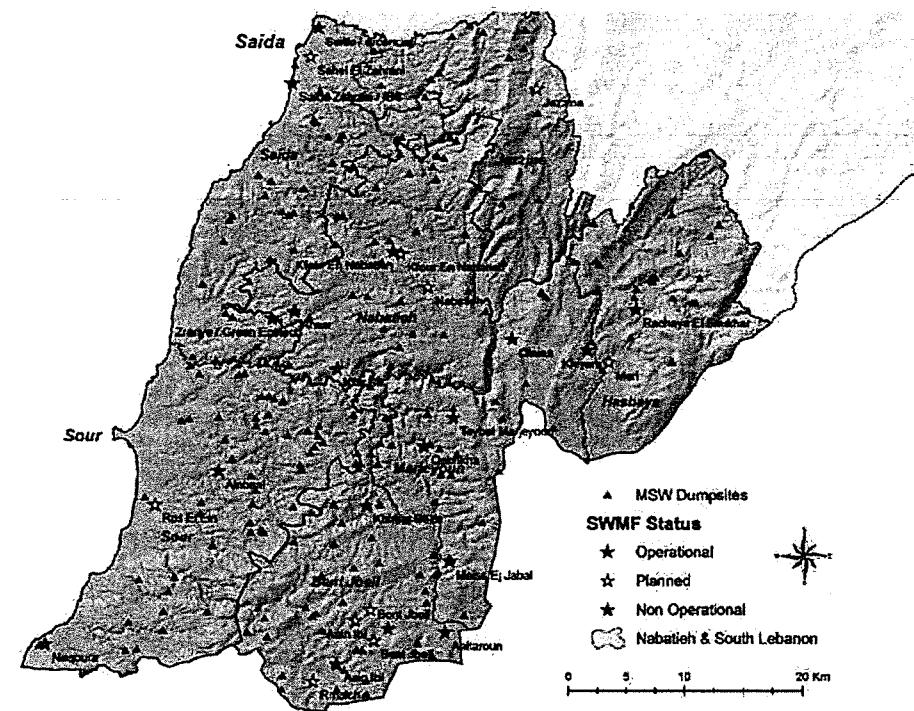


Figure X Nabatieh & South Lebanon SWMFs distribution

Source: UNDP, 2017



Source: UNDP, 2017

The water sector in Lebanon is facing detrimental challenges, hindering the ability of the government to supply adequate and reliable water services while conserving Lebanon's water resources. Although the national coverage of water networks is around 80%, the quality of the supplied public water is questionable due to the lack of protection of water resources, insufficient water treatment at the supply level, deteriorated distribution networks, and the absence of continuous monitoring. Untreated wastewater, which accounts for around 70% of the total generated wastewater, is being directly discharged into the environment, thus polluting the groundwater and surface water resources that supply a significant portion of Lebanon's

potable water. The pollution of water resources, in addition to the poorly managed water supply networks, have impacted the quality of water at the household level. An estimated 65% of the population does not have access to safely managed drinking water services (MoEW, 2022).

Lebanon's available renewable water resources have dropped below the 1,000 m³ /capita/year threshold that defines water stress: in 2010, the MoEW estimated that the total renewable resources per capita per year were 926 m³ and predicted that it will continue to fall reaching 839 m³ by 2015 (MoEW, 2012). Since then, population growth, climate change, and the influx of displaced have further strained the available resources and as a result, the total renewable resources per capita have reached 700 m³ /capita/year (IFI, 2014). In addition to the challenges associated with ensuring that the water sources are effectively managed to meet the demands of the different sectors, pollution levels in many of these freshwater systems have made them either unable to meet their designated uses, or requiring expensive treatment prior to use (SOER, 2020).

With the ongoing multiple crises since 2019, water supply and access to water has become challenging to most of the Lebanese population. In addition to the decrease in available water resources per capita, the infrastructure of the sector has become very vulnerable lately, which has increased the risk of water shortage in many regions of the country, notably Baalbek-Hermel Governorate and West Beqaa district (UNICEF, 2021), as shown in Figure 2-6 below.

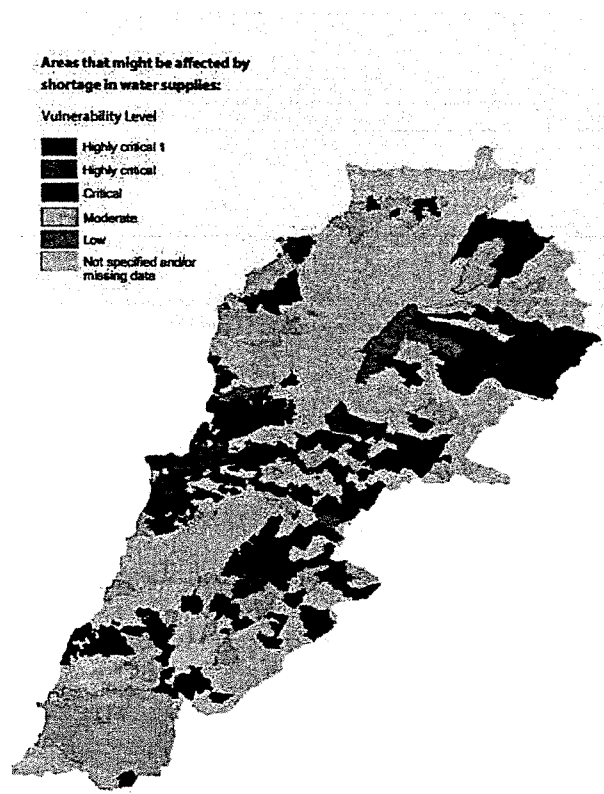


Figure 2 Vulnerability Level to water shortage in Lebanon

Source: UNICEF, 2021

With the cumulative consequences that climate change, infrastructure deterioration, population growth, and climate change have, the vulnerability to water shortage situation of 33% of the total population is classified as Highly Critical 1 (Error! Reference source not found.). The severe power outages have also further aggravated the problem of water supply.

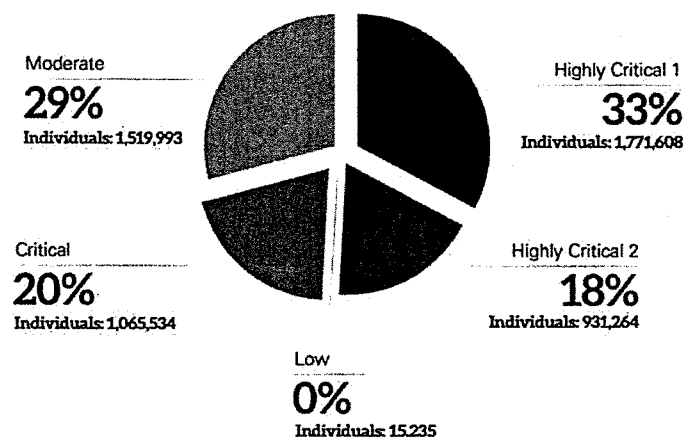


Figure AA Levels of vulnerability of the Lebanese population

Source: UNICEF, 2021

The NLWE provides potable water services in the two governorates (North and Akkar), reaching over 549,639 people, or 61% of the population within its service area (LWP, 2017). Irrigation services are also provided by the Establishment, but are restricted to the areas of Batroun, Dannieh, Minieh, and Halba (USAID3, 2019).

Akkar

Access to improved drinking sources has decreased in Akkar from 99% in 2020 to 90% in 2021 (UNHCR, 2021). As for the sources of the drinking water, they vary whereby 21% is from bottled mineral water, 37% is from protected wells, and 5% are from the water network (UNHCR, 2021).

North

Access to water in the North is poor, with only 57 percent of households connected to the water network, poor hours of public water supply, and overall water scarcity in the region. The average number of hours of public water supply for summer and winter was 11.7 hours before the severe outage in power supply over the last 2 years.

The BWE governs the entire Bekaa region including Hermel, Baalbek. It operates over 196 potable water supply systems, 36 of which depend on local springs of various sizes and the rest are supplied by more than 238 wells. The only operating water treatment plant within the BWE jurisdiction is located in Zahleh, where over 8,000 m³ are treated per day, which are then distributed through a water network of 3,000 km in length (including parts under construction) (USAID2, 2019).

Baalbek-El Hermel

There is a huge water wealth in the Hermel district that is not well utilized, mainly due to the historical neglect and marginalization by the authorities and agencies concerned with securing this service

on the one hand, and the misuse of this wealth by the local community on the other hand, as it is noted that some of these families are collecting winter water in wells or purchasing it through tanks, or by relying on artesian wells, which negatively affects the living standards of the population. But the main problem is the presence of an old and worn-out water network that is more than seventy years old, and it is still a common network in the city (OMSAR, 2016).

Water pollution is another problem that is due to the disposal of wastewater into sanitary pits which overlap with the drinking water sources. The city of Hermel relies on several sources of water, which are: The ever-flowing Orontes River, which has a length of 25 km inside Hermel, and a speed of water flow per second of 13 m³/s, but it is not used for drinking, and there are encroachments on it by the owners of tourist restaurants and cafes; the springs that are used for irrigation of agricultural lands, including: the capital spring, the main spring, Bedita spring, the Daffash spring, and Ain Al-Zarqa; two ponds, Al-Tal Pool and Al-Qamou Pool, are used for irrigation; State water / central water tanks; water from private artesian wells; purchasing water through tankers.

Bekaa

Bekaa suffers from an estimated deficit of 12,384.2m³/day while the needed water supply is of 127,918 m³/day under acceptable conditions. Unfortunately, the deficit is greater when the current actual unaccounted-for Water (UFW) is considered since it can reach 57,155 m³/day.

According to the UNHCR 2016 project, to meet the water demand through the year 2035, two extraction zones in the Zahle and West Bekaa Districts have been suggested for well drilling. Regarding Rachaya District, three extraction zones for well drilling were suggested to meet the water requirement until 2035 (UNHCR, 2016). Additionally, according to the Water Master Plan for the Bekaa (KREDO 2015), nine (9) water supply systems are planned for Rachaya District, six (6) water supply systems for Zahle District, and one (1) for West Bekaa in order to meet the water demand through the year 2035.

The SLWE operates over 500 potable water supply systems, 14 of which depend on springs of various magnitudes, the rest are supplied by over 324 wells. Water is pumped from the source and stored in over 510 reservoirs distributed across the South, distributing water to households (SLWE, 2017). Water is distributed through a network of approximately 3,350 km long (USAID1, 2019).

Nabatieh

The city of Nabatiyeh depends mainly on the wells of Fakhr El-Din, the spring of Al-Tasa, and private wells. Some citizens resort to meeting their water needs by purchasing water through tanks. The city has networks for service and drinking water and needs to increase its water lines and coverage.

The city of Nabatiyeh suffers from a lack of water services, despite the passage of the Litani River and the Zahrani River close to it, as they can be exploited for domestic purposes and for drinking water. The Al-Tasa spring feeds four old neighborhoods, while the new neighborhoods are fed from Fakhr El-Din wells, and there is the Al-Rahebat neighborhood that is fed from Al-Najdah well.

a. Access to Sanitation

In 2015, 81% of the total Lebanese population had access to improved sanitation facilities, and 19% relied on unimproved facilities other than open defecation and shared facilities (WHO/UNICEF JMP, 2015). As of 2017, residents that have access to safe sanitation facilities were reported at 98% of the

total population (WHO/UNICEF JMP, 2019). However, it must be noted that although access to proper sanitation is high, wastewater treatment remains very low and surface water contamination remains high.

3. *Economy, Livelihood and Employment*

The on-going financial crisis in Lebanon has led to an increase in poverty and highly impacted the country's economy. By the end of 2021, Lebanon's real GDP index had contracted by 34.6 percent since 2018, comparable to Lebanon's real GDP index in 2007. In July 2022, the World Bank downgraded Lebanon's economic standing to a low-middle income country (WB, 2022).

The adverse shocks have driven an overwhelming share of the population into poverty and vulnerability to food insecurity. Food price inflation was further exacerbated by the removal of subsidies, particularly impacting the poor and vulnerable.

At the governorate level, the unemployment rate has increased in all governorates without exception. The largest increase in unemployment was observed in Baalbek-Hermel (40.7 percent), followed by South Lebanon (36.5 percent) in 2022. Employment in the informal sector (in terms of the characteristics of the establishment in which the person works) has increased by 13.1 percentage points, from 35.2 percent in 2018-2019 to 48.3 percent in January 2022 (ILO, 2022). The sector with the highest share of informal employment is Agriculture, Fishing and Forestry with 98.1 percent (ILO, 2022).

The gender gap in labor force participation (LFP) stands at 44 percent, with female LFP at 22.2 percent versus a male LFP at 66.2 percent.

(b) OVERVIEW OF THE AGRICULTURE SECTOR

The agro-food industry is the largest industrial sector in Lebanon, accounting for 18% of all industrial companies," claims IDAL, since it contributes around 4.7% of Lebanon's GDP" (IDAL, 2017). This makes the Bekaa governorate's agricultural, agro-pastoral, and tourism industries vital. Wineries-focused tourism and farming activities connected to wine production are two examples of rural tourist activities in West Bekaa, Rachaya, and Zahle.

Lebanon offers a range of agroecological zones well suited to the production of diverse agricultural products and with potential for exports. Five distinct agro-climatic zones are present in the coastal strip, low and middle altitudes of Mount Lebanon, West, Central and North Bekaa. The most fertile and productive lands are located in the Bekaa Valley, the Plain of Akkar and the thin strip of coastal plains. Crop production represents about 60 percent of agricultural output, while livestock production accounts for 40 percent and contributes a critical year-round source of livelihoods. Mountain agriculture is characterized by small holdings sustaining poor farmers and many households for whom agriculture is a secondary source of income. Agriculture in the coastal plains is dominated by permanent crops (e.g., citrus and banana), while the plains of Akkar and Bekaa Valley are dominated by cash crops (potatoes and vegetables). Lebanon's domestic agribusiness market has potential for steady growth. Lebanon has a revealed comparative advantage for vegetable, fruit, nuts and other high-value agriculture products with fruit and vegetable production also representing an important segment of Lebanon's agribusiness sector. It also has a significant comparative advantage for exporting high-value agri-food to premium markets thanks to agri-climatic conditions, favorable trade agreements with Europe and the GCC

and the recent defacto devaluation of the currency. According to the International Trade Centre, the untapped agricultural and agri-food export potential exceeds US\$450 million, with 65 percent coming from fruits, food products and vegetables. Expanding agri-food exports can increase foreign currency inflows, which are much needed given the current context. Increasing local production offers opportunities for import substitution. This can be achieved by supporting small producers and SMEs to comply with stringent food safety, quality, traceability, labeling and environmental sustainability requirements imposed by high-value export markets.

The primary agricultural production's contribution to GDP increased from 3.2 percent (USD 1.77 billion) in 2018 to 8.9 percent (USD 2.32 billion) in 2020. It is estimated that approximately 20 percent of Lebanese households generate primary or secondary income from the broader agri-food sector, with agribusiness as the largest industrial sub-sector of the economy (World Bank, 2021). The agri-food sector accounted for over 17 percent of total exports in 2020 (or USD 0.7 billion on average between 2014 and 2020 (International Trade Center, 2020). Lebanon's top five categories of agricultural and food exports by value were preparations of vegetables, fruit, or nuts; edible fruits and nuts; beverages, spirits, and vinegar; miscellaneous edible preparations; and animal or vegetable fats and oils. Although domestic agri-food production satisfies only 20 percent of local demand, it contributes the largest share to livelihood generation for poor segments of society and is concentrated in the poorest areas, the Bekaa valley and Akkar in particular, which have been most heavily affected by the Syrian crisis. In fact, the agri-food sector is one of the three sectors (other than construction and cleaning) where Syrian displaced populations are legally allowed to work, and agriculture is the second-highest employer of displaced Syrians. The multiple challenges facing the sector are putting its resilience and sustainability at risk and posing threats to food security and rural livelihoods.

Increasing global fertilizer prices and energy costs compounded by the foreign exchange crisis are undermining the viability of agriculture and threaten to diminish the contribution of local production to food security. According to a survey of agricultural households carried out in July and August 2022 by FAO, over 80 percent of crop producers faced production difficulties, with the most frequent being access to fertilizers (72 percent) and pesticides (59 percent).

Lebanese farmers and agri-food SMEs lack the necessary access to finance to invest in sustainable, climate smart and modern modes of production. Small and medium-sized farmers relying only on farming income have been particularly affected by the high input prices, reducing input application, or substituting with lower quality, leading to lower marketable production and incomes (MoA, 2020).

(c) CHILD LABOR

Children in Lebanon are subjected to the worst forms of child labor, including use in the production and trafficking of drugs, sometimes as a result of human trafficking, and in forced labor in agriculture (US Department of Labour, 2022). In Lebanon, food insecurity and child labour have increased in 2020 and both are correlated in vulnerable communities. In addition, 60% of child labor is in agriculture. In the Bekaa region in 2019, 30% of working children reported injuries at work and 42% were insulted at work. Children have also reported physical abuse as 24% of boys and 16% of girls have been threatened (IRC & LPC, 2021).

The NGOs that are working on preventing child labor in Lebanon are Himaya, Lebanese Union of Child Welfare (LUCW), Lebanese Organization of studies and Training (LOST) in addition to the international NGO Humanium.

ILO, Lebanon's Ministry of Labour and Beyond Association launched in 2016 a joint initiative to establish and support a series of community centers to provide a range of services aimed at combatting child labor across the country. The centers that are currently operational are in the Bekaa, Nabatieh and Ouzai (Beirut suburbs) (ILO, no date).

There is no recent data on child labor in Lebanon with reliable information. A large number of children work in the following sectors: auto repair (e.g. Mechanical work, car painting), construction and metalworking including aluminum and forged iron, and sanitary installations. In addition, there are many children working in the agricultural sector in Akkar, Hermel and Baalbek districts.

As for the Syrian displaced populations, a survey conducted in 2019 by the AUB for the Bekaa region showed that most working children (≥ 4 to ≤ 18 years) in this study worked in the agricultural sector (about 75%). Many of these children were subject to harsh working conditions. Workplace injuries were quite common (30%). When children experienced an accident or injury at work, they or their families usually had to pay for the cost of treatment (86%) (AUB, 2019).

Only 18.3% of working children attended some form of schooling at the time of the study. Working children in compulsory school age (≥ 6 to ≤ 15 years) constituted 72.6% (3,178 children) of the total population of working children. Half of the working children did not go to school because they had to work as a consequence of dire familial financial circumstances (AUB, 2019).

(d) OVERVIEW OF THE NATIONAL SOCIAL PROTECTION STRATEGY

In Lebanon, the social protection system is scattered and non-unified. Several schemes exist, including social insurance programmes for public servants and for military and private sector workers, syndicate pension plans, and small social assistance programmes.

Vulnerable people including those with disabilities, elderly, women, and children rely on unsustainable sources of income including informal employment and family support. The country lacks a coherent national social protection system, which has led so far to fragmentation and duplication of assistance while coverage and provision of protection to the poorest and most vulnerable remain inadequate.

The GOL adopted two national plans in an attempt to alleviate poverty in the country: National Social Action Plan Toward Strengthening Social Safety Nets and Access to Basic Social Services (2007), and National Social Development Strategy (NSDSL) in 2010 (Bastagli et al., 2019). A decade later, the GOL launched the Roads and Employment Project (REP) to rehabilitate roads in different regions of the country and create employment opportunities. The REP followed the population growth and the increase in unemployment rates in the country. In 2021, an amount of US\$ 10 million was reallocated to create a new component to support small farmers in rural areas. In addition, GOL developed and launched in 2011 the Emergency National Poverty Targeting Program (NPTP) Project to alleviate poverty rates in the country. Lately, MOSA launched the Daem Network for Social Protection. The DAEM platform has initiated the development of an integrated National Social Registry that will enable Lebanon to address future shocks rapidly, transparently, and equitably. The network comprises two programmes: safety programme, and an e- finance card programme (MOSA, 2022). Managed by IMPACT under the supervision of the Central Inspection, the platform has allowed the registration and

screening of household applications along the highest standards of transparency and efficiency.

Despite the consecutive attempts of GOL represented by MOSA in those programmes, as of September 2021, the UN estimates that roughly 75% of the total population lives in poverty (UN, 2021).

The lack of social security basics and the cumulative effects of the consecutive crises have drowned most of the Lebanese population into poverty, leading them to have limited to no access to proper services, including medical, educational, and transportation among others. The following sections provide an overview of the main programs aiming at alleviating poverty.

i. National Poverty Targeting Program

The National Poverty Targeting Program (NPTP) in Lebanon, launched in 2011, is managed by the Ministry of Social Affairs (MOSA) and the Presidency of the Council of Ministers (PCM). The rationale behind this program is to "provide social assistance to the poorest and most vulnerable Lebanese households based on transparent criteria that assess each household's eligibility to receive assistance, given available public resources" in Lebanon and improve the lives of 237,958 beneficiaries, or 42,935 households (PCM, no date).

NPTP is supported and funded by international organizations including the World Bank (WB), The World Food Programme of the United Nations (WFP), the UNHCR and the German Cooperation.

Based on the "Implementation Completion Result" report issued by the World Bank in 2021, while it was not possible to measure the Project's impact on poverty rates, it is likely to have had a significant impact on both monetary and non-monetary poverty. The certification of NPTP beneficiaries is expected to reduce monetary poverty of 261,000 individuals from extremely poor households that had access to health and school subsidies, while the e-card Food Vouchers improved food security of over 105,500 individuals. It is also expected to have decreased non-monetary poverty by improving access of poor and vulnerable people to education and health services, diversified dietary intake, and reduced negative coping strategies. The NPTP platform was used to target over 225,000 beneficiaries for restoring their access to essential healthcare services at MOHP Primary Health Care Clinics, and for the provision of UNICEF's ATM cash cards to support children through its winterization program during 2016 (US\$3 million) and 2020 (US\$3.5 million). These benefits helped to alleviate monetary poverty and free up household resources for other essentials.

ii. Roads and Employment Project

As part of the efforts to create job opportunities for residents in Lebanon as well as Syrian displaced populations, and to improve the economic situation of households, the Roads and Employment Project (REP) was launched in 2017 with the financial support of a loan accredited from the WB to the GOL. The components of the project were amended in 2021, following the economic collapse and the devaluation of the Lebanese Pound, and the COVID-19 pandemic. Both crises severely affected the living conditions of the Lebanese population, bringing roughly 75% of the total population to live below the poverty line, with 36% of them living in extreme poverty.

An additional component (component 4- Support to farmers engaged in crop and livestock production) was added to the project based on the request of MOA. The project would provide support to approximately 26,700 smaller crop and animal producers in Lebanon (whereby at least 10% of the beneficiaries shall be women) by providing them with vouchers for the

procurement of essential inputs to enable continued agricultural production following COVID-19-related planting and harvesting delays. Two types of paper-based vouchers would be offered: one for crop production inputs, and another for animal production inputs, mostly feed. On the other hand, the vouchers would not finance the purchase of pesticides. The component would also support the annual animal vaccination program of the Directorate of Animal Resources under the MOA by procuring vaccines for animal diseases.

iii. *Emergency Social Safety Network (ESSN)*

The ESSN also known as AMAN is a US\$246 million 3-year project launched in March 2022, that provided cash transfers and access to social services to extremely poor and vulnerable Lebanese populations affected by the economic and COVID-19 crises. The ESSN's purpose is to arrest the increase in extreme poverty and to preserve the human capital of 13 – 18 year-old children enrolled in public schools. It also aims to scale-up and enhance the National Poverty Targeting Program (NPTP): Lebanon's main poverty-targeting social assistance program launched in 2011 with financial and technical assistance from the World Bank.

(e) OVERVIEW OF CULTURAL HERITAGE AREAS

Lebanon is a host country to many archaeological and cultural sites. Five properties are inscribed on the World Heritage List of UNESCO: Anjar, Baalbek, Byblos, Ouadi Qadisha and the Forest of the Cedars of God, and Tyre (UNESCO, no date).

Many other sites are on the tentative list of UNESCO. These sites are:

- The historical center of Batroun (Le Centre Historique de la Ville de Batroun);
- Echmoun Temple;
- Set of Historical Monuments and Natural Sites of the Village of Menjez;
- Sacred Mount Hermon and its associated cultural monuments;
- Nahr el-Kalb Archaeological Site;
- Saïda Historical Center;
- The castles of Mount Amel: Qalaat Al Chakif (Beaufort Castle), Qalaat Tibnin (Toron Castle), Qalaat Chakra (Dubieh Castle), Qalaat Deir Kifa (Maron Castle), Burj Al Naoqoura (Naqoura Tower);
- The Ancient City of Tripoli;
- Ras al-Qalaat promontory / Ras Al Natour promontory / Ras el-Mlelih Promontory; and
- The Rachid Karameh International Fair in Tripoli-Lebanon;