

Transport and Accessibility to Tourism Areas

Batroun, Lebanon





Analysis of Threats and Enabling Factors for Sustainable Tourism at Pilot Scale

Transport and accessibility in tourism areas

Batroun scale, Lebanon



Union for the Mediterranean
Union pour la Méditerranée
الاتحاد من أجل المتوسط



CPMR
CRPM



OVERVIEW

The present document was produced in the framework of **Co-Evolve4BG** project “*Co-evolution of coastal human activities & Med natural systems for sustainable tourism & Blue Growth in the Mediterranean*” in relation to Threats and Enabling Factors for maritime and coastal tourism development on a national scale” Co-funded by ENI CBC MED Program (Grant Agreement A_B.4.4_0075).

This document constitutes the **Deliverable 3.1.2.38** (Transport and accessibility in tourism areas in Batroun, Lebanon) of the **Activity 3.1.2** (Threats and Enabling Factors at local scale: Pilot Areas analysis) under the **Output 3.1** (Integrated analysis of Threats and Enabling Factors for sustainable tourism at MED scale) of the project.

REVIEW

Contributors

Sana ABIDIB, PhD

📍 Lebanese University, Faculty of Literature and Human Sciences, Lebanon

Rima CHEBL, Architect

📍 Julfar Engineering, Lebanon

Reviewers

Lobna BEN NASR, PhD

📍 ISTEUB, University of Carthage, Tunisia

Supervisors

Béchir BEJAOU, PhD

📍 National Institute of Marine Sciences and Technologies, Tunisia

Nahed MSAYLEB, PhD

📍 Lebanese University, Faculty of Agriculture and Veterinary Sciences, Lebanon

LAYOUT

Khouloud ATHIMEN, Engineer, Technical Coordinator

📍 National Institute of Marine Sciences and Technologies, Tunisia

Houaida BOUALI, Engineer

📍 National Institute of Marine Sciences and Technologies, Tunisia

Mohamed Ali BRIKI, Engineer

📍 Coastal Protection and Planning Agency, Tunisia

Index

Index	iv
List of figures	v
List of tables	vi
List of abbreviations	vi
I. Introduction	1
I.1. Sustainability and sustainable transport	1
I.2. Definition of Sustainable Transport	5
I.3. Sustainable transportation principles	6
II. Transport supply in Batroun City	10
III. Maritime Transport	11
III.1. Batroun Fishing Port	11
III.2. San Stephano Marina	20
IV. Land Transport	21
IV.1. Road network	21
IV.2. Public Transport: Bus and taxi	23
IV.3. Soft Mobility: walking and biking tours	24
V. Conclusions	26
VI. Electronic references	27

List of figures

Figure 1. Sustainable transport goals	1
Figure 2. Sustainable transport hierarchy	6
Figure 3. Ten principles for sustainable transport	9
Figure 4. Batroun internal streets and parking	10
Figure 5. Exploring Batroun by bike	10
Figure 6. Old port area -1940's vs. Current port area	11
Figure 7. Operational status of vessels at each fishing port	13
Figure 8. Cooperative membership	14
Figure 9. Lebanese fishing ports	16
Figure 10. Fishermen of Batroun while manufacturing the Spanish traps	19
Figure 11. Traps piled up on the fishing vessels	19
Figure 12. San Stephano resort marina	20
Figure 13. Batroun coastal highway	22
Figure 14. Aerial view of roads on the seaside in Batroun	23
Figure 15. Charles Helou station	23
Figure 16. Directions from Charles Helou station to Batroun	23
Figure 17. Bike rental kiosk.	24
Figure 18. Proposed biking trail along Batroun's coast	25
Figure 19. Diaspora houses	25

List of tables

Table 1. Sustainability goals	2
Table 2. Sustainable transport goals and objectives	3
Table 3. Key sustainable transport goals, objectives, and indicators	4
Table 4. Distribution of navigation licenses by homeport	12
Table 5. List of official status of Lebanese coastal ports/landing sites	15
Table 6. Type and length of breakwaters of coastal ports and landing sites	17
Table 7. List of coastal ports / landing sites with fish handling basin for offloading.	18
Table 8. Distance matrix	21

List of abbreviations

ASLA	American Society of Landscape Architects
CST	Center for Sustainable Transportation
DFW	Department of Fisheries and Wildlife
ECMT	European Conference of Transport Ministers
EST	Environmentally Sustainable Transport
EU	European Union
FHWA	Federal Highway Administration
GRT	Gross Registered Tonnage
MoA	Ministry of Agriculture
NARC	National Association of Regional Councils
NGO	Non-Governmental Organization
NRTEE	National Round Table for Environment and Economy
OECD	Organization for Economic Co-operation and Development

I. Introduction

I.1. Sustainability and sustainable transport

“Sustainability is the next great game in transportation. The game becomes serious when you keep score” – Greenroads.

Nowadays, more interest is growing in the concepts of livability, sustainable development, and sustainable transportation. While sustainability balances economic, social, and environmental goals and objectives, livability refers to the sustainability objectives that directly affect community members. They generally share the same objectives, but often with different priorities and implementation processes. For example, both concepts aim at reducing pollution. In fact, sustainability often focuses on climate change emissions while livability focuses on local air and noise pollution.

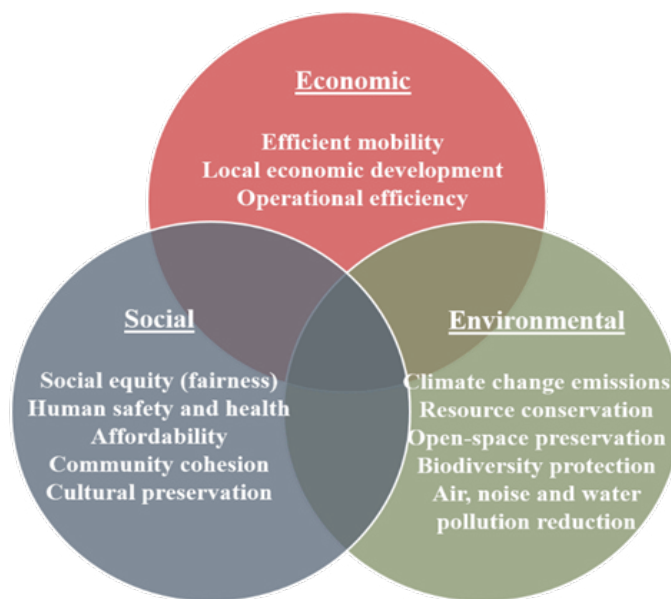


Figure 1. Sustainable transport goals.

In fact, sustainability reflects the fundamental human desire to protect and improve the living environment. It emphasizes the integrated nature of human activities as well and therefore the need for coordinated decisions within different sectors, groups, and jurisdictions. Sustainable planning expands the objectives, impacts and options considered in a planning process, which ensures that individual, short-term decisions are consistent with strategic, long-term goals. Finally, sustainable transport planning requires decisions that affect people in a positive way. Therefore, the planners as experts must take into consideration a variety of objectives and impacts in the planning process. Various transport planning objectives support sustainability goals:

- Transport system diversity: travelers can choose from various modes, location, and pricing options.
- System integration: the transport system's various components are well integrated, such as pedestrian, cycling access to transit, as well as integrated transport and land use planning.
- Affordability: affordable transport options provide access to lower-income households.
- Resources (energy and land) efficiency: policies encourage energy and land efficiency.
- Efficient pricing and prioritization: road, parking, insurance, and fuel are priced to encourage efficiency to favor higher value trips and modes that are more efficient.
- Land use accessibility (smart growth): policies support compact, mixed, connected, multi-modal land use development to improve land use accessibility and transport options.
- Operational efficiency: transport agencies, service providers and facilities are managed efficiently to minimize costs and maximize service quality.
- Comprehensive and inclusive planning: planning is comprehensive, integrated, and inclusive.

Table 1. Sustainability goals.

Economic	Social	Environmental
Economic productivity <i>Local economic development</i> Resource efficiency <i>Affordability</i> Operational efficiency	<i>Equity / Fairness</i> <i>Safety and security</i> <i>Community development</i> <i>Cultural heritage preservation</i> <i>Public fitness and health</i>	Climate change prevention and mitigation <i>Air, noise and water pollution prevention</i> Non-renewable resource conservation <i>Open-space preservation</i> Biodiversity protection
Good Governance and Planning		
<i>Integrated, comprehensive and inclusive planning</i> Efficient pricing		

Italics indicates livability objectives

Table 2. Sustainable transport goals and objectives.

Sustainability Goals	Transport Planning Objectives							
	Transport Diversity	System Integration	Affordability	Resource (energy and land) Efficiency	Demand Management (efficient pricing & prioritization)	Land use accessibility (smart growth)	Cost Effective Operations	Comprehensive and Inclusive Planning
Economic productivity	X	X		X	X	X	X	
Economic development	X	X	X	X	X	X		X
Energy efficiency	X	X		X	X	X		
Affordability	X	X	X	X	X	X		
Operational efficiency					X		X	X
Equity/Fairness	X	X	X		X	X		
Safety, security and health	X	X	X	X	X	X		X
Community development	X	X	X	X	X	X		X
Heritage protection	X			X	X	X		X
Climate stability	X	X	X	X	X	X		
Air pollution prevention	X	X	X	X	X	X		
Noise prevention	X			X				
Water pollution	X	X	X	X	X	X		X
Open space preservation	X	X	X		X	X		X
Good planning								X
Efficient pricing				X	X		X	

This table indicates which planning objectives support various sustainability goals

Table 3. Key sustainable transport goals, objectives, and indicators.

Sustainability Goals	Objectives	Performance Indicators
I. Economic		
Economic productivity	Transport system efficiency. Transport system integration. Maximize accessibility. Efficient pricing and incentives.	<ul style="list-style-type: none"> • Per capita GDP • Portion of budgets devoted to transport. • Per capita congestion delay. • Efficient pricing (road, parking, insurance, fuel, etc). • Efficient prioritization of facilities
Economic development	Economic and business development	<ul style="list-style-type: none"> • Access to education and employment opportunities. • Support for local industries.
Energy efficiency	Minimize energy costs, particularly petroleum imports.	<ul style="list-style-type: none"> • Per capita transport energy consumption • Per capita use of imported fuels.
Affordability	All residents can afford access to basic (essential) services and activities.	<ul style="list-style-type: none"> • Availability and quality of affordable modes (walking, cycling, ridesharing and public transport). • Portion of low-income households that spend more than 20% of budgets on transport.
Efficient transport operations	Efficient operations and asset management maximizes cost efficiency.	<ul style="list-style-type: none"> • Performance audit results. • Service delivery unit costs compared with peers. • Service quality.
II. Social		
Equity / fairness	Transport system accommodates all users, including those with disabilities, low incomes, and other constraints.	<ul style="list-style-type: none"> • Transport system diversity. • Portion of destinations accessible by people with disabilities and low incomes.
Safety, security and health	Minimize risk of crashes and assaults, and support physical fitness.	<ul style="list-style-type: none"> • Per capita traffic casualty (injury and death) rates. • Traveler assault (crime) rates. • Human exposure to harmful pollutants. • Portion of travel by walking and cycling.
Community development	Helps create inclusive and attractive communities.	<ul style="list-style-type: none"> • Land use mix. • Walkability and bikability • Quality of road and street environments.
Cultural heritage preservation	Respect and protect cultural heritage. Support cultural activities.	<ul style="list-style-type: none"> • Preservation of cultural resources and traditions. • Responsiveness to traditional communities.
III. Environmental		
Climate stability	Reduce global warming emissions Mitigate climate change impacts	<ul style="list-style-type: none"> • Per capita emissions of greenhouse gases (CO₂, CFCs, CH₄, etc.).
Prevent air pollution	Reduce air pollution emissions Reduce harmful pollutant exposure	<ul style="list-style-type: none"> • Per capita emissions (PM, VOCs, NOx, CO, etc.). • Air quality standards and management plans.
Minimize noise	Minimize traffic noise exposure	<ul style="list-style-type: none"> • Traffic noise levels
Protect water quality & hydrologic functions	Minimize water pollution. Minimize impervious surface area.	<ul style="list-style-type: none"> • Per capita fuel consumption. • Management of used oil, leaks and stormwater. • Per capita impervious surface area.
Openspace and biodiversity protection	Minimize transport facility land use. Encourage compact development. Preserve high quality habitat.	<ul style="list-style-type: none"> • Per capita land devoted to transport facilities. • Support for smart growth development. • Policies to protect high value farmlands and habitat.
IV. Good Governance and Planning		
Integrated, comprehensive and inclusive planning	Clearly defined planning process. Integrated and comprehensive analysis. Strong citizen engagement. Lease-cost planning.	<ul style="list-style-type: none"> • Clearly defined goals, objectives and indicators. • Availability of planning information and documents. • Portion of population engaged in planning decisions. • Range of objectives, impacts and options considered. • Efficient and equitable funding allocation

I.2. Definition of Sustainable Transport

There are many definitions of sustainability, it is defined as livability, sustainable development, and sustainable transport. It is sometimes defined narrowly as simply environmental sustainability, concerned only with pollution reduction and habitat preservation, but is increasingly defined more broadly to include other goals. Below are examples of broad “sustainable transport” definitions:

- A sustainable transport system is one that is accessible, safe, environmentally friendly, and affordable.
- Environmentally Sustainable Transportation (EST): it is the transportation that endangers neither public health nor ecosystems and it meets the needs for access thanks to the use of renewable resources below their rates of regeneration, and use of non-renewable resources below the rates of renewable substitutes development.
- Sustainable transportation system is one that:
 - Allows the basic access needs of individuals and societies to be met safely and effectively in a manner that respects human and ecosystem health and goes with equity within and between generations.
 - Is affordable, operates efficiently, offers a diverse variety of transport modes, and supports a vibrant economy.
 - Limits emissions and wastes within the planet's ability to absorb them. It also minimizes nonrenewable resources consumption as well as limits renewable resources consumption to the sustainability level. It also reuses and recycles its components and minimizes land use and noise production.

SUSTAINABLE TRANSPORT

Sustainable Transport Hierarchy

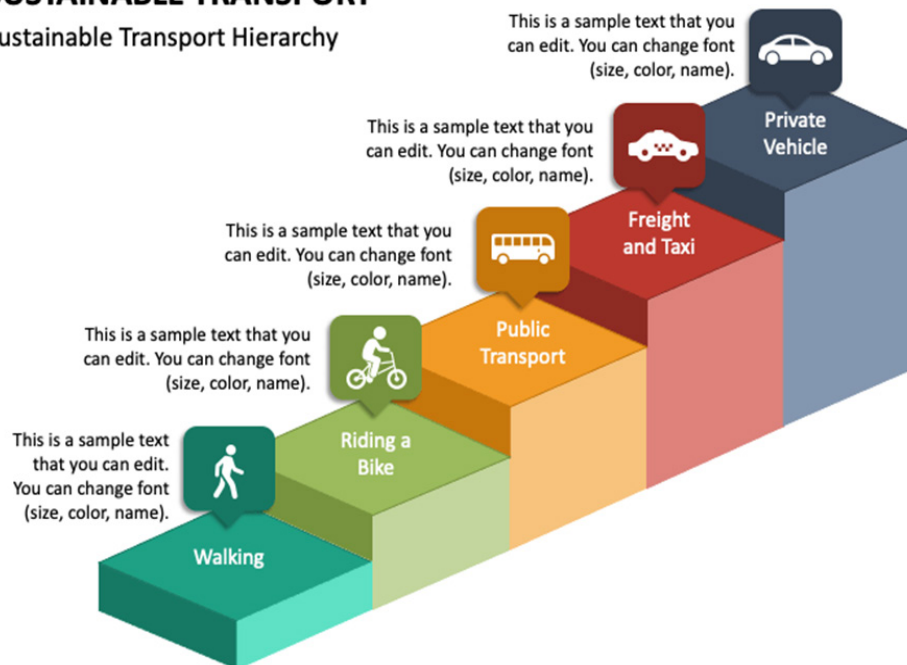


Figure 2. Sustainable transport hierarchy.

1.3. Sustainable transportation principles

Principles are general organizing concepts that help define goals, objectives, practices, and indicators. Below are examples of sustainable transport principles.

A. Sustainable Landscape: Sustainable Site guiding Principles, the American organization of Landscape Architects has developed the following principles

- Safety: make no harm and no change to the site otherwise it will degrade the surrounding environment. Promote projects on sites where previous disturbance or development presents an opportunity to regenerate ecosystem services through sustainable design.
- Precautionary principle: be cautious in making decisions that could create risk threatening human and environmental health. Some actions can cause irreversible damage. Examine a full range of alternatives including no action and be open to contributions from all affected parties.
- Designs complying with nature and culture: create and implement designs that are responsive to economic, environmental, and cultural conditions with respect to the local, regional, and global context.

- Adopt a decision-making hierarchy of preservation, conservation, and regeneration. Maximize and mimic the benefits of ecosystem services by preserving existing environmental features, conserving resources in a sustainable manner, and regenerating lost or damaged ecosystem services.
- Provide regenerative systems as intergenerational equity: provide future generations with a sustainable environment supported by regenerative systems and endowed with regenerative resources.
- Support a living process: continuously re-evaluate assumptions and values and adapt to demographic and environmental change.
- Use a systems' thinking approach: understand and value the relationships in an ecosystem and use an approach that reflects and sustains ecosystem services. Re-establish the integral and essential relationship between natural processes and human responsible activity.
- Use a collaborative and ethical approach: encourage direct and open communication among colleagues, clients, manufacturers, and users to link long-term sustainability with ethical responsibility.
- Maintain integrity in leadership and research: implement transparent and participatory leadership, develop research with technical rigor, and communicate new findings in a clear, consistent, and timely manner.
- Foster environmental stewardship: in all aspects of land development and management, foster an ethic of environmental stewardship and understanding that responsible and effective management of healthy ecosystems improves the quality of life for the current and future upcoming generations.

B. National Round Table for Environment and Economy

Their aim is to develop transportation systems that maintain and improve both human and ecosystem well-being respectively. Yet, due to the varying environmental, social, and economic conditions between and within countries, it seems that there is no single best way to achieve sustainable transportation systems. In fact, there is A set of guiding principles that can be described, however, to build the transition strategies effectively.

Below is a list of the fundamental principles:

- Access: People are entitled to reasonable access to other people, places, goods, and services. People And Communities Transportation systems are a crucial element of a strong economy. In fact, they can contribute directly to building community and enhance quality of life.
- Equity: Nation states and the transportation community must strive to ensure social, interregional, and intergenerational equity by meeting the basic transportation-related needs of all people including women, the poor, the rural, and the disabled.

- **Health and Safety:** Transportation systems should be designed and operated in a way that protects the health (physical, mental, and social well-being) and safety of all people and enhances the quality of life in communities.
- **Individual Responsibility:** All individuals should be responsible to act as stewards of the natural environment by adopting sustainable choices about personal movement and consumption.
- **Integrated Planning:** Transportation decision makers must pursue more integrated approaches to planning. In fact, Environmental Quality Human activities can overload the environment's finite capacity to absorb waste, physically modify or destroy habitats, and use resources more rapidly than they can be regenerated or replaced. Efforts must be made to develop transportation systems that minimize physical and biological stress, staying within the assimilative and regenerative capacities of ecosystems, and respecting the habitat requirements of other species.
- **Pollution Prevention:** Transportation needs must be met without generating emissions that threaten public health, global climate, biological diversity, or the integrity of essential ecological processes.
- **Land and Resource Use:** Transportation systems must make efficient use of land and other natural resources while ensuring the preservation of vital habitats and other requirements in maintaining biodiversity. Economic Viability Sustainable transportation systems must be cost effective. If adjustment costs are incurred in the transition to more sustainable transportation systems, they should be equitably shared, just as current costs should be more equitably shared.
- **Fuller Cost Accounting:** Transportation decision makers must move as expeditiously as possible toward fuller cost accounting, reflecting the true social, economic, and environmental costs, to ensure that users pay an equitable share of costs.

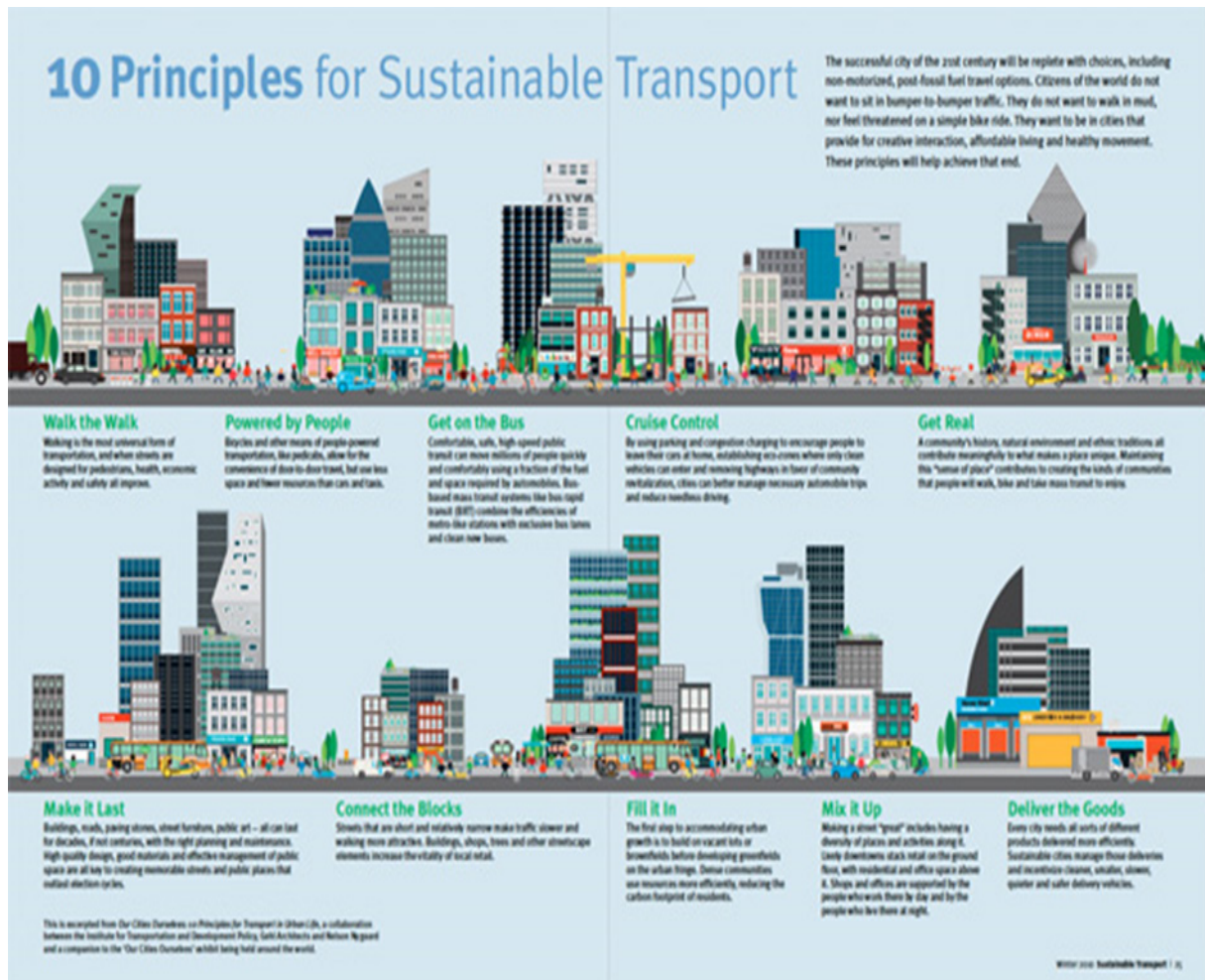


Figure 3. Ten principles for sustainable transport.

II. Transport supply in Batroun City

Batroun has benefited from a multi-modal transport system that has been enriched by several physical infrastructure components, which offers the city the chance to target an efficient and sustainable mobility. Both maritime and land transport are active in Batroun. Their components will be further elaborated separately in the following chapters, as follow:

- Maritime transport: ports and marinas.
- Land transport: road network, motorized vehicles and parking, public transport, and soft mobility network.



Figure 4. Batroun internal streets and parking.



Figure 5. Exploring Batroun by bike.

III. Maritime Transport

III.1. Batroun Fishing Port

Batroun City has one central port, the “Mina” as the locals call it. Previously, the port area acted as an economic hub where trade was widespread across different cultures. Typical of any coastal city, the sea has traditionally contributed to Batroun’s wealth. Since ancient times, merchandise was imported and exported through its port. The sea produced fish, salt, and high-quality sponge... Today, the activities taking place in the port area are shifting towards a more touristic aspect to respond to the public’s needs, thereby, setting Batroun as an anchor point along the coastal line. It is essentially reserved for fishing, boating, and recreational activities.



Figure 6. Old port area -1940’s vs. Current port area.

Administratively, the Directorate of Rural Development and Natural Resources within the ministry of agriculture (MoA) in Lebanon deals with the fisheries. The Service of Forests and Natural Resources is a part of this directorate and controls the Fisheries and Wildlife Department (DFW).

The following data regarding the Batroun port is extracted from the “Census of Lebanese Fishing Vessels and Fishing Facilities” published by the Ministry of Agriculture - Directorate of Rural Development and Natural Resources - Department of Fisheries & Wildlife in November 2005. The gathered statistics are relevant to 2,662 marine fishing vessels surveyed along the Lebanese coast. Batroun port hosted 62 vessels (Table 4), the majority of which obtained their navigation license from Chekka port. Most fishermen lived in or in the vicinity of their homeports.

Table 4. Distribution of navigation licenses by homeport.

Home Port	Navigation License Port							Grand Total
	Beirut	Chekka	Jbail	Jounieh	Saida	Sour	Tripoli	
Aabde					1		141	142
Aamchit	1		35	3				39
Aaqeibe	1		12	41			3	57
Aarida					1		31	32
Ain Qantara					23			23
Barbara		1	4					5
Batroun		52	2				8	62
Beddaoui				1				1
Beirut-Ain el Mraisseh	16			1				17
Beirut-Dalieh	52				6			58
Beirut-Jal el Baheer	14							14
Beirut-Manarah	105			1				106
Bouar	16	1	2	24	1		5	49
Cheikh Zennad							1	1
Chekka	1	26					1	28
Dbaiye	11	1	5	58		2	3	80
Dora	271	1	3	19	9		4	307
Enfe		53					2	55
Halat			1	1				2
Hamat-Roca Marina		4						4
Hay el Bahr							2	2
Heri		16					1	17
Jamil Gemayyel	2		1				1	4
Jbail	1		55	2				58
Jiye	3				6			9
Jnah-Cote D'Azour	27							27
Jounieh-Kaslik	11		6	59	4	3		83
Kfar Aabida-Fadous		6						6
Mounis					15			15
Naqoura	1				3	11		15
Ouzaii	131		2	2	83		3	221
Qalamoun							51	51
Saida					188			188
Selaata		14					3	17
Sour				1	17	203		221
Sour-Rest House						3		3
Tabarja	4		2	22			3	31
Tripoli-Al Mina		21					451	472
Tripoli-Huqran							75	75
Zeereh					64	1		65
Grand Total	668	196	130	235	421	223	789	2,662

Around 5% of the vessels at Batroun port were reported non-operational by the time (Figure 7). The main reason for their inactivity was either vessel and engine repair or temporary fishing inactivity due to bad weather.

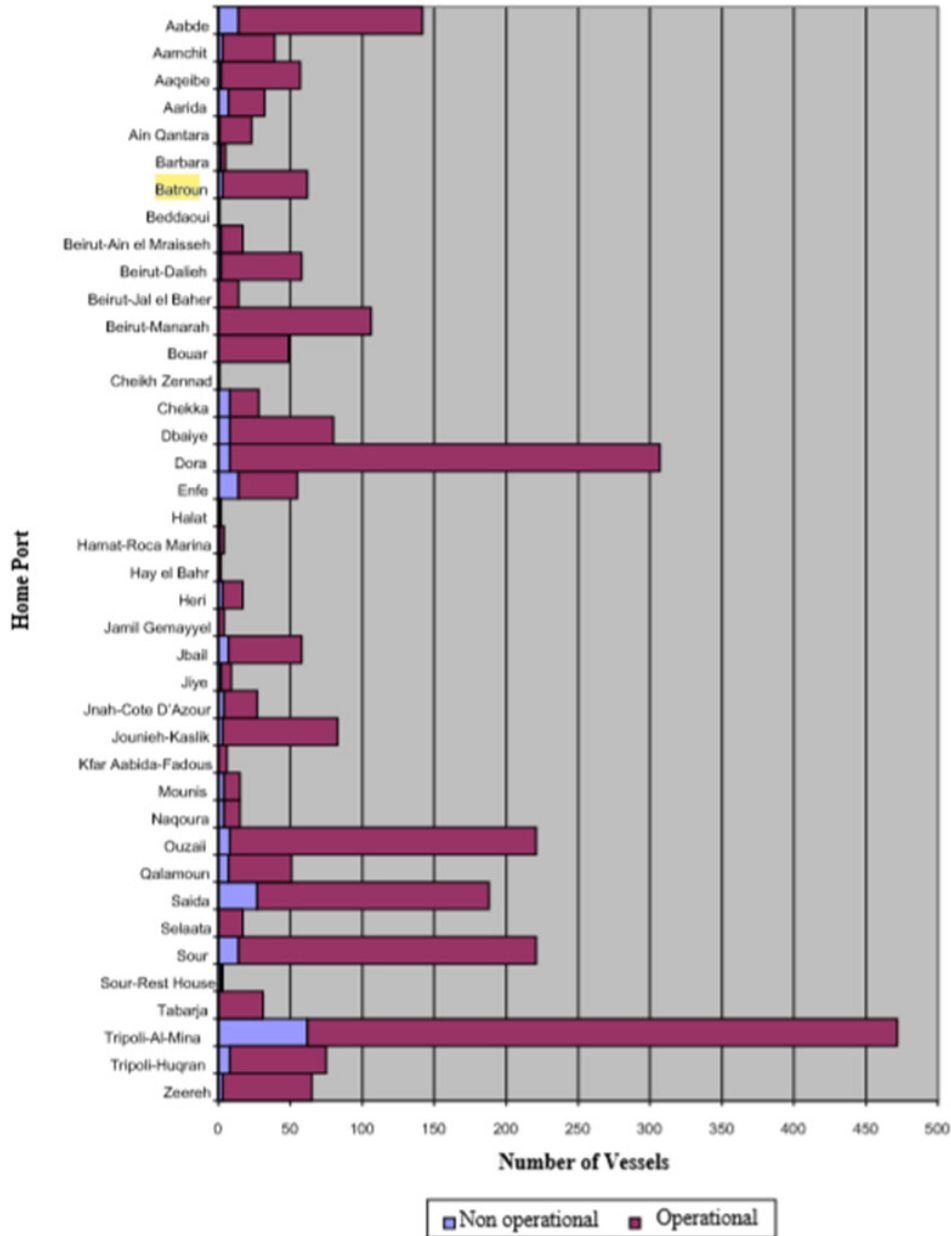


Figure 7. Operational status of vessels at each fishing port.

About 70% of the recorded vessels had Gross Registered Tonnage (GRT) less than 5 tons while 24% had 5-10 tons GRT (Source: Census of Lebanese Fishing Vessels and Fishing Facilities).

There is usually one fisherman cooperative in each officially recognized fishing port except for Dora Port that had two cooperatives. Almost 87% of the vessel owners in Batroun declared that they were members in the cooperative (Figure 8).

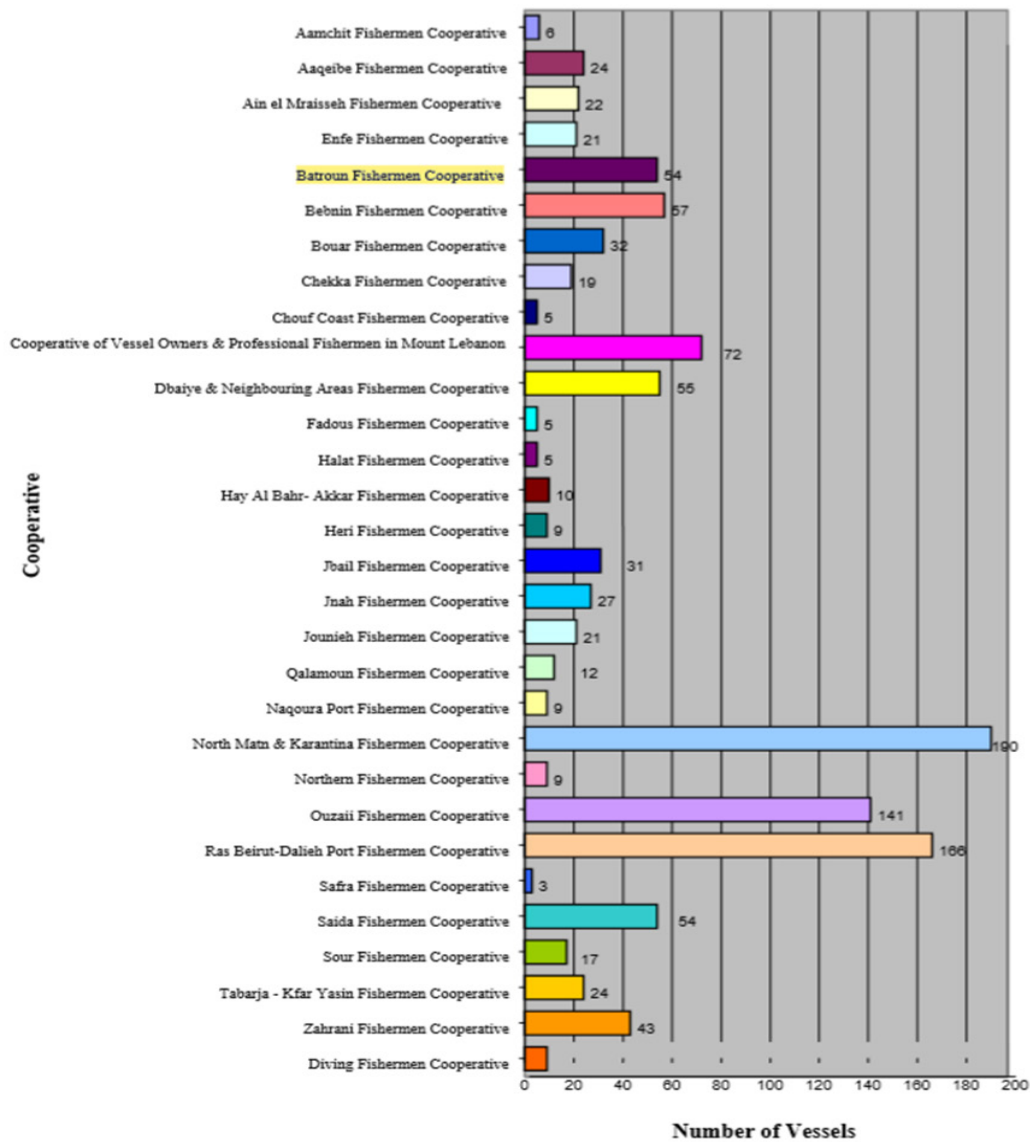


Figure 8. Cooperative membership.

Batroun port is among the officially recognized ports by the Ministry of Public Works & Transportation.

Table 5. List of official status of Lebanese coastal ports/landing sites.

Name of Port / Landing site	Coordinates (Lambert)	Official Port /Landing site	
		No	Yes
Aarida	0173962 0298915		X
Cheikh Zennad	0174803 0296095		X
Hay el Bahr	0175333 0291813	X	
Aabde	0173824 0286487		X
Tripoli - Al Mina	0159101 0279474		X
Tripoli - Huqran	0158200 0279417		X
Qalamoun	0156291 0272323		X
Enfe - Nuhairy	0151588 0269607		X
Enfe - Dabbaghah	0150817 0269142		X
Enfe - Rmeilet	0150983 0268287		X
Chekka	0150209 0265464		X
Heri	0148036 0263231		X
Hamat-Roca Marina	0147917 0263398	X	
Selaata	0144024 0260430		X
Batroun	0144068 0257739		X
Fadous	0143747 0254445		X
Barbara	0141657 0250573	X	
Aamchit	0141206 0246101		X
Jbail	0142482 0242783	X	
Halat - Al Fidar	0143120 0240098	X	
Halat	0142863 0238295	X	
Aaqaibe	0142235 0235606	X	
Bouar	0141620 0234872	X	
Safra	0140909 0233699		X
Tabarja	0141447 0230955	X	
Jounieh - Kaslik	0140658 0227448		X
Dbaiye	0137229 0223094	X	
Jamil Gemayyel	0148897 0218461	X	
Dora	0133549 0218011		X
Beirut- Ain Mraisseh	0127678 0218548		X
Beirut - Jal el Bahr	0126496 0218620		X
Beirut- Manara	0126073 0218413	X	
Beirut- Dalieh	0126238 0216994		X
Jnah - Cote D'Azour	0127055 0214444		X
Ouzaii	0127060 0211727		X
Naame	0123887 0201579	X	
Jiye	0120160 0190871		X
Saida	0115923 0181344		X
Zeereh	0109999 0171103		X
Ain Qantara	0109120 0170414	X	
Mounis	0107206 0168380		X
Sour	0099284 0149472		X
Sour- Rest House	0100061 0148368		X
Naqoura	0094165 0133267		X
Grand Total		14	30

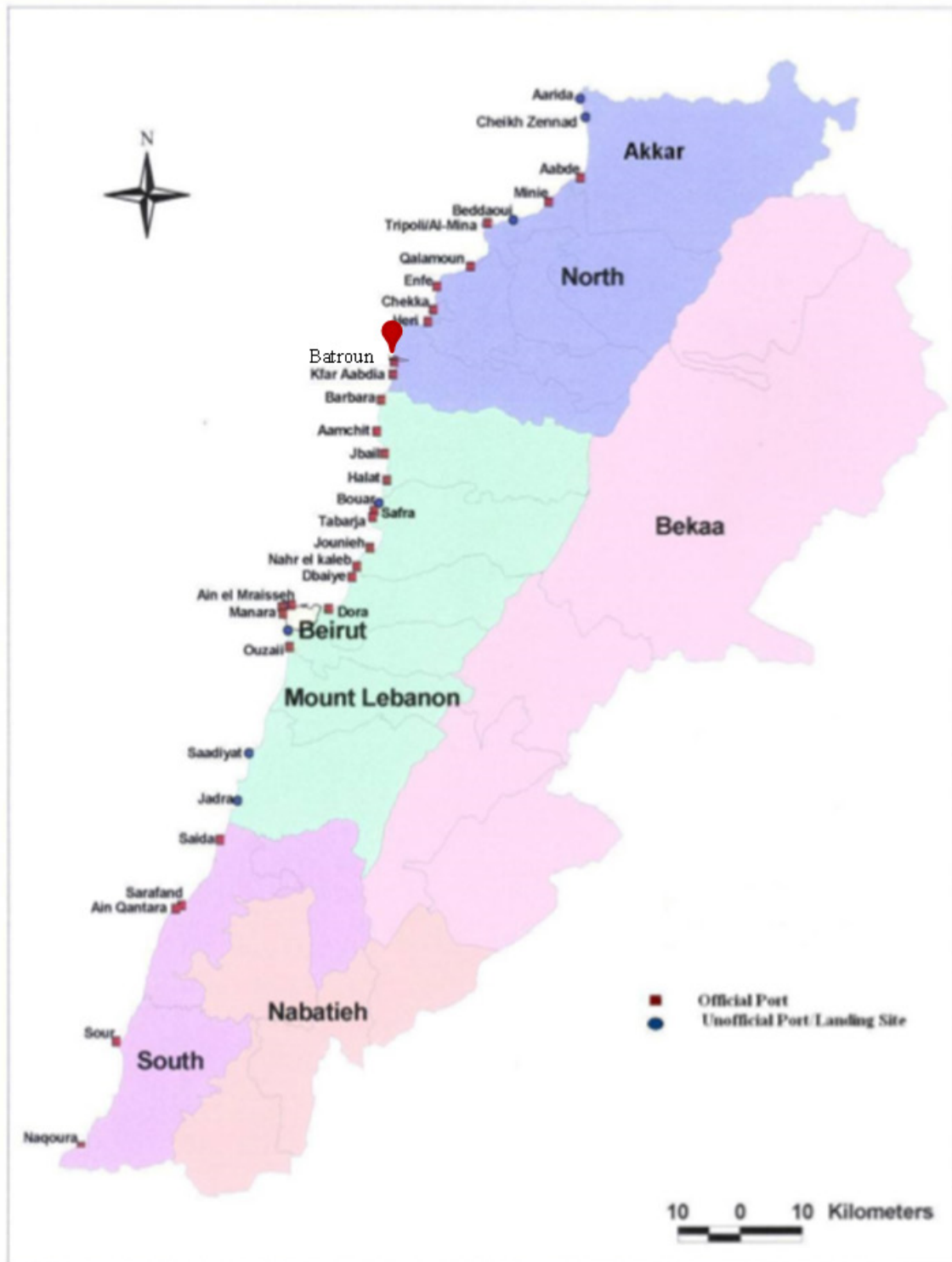


Figure 9. Lebanese fishing ports.

The breakwater is essential for ports protection. Batroun port has rubble breakwaters and reinforced concrete walls breakwaters of an average length of 140 meters (Table 6).

Table 6. Type and length of breakwaters of coastal ports and landing sites.

Name of Port/ Landing Site	Type of Breakwater			Length of Breakwater (m)
	Rubble	Reinforced Concrete Wall	Other Precast Concrete structures	
Aabde	X			220
Aamchit	X	X		246
Aaqeibe	X			220
Aarida				
Ain Qantara	X	X		27
Barbara	X	X		45
Batroun	X	X		140
Beirut - Ain el Mraisseh			X	20
Beirut - Dalieh			X	20
Beirut - Jal el Baher				
Beirut - Manarah	X			57
Bouar	X			201
Cheikh Zennad				
Chekka	X	X		223
Dbaiye	X		X	300 ¹
Dora				360
Enfe - Dabbaghah	X			89
Enfe - Nuhairy	X			
Enfe - Rmeilet				
Halat				
Halat - Al Fidar				
Hamat - Roca Marina	X			
Hay el Bahr				
Heri	X			164
Jamil Gemayyel				
Jbail		X		49
Jiye	X			
Jnah - Cote D'Azour				
Jounieh - Kaslik	X	X		102
Kfar Aabida - Fadous	X	X		33
Mounis				
Naame				
Naqoura		X		194
Ouzaii	X			503
Qalamoun	X			50
Safra				40
Saida		X		160
Selaata	X			200
Sour	X	X		315
Sour - Rest House	X			45
Tabarja	X	X		75
Tripoli - Al Mina	X			346 ²
Tripoli - Huqran	X			114
Zeereh	X	X		253
Grand Total	26	13	3	

Batroun port is equipped with fish handling basin for offloading with an average length of 250 meters (Table 7).

Table 7. List of coastal ports / landing sites with fish handling basin for offloading.

Name of Port/Landing site	Fish handling basin for offloading	Length (m)
Aabde	X	540
Aamchit	X	209
Aaqeibe	X	512
Aarida		(blank)
Ain Qantara	X	150
Barbara	X	60
Batroun	X	250
Beirut - Ain el Mraisseh	X	120
Beirut - Dalieh	X	140
Beirut - Jal el Baher		(blank)
Beirut - Manarah	X	266
Bouar	X	330
Cheikh Zennad		(blank)
Chekka	X	250
Dbaiye	X	480
Dora	X	920
Enfe - Dabbaghah	X	32
Enfe - Nuhairy	X	270
Enfe - Rmeilet	X	65
Halat		(blank)
Halat - Al Fidar	X	70
Hamat - Roca Marina	X	(blank)
Hay el Bahr		(blank)
Heri	X	164
Jamil Gemayyel	X	(blank)
Jbail	X	230
Jiye	X	30
Jnah - Cote D'Azour		(blank)
Jounieh - Kaslik	X	302
Kfar Aabida - Fadous	X	102
Mounis	X	96
Naame		(blank)
Naqoura	X	200
Ouzaii	X	620
Qalamoun	X	250
Safra		(blank)
Saida	X	425
Selaata	X	267
Sour	X	618
Sour - Rest House	X	50
Tabarja	X	250
Tripoli - Al Mina	X	1,306
Tripoli - Huqran	X	150
Zeereh	X	245
Grand Total	36	

Finally, as mentioned in the FishInMed project “Small-scale fisheries multi-functionality best practices in the Mediterranean basin” funded by the EU within the ENPI CBC Mediterranean Sea Basin Program 2007 – 2013, surveys were held with fishermen of Batroun. The main purpose of the surveys was to collect international experiences which have been undertaken with the aim of introducing the concept of multi-functionality in small scale fisheries. The main key factors that emerged from these surveys were that between 2007 and 2010, as a part of a project for the socioeconomic development of Batroun fishing community implemented by an Italian NGO, fishermen of that community were trained in the manufacturing of fishing traps targeting deep sea shrimps. Tests at sea were carried out by fishermen and researchers providing interesting results in terms of yields obtained. In fact, the so-called Spanish traps are low-cost, easy-to-manufacture fishing gears that can provide an additional income for those fishermen who exploit the upper sector of the continental slope. It can also represent a valid alternative for those small-scale fishermen who want to explore new fishing grounds. This is seen as a success story.



Figure 10. Fishermen of Batroun while manufacturing the Spanish traps.



Figure 11. Traps piled up on the fishing vessels.

III.2. San Stephano Marina

Ideally located on Batroun's seaside road around 1.1 km from the center, San Stephano resort is a 4 star apart-hotel. The San Stephano marina features several facilities and amenities along its sandy beaches such as Scuba Diving, fishing, snorkeling, and water sport activities. In addition, it provides complete service for yachts and boats (Figure 12).

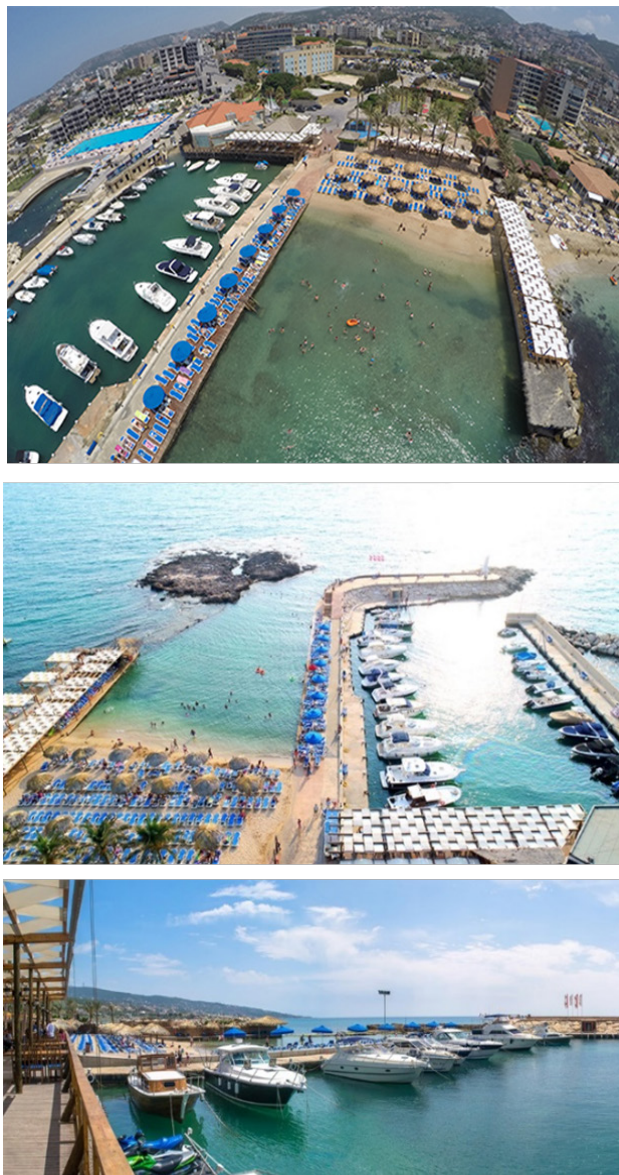


Figure 12. San Stephano resort marina.

IV. Land Transport

IV.1. Road network

Since Batroun is located on the coastal road to Tripoli, it is easily accessible and directly reached from the capital. When using a motorized vehicle, one can access Batroun either by following the coastal highway North from Beirut or Byblos, or by taking the old road along the seashore.

Table 8. Distance matrix.

Distances from Capital City to Major Towns (km)								
	Beirut	Tripoli	Sidon	Batroun	Tyre	Aley	Chtaura	Halba (akkar)
Beirut		88	46	56	91	14	40	114
Tripoli			130	33	175	92	86	30
Sidon				100	45	43	66	55
Batroun					147	63	65	63
Tyre						54	106	204
Aley							28	116
Chtaura								104
Halba (akkar)								

Travel Time from Capital City to Major Towns (km)								
	Beirut	Tripoli	Saida	Batroun	Tyre	Aley	Chtaura	Halba (akkar)
Beirut		1.2 hrs	45 min	1 hr	1.5 hrs	15 min	45 min	2 hrs
Tripoli			2 hrs	30 min	2.5 hrs	1.5 hrs	1.5 hrs	30 min
Saida				2 hrs	45 min	45 min	1 hr	1 hr
Batroun					2 hrs	1 hr	1 hr	1 hr
Tyre						1 hr	2 hrs	2.5 hrs
Aley							30 min	2 hrs
Chtaura								1.5 hrs
Halba (akkar)								



Figure 13. Batroun coastal highway.

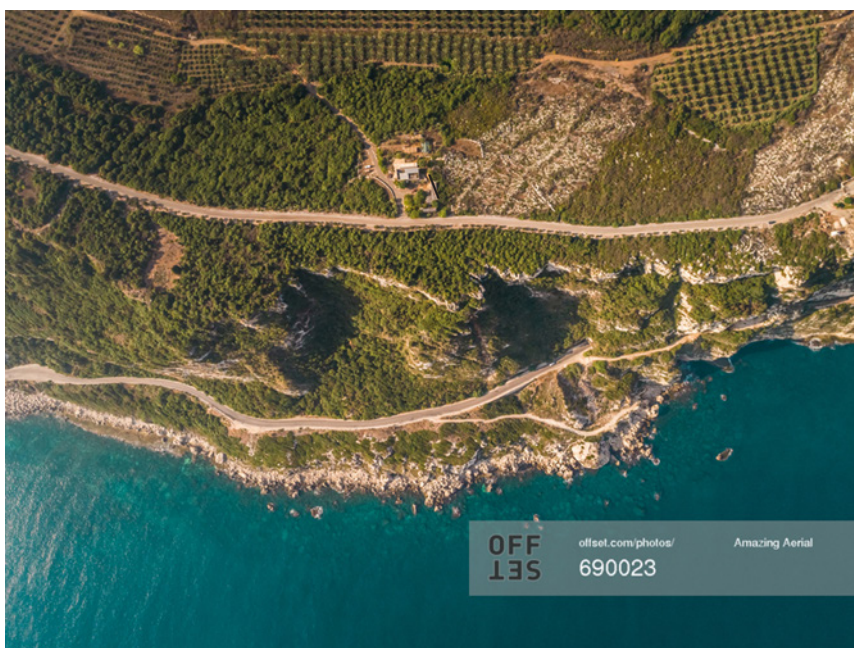


Figure 14. Aerial view of roads on the seaside in Batroun.

IV.2. Public Transport: Bus and taxi

Batroun is easily accessible by the public transport system, either by bus or by taxi. To get there using the bus, one can board it to Tripoli from Zone B or C of Charles Helou bus station in Beirut to be dropped off at Batroun. The tariff varies depending on the bus company that is used to reach the destination. Alternatively, one can catch a bus or minivan from Dora station or a taxi from Byblos.



Figure 15. Charles Helou station.

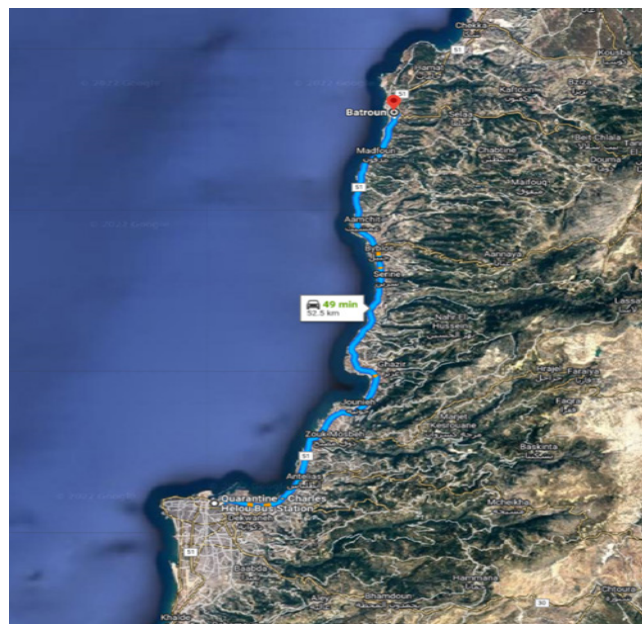


Figure 16. Directions from Charles Helou station to Batroun.

IV.3. Soft Mobility: walking and biking tours

Like many of Lebanon's old towns, visitors can best explore Batroun's magic through foot tours that cover compact areas that are not easily reached by vehicles. In fact, walking will enhance the tourists' experience of the town and will give them a better taste and joy of the city's elements.

On the other hand, Batroun's beach clubs and areas that are slightly more outlying will require a short bike ride to be accessed. A typical proposed itinerary for a bike ride in Batroun can be carried on as follow: first by stopping at the Diaspora houses commemorating all the Lebanese people around the world, then the old Phoenician castle, Greek Orthodox & Maronite churches followed by a ride along the Mediterranean Sea at the "Mina" (Port) and finally enjoying a meal at any of the restaurants on the beach or just a brief refreshment with a fresh lemonade.

A couple of kiosks for bike rental are available in Batroun. Their location is convenient, and they offer private or customized biking tours of the town while providing all the equipment along with all the required safety measures. The local businesses are about welcoming locals and tourists alike into this warm community. It is about sharing the experience of being a native and learning all one's need to know about the culture & history.



Figure 17. Bike rental kiosk.

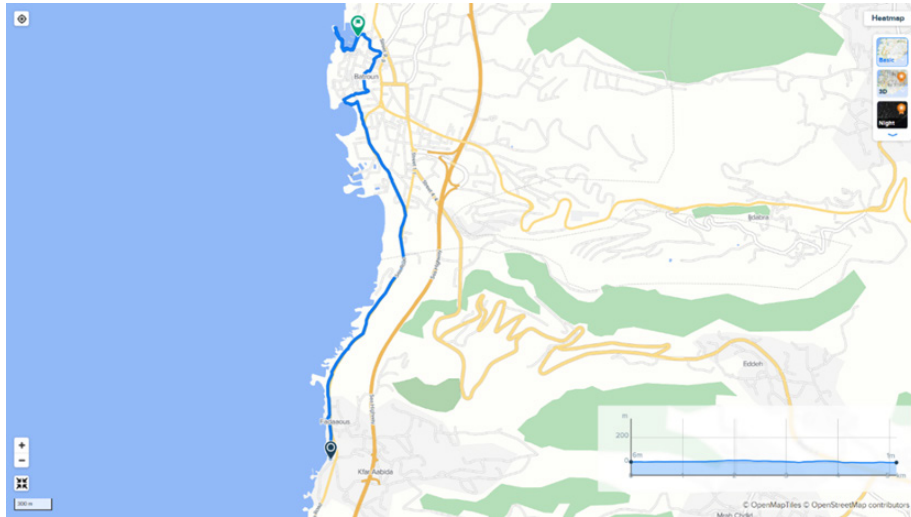


Figure 18. Proposed biking trail along Batroun's coast.



Figure 19. Diaspora houses.

V. Conclusions

Batroun city aims to achieve resilience through implementing a sustainable transportation system. These practices will limit emissions and wastes therefore keeping them within the ranges by minimizing nonrenewable resources consumption, it will also limit renewable resources consumption and reach the specific sustainable level, and finally minimize land use of land as well as noise production. In addition, it will allow the basic access needs of individuals and societies to be met safely and consistently, while promoting human and ecosystem health with equity between all users. Finally, it is affordable, it also operates efficiently, it also offers a variety of transport modes, and supports a vibrant diverse economy.

As for the transport sector in Batroun city, the implementation of the existing physical infrastructure as well as the development of the transport supply system, all these latter will ultimately entail the environmental, social, and economic benefits of sustainability. This improvement in the transportation sector will balance the triple bottom line of the sustainability goals. For example, they will improve the air quality through decreasing pollutants in the atmosphere which will directly enhance the visitors' experience, reduce the transportation cost on users, create more income and finally respond to any hazard. Each of the previously mentioned sustainable goals does not only fit into a specific category but can overlap. For instance, pollution is generally considered as an environmental issue. Yet, it can also be a social issue once affecting human health, and an economic issue in the case of fishing and tourism industries.

Finally, it is inevitable to notice that maritime tourism is booming nowadays in Batroun. In fact, various dynamics throughout time contributed to this exceptional prosperity and helped achieve this success, regardless of the global pandemic and limited resources. On the other hand, all the policies and programs made by the governmental authorities and local stakeholders intend to promote Batroun as a sustainable self-sufficient touristic hub. However, similarly to other towns in Lebanon, this coastal city, unfortunately lacks a resilient holistic strategic planning framework. Such a plan can help create a very well-connected road network that can encourage public transport use and as a result can build adequate infrastructure hosting multi-modal transport, as well as enhance the existing assets and improve the sustainable transportation standards.

Given the existing transport supply in Batroun along with the sustainable transportation indicators, it is essential to highlight the importance of implementing sustainable transportation strategies that are aligned with the Blue Economy targets.

VI. Electronic references

<https://www.vtpi.org/wellmeas.pdf>

https://www.cdr.gov.lb/getmedia/efc49abb-0eac-43df-b42a-5cfcedb0ee22/Batroun_Final-ESMP.pdf.aspx

http://www.enpicbcmmed.eu/sites/default/files/small-scale_fisheries_multifunctionality_best_practices_-_part_2.pdf

<http://www.agriculture.gov.lb/getattachment/b703cc8a-1135-4b6f-9921-61ae39d81e90/Census-of-Lebanese-Fishing-Vessels-and-Fishing-Facilities>

<https://lcf.lau.edu.lb/images/phoenician-batroun.pdf>

<https://thearabweekly.com/batroun-lebanons-ancient-coastal-city-waiting-be-unearthed>

<http://www.sanstephano.com/marina.html>

<https://dlca.logcluster.org/display/public/DLCA/2.3+Lebanon+Road+Network>

<https://www.living-lebanon.com/visit-lebanon/north-lebanon/batroun-surroundings/sights-activities/359-biking-batroun>

<https://www.wikiloc.com/cycling-trails/biking-in-batroun-region-2794336>

<https://www.bohemianvagabond.com/biking-tour-batroun/>

<https://www.visit-lebanon.org/leisure/northern-lebanon>

DISCLAIMER

The present document has been produced with the financial assistance of the European Union under the ENI CBC MED Program. The contents of this document are the sole responsibility of *Ministry of Public Works and Transport (MWPT) and Al Midan NGO* and can under no circumstances be regarded as reflecting the position of the European Union or the Program management structures.

PARTNERS



Institut National Des Sciences
Et Technologies De La Mer



ASSOCIATES PARTNERS



CPMR
CRPM

