Coastal Littoralization and Urbanization

Tyre scale, Lebanon

ENI CBCMED
Cooperating across borders in the Mediterranean

Project funded by the EUROPEAN UNION

REGIONE AUTÒNOMA DE SARDIGNA
REGIONE AUTONOMA DELLA SARDEGNA

Co-Evolve4BG

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

Coastal Littoralization and Urbanization

Tyre scale, Lebanon

جمعية أمواج البيئة
AMWAj NGO

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 3.1.2.41** (Coastal Littoralization and Urbanization –Tyre scale, Lebanon) of the **Activity 3.1.2** (Threats and Enabling Factors at the 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

Rebecca BAISSARI, Engineer

Agricultural Vocational School of Batroun, Lebanon

Reviewer

Lobna BEN NASR, PhD

ISTEUB, University of Carthage, Tunisia

Nahed MSAYLEB, PhD

Lebanese University, Faculty of Agriculture and Veterinary Sciences, Lebanon

Supervisors

Bechir BEJAOUI, PhD

National Institute of Marine Sciences and Technologies, Tunisia

Malek GHANDOUR, Engineer

AMWAJ of the Environment, NGO, 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

List of figures

List of tables

Abstract

The purpose of this paper is to determine the features of Tyre's urbanization/littoralization in the context of tourism and environmental stability. It is prepared by reviewing available data at the national and regional levels. The paper is divided into three sections. Section 1 presents an overview of the current and potential future developments of Tyrian coast urbanization. Section 2 discusses the effects of urbanization on the environment and tourism. Section 3 reports on the influence of tourism on urbanization and how to accomplish long-term Coastal/Maritime Tourism growth in Tyre.

I. Introduction

One objective of the sustainable development goals of the UN (United Nations) is to make cities and human settlements inclusive, safe, resilient, and sustainable. Given that cities are host to more than half of the world's population, this task may be difficult to achieve. In Lebanon, the World Bank has estimated the urban population to account for 88% of the total population. Rapid urbanization, along with rising demands for public services, long-term urban planning, and recent fuel and economic crises, has made city development a huge challenge (UN-Habitat, 2017).

Tyre is a southern Lebanon coastal urban agglomeration which covers an area of 16.8 km^2. Located 83 km south of Beirut, its urban area is defined by a continuous built-up morphology. Its geography comprises parts of the four municipalities of Tyre, Ain Baal, Abbassyeh, and Burj El Shemali. 53 distinct neighborhoods have been identified within the Tyre urban area.

The approximate remote land cover analysis of Tyre shows that the largest land use is occupied by agricultural land covering 44% of the area, followed by the urban built-up areas covering 40% of the land (UN-Habitat, 2017).

The urban morphology is characterized by dense built-up areas occupying the whole of Tyre municipality peninsula, the site of the old island city. Another density focus is concentrated in Burj El Shemali municipality on the eastern side. Along the main east-west highway connecting these two areas stretches an almost continuous medium-to-high density built-up strip. This main road is surrounded by dispersed facilities for coastal and harbor functions, in addition to minor formal and informal industrial activities towards the north-eastern edge.

Besides hosting a rich and diverse Lebanese social fabric, Tyre hosts three dense Palestinian Refugees: Camps of ElBuss, Al-Rasheediyeh, and others around the city. These camps have caused significant pressure on the city's various sectors, especially on basic services and infrastructure. Further, the Syrian refugee crisis and its subsequent implications, caused a mass displacement of Syrian refugees, in an uncontrolled manner into the city placing further pressure on already strained infrastructure.

II. Current and potential future developments in Tyrian coast urbanization

II.1 Characteristics of Urbanization and Littoralization

Tyre urban area covers about 16.8 km^2. It is characterized by archaic urban growth and high-density low-income population, concentrated in the old city and new developments. The urban areas belong to four different municipalities (Tyre, Ain Baal, Abbassyeh, and Burj El Shemali.), however, none are included as urban municipalities. The four municipalities are members of the Union of Municipalities of Tyre, which includes sixty municipalities and three localities without municipal councils, represented by their mukhtars.

Tyre urban area lies on a fertile coastal plain with an elevation not exceeding 50 m above sea level. Thus, an intra-urban agriculture structure characterizes the city. The agricultural land cover occupies 44% of the city's territory. However, the sector reported underperformance in productivity terms combined with its distribution across strategically significant urban land.

Built-up land accounts for 40% of the city's land area, providing a land-use category – although a diverse one – that is the second largest after agriculture. The promontory has the most developed area, although it also reaches eastward inland to Burj El-Shemali. In Burj El-Shemali municipality, industrial uses are scattered to the north and a smaller degree to the south of the connecting east-west motorway between these sites. While the built-up region is dense on the west side, where it is restricted by the shoreline, it becomes less dense as you travel east, resulting in a spatially fragmented development pattern.

Figure 1. Tyre littoralization

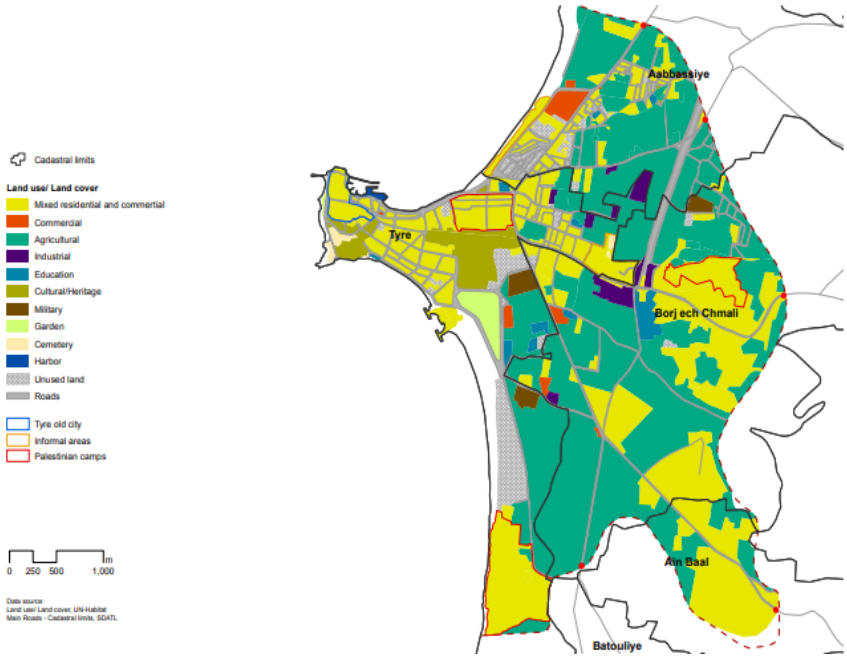

Figure 2. Major land cover categories in Urban areas. Remote analysis from satellite imagery (UN-Habitat, 2017)

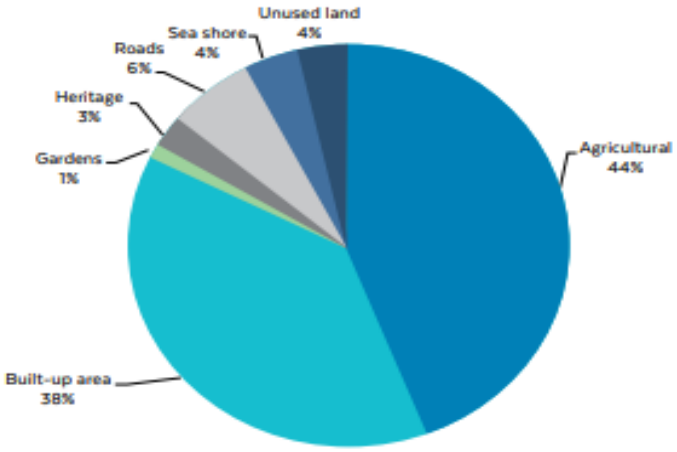

Figure 3. Tyre Urban area land cover breakdown (UN-Habitat, 2017)

Table 1. Tyre Urban area land cover breakdown (UN-Habitat, 2017)

Land use/Land Cover	Area m^2	Tyre Urban Area %
Agricultural	7,309,194	44.2
Built-up area	6,332,028	38.3
Mixed residential and commercial	5,219,592	31.5
Cemetery	54,746	0.3
Commercial	174,732	1.1
Cultural	24,590	0.1
Education	200,809	1.2
Harbor	27,221	0.2
Health	1,128	0.0
Industrial	220,391	1.3
Military	152,200	0.9
Parking	34,508	0.2
Playground	42,573	0.3
Touristic	179,539	1.1
Gardens	169,056	1.0
Heritage	439,785	2.7
Roads	1,038,731	6.3
Sea shore	642,070	3.9
Unused land	616,942	3.7
Total	16,547,807	

After having reported the location of the approved land subdivisions on the main map, it became obvious that the urban expansion inside the agricultural plain is already engaged, even if there are no buildings implemented yet. The addition of these land development entities results in a finger shape structure located mainly along the major roads around Tyre, linking the city to Al Abbassyeh, Juaya and Qana. This heavily affects the future of the coastal plain and its landscape. Only 46% of these subdivided areas are already built, providing some 300 hectares of land immediately available for construction. These approved subdivisions can hardly be changed.

Tyre is the only municipality in the metropolitan region having significant cultural and heritage monuments.

El-Buss (1.5 km south-east of Tyre's central city), Burj El-Shemali (3 km east of Tyre), and Rashidieh (on the seaside 5 km south of Tyre) are the three recognized Palestinian refugee camps in the Tyre urban region (Hajj, 2016). They are along or along the main north-south mainland route. There are various parcels of undeveloped land to the north

and south of El Buss Palestinian Camp, as well as on the Tyre municipality's beach to the south of the promontory. The city's coastline resource, a semi-natural endowment likely to attract strategic exploration in terms of its touristic and amenity value.

A vast green space known as 'Horsh Abbassyeh' in the municipality of Abbassyeh-Sour has been improved and is now available to the public. This lies immediately south of the Hippodrome and the Necropolis of El-Buss, one of the city's two primary historical monuments. All of this points to a heritage/amenity feature complex with strategic importance.

The quality of most of the built-up regions ranges from fair to good. Buildings across the Ain Baal municipality, including the Tyre urban area, which is reflected in better value and increasing real estate values. As a result of the limited inexpensive housing alternatives in the region, the neighborhood has only a minimal refugee presence (a small number of Syrian refugees and no Palestinian refugees).

However, from an opportunistic point of view, the structure of land property explains the preservation of the seashore from urban sprawl. Indeed, the littoral is till now generally free from any form of residential construction although some touristic establishments have been implemented (Ex: Tyros resort in Iskenderuna; CRI *et al.* 2015).

The east-west line from Burj el Shemali to the old town has the highest building density in the Tyre urban region, followed by Palestinian camps and out-of-camp concentrations. When the density is compared to the distribution of socioeconomic groups, a significant link between socioeconomic vulnerability and high-density locations emerges. The densely constructed historic city, the administrative and economic city center, as well as Palestinian camp and out-of-camp populations, all contribute to Sour's high density. Ain Baal, on the other hand, is characterized by less densely built sections, indicating the population's better socioeconomic position, as well as high housing costs, which effectively prevent vulnerable refugees and urban poor from settling there.

Figure 4. Map showing building quality in Tyre urban area (UN-Habitat, 2017)

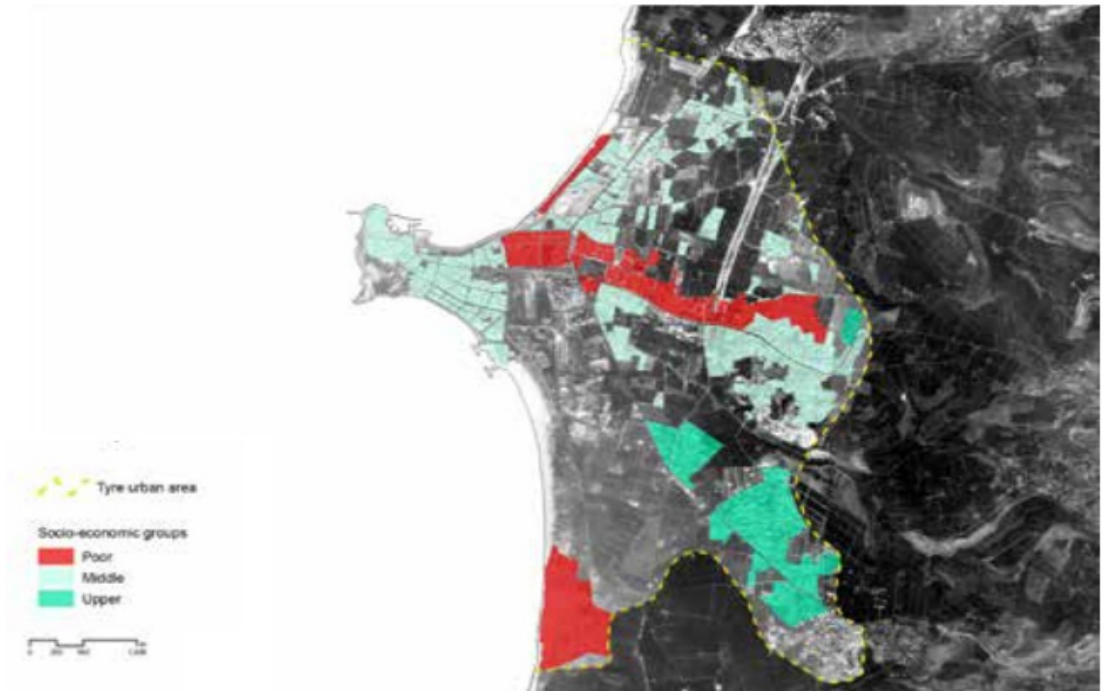

Figure 5. Socio-economic groups in Tyre urban area (UN-Habitat, 2017)

II.2 Future trends

As is common in all of Lebanon, there is a lack of city-level data to monitor trends. But, according to the National Physical Master Plan of the Lebanese Territory (NPMPLT; 2005), the population and urban area of the Tyre are expected to grow throughout the 2000-2030 plan period. Most of the population expansion is expected to occur in the suburbs, with little inner-city population densification or in-fill development predicted.

However, it is unclear whether the NPMPLT growth estimates are just historical trend projections or whether the extrapolation is changed to match spatial policy aims.

The city has experienced a significant increase in population through waves of displacement, adding pressure on the housing market, shelter options, and tenure, increasing the risk of deterioration of housing and shelter conditions.

In 2004, the 'Awqaf' (Religious Endowments) provided funding for various housing developments for low-income families. Since the project began, 6% of these housing units have been designated as secondary, while 13% have remained unoccupied. Tyre is seeing a rise in real estate values as well as a high percentage of unofficial housing. The flood of emigrant remittances into real estate investment, in Greater Tyre, drove a rise in real estate values. This assumption is supported by the CHUD project's second phase review (2001), which found that the sale prices of housing units in downtown Tyre grew by 68 per cent over four years (1998- 2001).

Unlicensed development in regions like Maarake, Bazouriye, and Dhayra constitutes informal housing. This sort of structure was mostly the consequence of unresolved family inheritance conflicts. Other investigations of the Tyre District have shown the same pattern, with the CRI report from 2015 revealing that 20-30% of housing units were built on public grounds in some situations (CRI *et al.* 2015).

Built Heritage and the remaining stone houses in the historical center of villages: Alike in main Lebanese regions, vernacular architecture in the historical center of villages have largely suffered from rapid urbanization, worsen by periods of war, occupation, and reconstruction. Remaining stone houses in several villages (Cf. Built, natural and cultural heritage map), mainly uninhabited, are lost amongst the modern urban fabric (add of floors on the top, adjacent extensions) and suffer a lack of protection measures (specific urban zoning) and restoration works.

III. Effects of urbanization and Littoralization in Tyre

III.1 Impacts on Coastal/Maritime environment

Urbanization has had a substantial influence on coastal ecosystems in the Levantine basin, resulting in biodiversity loss (Doxa *et al.* 2017). Coastal vegetation has a varied range of organisms that have evolved to meet the unique needs of this environment (Voronkova *et al.* 2008). As a result, important Mediterranean ecosystems such as vermetid reefs and *Cystoseira* forests have been seriously harmed, and their local extinction has been confirmed in numerous places.

For the provision of urban services and infrastructure, density is a critical factor. High population density is linked to overpopulation and overcrowding, inadequate service provision, and increased environmental challenges, particularly in impoverished and/or poor urban areas.

Figure 6. Urbanization near the coast in Tyre

The seashore to the south of Tyre is the longest and widest stretch of sand beaches in Lebanon, despite the systematic removal of sand over the past 20 years. The natural attractions of the site are its location on the Mediterranean Sea with a picturesque harbor surrounded by fishing installations and traditional living quarters. In the last twenty years, the city of Tyre witnessed rapid and phenomenal urban growth, which has transformed it into a critical regional node.

The uncontrolled spreading of populated zones and the high market value of sand due to the extensive building taking place led to its illegal mining from sandy dunes of the beaches, sediment dredging offshore, gravel quarrying in riverbeds, sea embankments near the shore, and urban encroachment on agricultural lands. There are now tighter controls on illegal mining, but there are still signs that it is taking place on a small scale. The natural recharge of sand by longshore drifting northwards along the coast from the south of Tyre is now probably minimal.

A study conducted by the Marine and Coastal Resources Program at the IoE-UoB (MCR-IoE-UoB) compared historical aerial photographs of 1962 and a satellite image of 2010 by using photo-interpretation based on the Geographic Information System (GIS; Merhaby *et al.* 2020) showed that sand and pebble beaches have retreated due to extensive erosion while more than 8 km2 of land were added along the Lebanese shores by sea-filling. These changes are attributed to illegal activities like sand extraction and chaotic coastal development due to the inability of the Government to enforce applicable laws especially during and after the civil war (1975-1990) (Abou Dagher *et al.* 2013) and beyond.

These practices have an irreversible harmful impact on sandy coasts, especially on marine flora and fauna, seriously altering their habitats. For example, fish and shrimp spawning grounds may have been destroyed. Sand withdrawal also leads to the occurrence of valleys in the sea which is dangerous to swimmers because of the tides that are generated (CDR/DAR/IAURIF, 2005; MOE/UNDP/ECODIT, 2011).

Furthermore, the urbanization close to the coastline disturbs the natural processes and dynamics of sand replenishment and dissipation of wave energy. Dunes have the function of replenishing beach sand lost during catastrophic storm events and preventing coastal erosion. The loss of dune sand impedes this important beach-dune interaction.

In Tyre, the dominant source of pollution is wastewater. The discharge of unconnected households is disposed of haphazardly into open sewers, water streams, and other forms of disposal in the environment, as well as septic tank connections (World Bank, 2015).

Pollution caused by tanks that further leak into the environment is common, either as households cannot afford tank desludging or repair/ maintenance.

The major environmental challenges caused by urbanization in Tyre are:

- Soil degradation and land fragmentation because of the development and operation of tourism and travel facilities (resorts, hotels, ports, *etc.*) as well as the supply of products and services (littoralization).
- Due to the building and usage of tourism amenities, coastal habitats have been altered and biodiversity has been lost.
- Travel and tourism facilities contribute to waste creation, water contamination, and marine pollution (resorts, hotels, cruises...).
- Due to the usage of fossil fuels for transportation and facility heating/cooling, air pollution and greenhouse gas emissions have increased.
- Transportation, crowding, and facility operations contribute to noise and light pollution in urban and natural surroundings.
- Natural resource depletion, in particular freshwater, energy, and food, by tourist facilities (resorts, hotels).

In terms of governance, urbanization has contributed to economic growth while also contributing to Climate Change and other global environmental costs linked with high consumption levels. Local governments that are unable to provide the basic infrastructure and services for urbanization would exacerbate urbanization's negative consequences, such as waste and wastewater pollution (Burak *et al.* 2004). Furthermore, inefficient land use planning has resulted in several resource overconsumption issues (Tolba and Saab, 2009). Appropriate laws and regulations, effective political and administrative processes, and strong local institutional capacity are required to enable the creation of an urban environment that supports citizens' needs (Bower and Turner, 1998).

Figure 7. Littoralization and population in Tyre

III.2 Impacts on Coastal/Maritime tourism

Urbanization gathers resources and basic service facilities, such as population, capital, and so on, which creates important conditions for the development of the regional tourism economy. Thus, we can say that urbanization has a significant effect on the output of the regional tourism economy; it also has the benefit of promoting increasing the number of tourists. Urbanization plays a significant role in promoting regional tourism economic output. However, in Tyre, tourism services and hotels are not perceived as being very rich and not as satisfactory.

On the other hand, urban population agglomeration has also exacerbated urban issues such as environmental pollution and traffic congestion. The problems of parking lots and traffic jams in Tyre are perceived as important tourism deterrents. This promotes citizens' demand for tourism and leisure and investment in tourism infrastructure. Besides, the urban economy has driven the consumption of energy and natural resources, which caused increasing carbon emissions and acid rain, and rising sea levels. The resulting climate change has led to a growth in the frequency of disasters which will directly have an impact on tourism since the sector is considered a weather and climate-sensitive industry.

Environmental problems such as disasters caused by urbanization, cultural relics destruction, and excessive use of resources caused by excessive tourism have made the development of tourism unsustainable.

Tyre has been subject to an ongoing rural exodus since the 1960s, superimposing on natural population increase in the city. This rural-to-urban movement not only influenced the Lebanese population but also the movement of Palestinian refugees from Bekaa to the city's refugee camps.

During the civil war, Tyre's urban development progressed both horizontally and vertically in an uncontrolled manner. This has included haphazard development within proximity to major archaeological sites and historical properties.

Although some rural populations are still surviving from agriculture, increased revenues of constructed properties in comparison to agricultural production revenues are diminishing the value of agricultural lands. This fact increases the risks of continued urban encroachment.

Moreover, infrastructure construction is an important measure of urbanization and regional tourism economic development. Thus, to promote effective and sustainable tourism activity in Tyre, wastewater, solid waste, and traffic congestion need to be better managed in the urban city to improve tourism. Therefore, the quality of the urban environment quality is a crucial consideration for tourists.

Figure 8. Recent and old littoralization of Tyre coast

III.3. Impacts of Coastal/Maritime tourism on Urbanization and Littoralization

Tourism is crucial for promoting industrial development and is an important driver of urbanization. Urban cities are not only the spatial carriers of human survival and social development but also spatial places for economic, political, and cultural agglomeration.

In coastal areas, tourism growth has become the fastest growing industry and reached its peak in recent decades, also becoming one of the biggest industries in the world (UNEP, 2009; Nara *et al.* 2014; Kurniawan *et al.* 2016; Schuhmann *et al.* 2016; Andres *et al.* 2018). However, tourism can be one of the key contributors to rapid urbanization and contributing to climate change and environmental impacts. While tourism urbanization brings economic and social benefits to the region by providing new job opportunities, it can also damage the local ecological environment. The excessive development of tourism resources can lead to the destruction of the ecological environment; the booming development of the tourism industry inevitably brings about the flow of the urban population, which leads to environmental "overload" and other problems.

While coastal areas are suitable for tourism developments, at the same time these areas are considered hazardous locations threatened by climate change (TIFS, 2010; Lemmen *et al.* 2016; NOAA, 2016). Potential impacts of climate change on coastal systems can include increased coastal erosion; more extensive coastal inundation; higher storm surge; increased loss of property and coastal habitats; increased flood risk and potential loss of life; loss of renewable and subsistence resources and tourism recreation; and damage to other infrastructure (McLean *et al.* 2001).

Although some of the changes can be beneficial, in the form of economic growth and infrastructural developments leading to an overall improvement in living standards (Andres *et al.* 2018). Nevertheless, pressures on coastal ecosystems, especially environmental degradation, and pollution, could increase significantly in the coming decades due to this growth (Andres *et al.* 2017). Environment and climate change connect urbanization, and tourism is also an important element in both (UNWTO-UNEP, 2008). People in lower urbanized districts are more vulnerable since they have less capacity to cope with pollution and climate change risks due to poverty and lack of awareness of the environment and changing variability (Tran and Nitivattananon, 2011). CREST (2012) indicated that large-scale tourist developments have put increasing pressure on fragile ecosystems, especially in coastal zones. These impacts consist of the destruction of local flora and fauna, pollution, the introduction of invasive species, land erosion, and conversion of public beaches into private ones. Those environmental impacts can be divided into three groups (Gouda, 2012): degradation of the natural composition of beach ecosystems, destruction of the great part of marine environments, and increased fragmentation between natural and developed areas.

Urbanization construction near the coastline transforms the coastal sandy habitats and their wildlife habitats. It will cease the processes and dynamics of sand replenishment and dissipation of wave energy. Dunes have the function of replenishing beach sand lost during catastrophic storm events and preventing coastal erosion. The loss of dune sand impedes this important beach-dune interaction. Even though the excavations have stopped, the quantity of sand removed and the range of disturbance to the ecosystem remains unknown. Furthermore, the unplanned urbanization will impact tourism by concealing the sea view and reducing the aesthetic parameters of this old city (MOE/UNDP/ECODIT, 2011).

The construction of hotels and secondary housing cooperatives has exploded because of unearned and real income expectations to the detriment of fertile land, creating aesthetic pollution and loss of tangerine and olive orchards in Tyre. Soil degradation and land fragmentation due to the construction and operation of tourist and travel facilities (resorts, hotels, ports, airports, *etc.*) as well as delivery of products and services (field trips, *etc.*); Linear and coastal urbanization (littoralization).

The preserved seafront of the Qada' (Cadaster) including the old city and the harbor of Tyre and its exceptional archaeological fields represents a major asset concerning all the other regions of Lebanon. Its preservation and the protection of many other natural and cultural sites are a real challenge since the stakes are high for the real estate sector and tourism development in that area.

Figure 9. Coastal tourism in Tyre

IV. Accomplishing long-term Coastal/Maritime Tourism growth in Tyre

Sustainable Blue Economy aims at improving maritime governance and at intensifying joint efforts, activities, and projects in various blue economy sectors (including blue jobs; marine litter; sustainable fisheries and aquaculture; nature-based tourism; green shipping). However, one of its major objectives is to manage linear and coastal urbanization (littoralization), consuming the precious but very limited resources of coastal areas, which has been identified with coastal tourism. It promotes the sustainable use, management and conservation of natural resources and ecosystems as well as promoting inclusive and sustainable rural development, with a specific focus on poverty eradication, women's empowerment, and youth employment, including equitable and sustainable access to basic local services for rural communities.

The blue economy ensures access of local producers to distribution channels and markets, including the tourism market. It includes applying holistic and integrated spatial planning processes and other related instruments, as well as improved compliance with respective rules and regulations, to increase economic, social, and territorial cohesion and reduce pressures on the environment.

The blue economy promotes the protection and rehabilitation of historic urban areas. It encourages institutional, policy and legal reforms for the effective mainstreaming of climate change responses into national and local development frameworks, particularly in the energy sector.

Nature-Based Solutions (NBS) are actions that use the natural functions of healthy ecosystems to solve environmental issues while providing economic and social benefits. For example, creating green spaces in cities can increase tourism revenues, offer recreational opportunities for citizens, and help lower temperatures and pollution levels in urban areas.

The bleu economy can play a significant role in addressing climate change through two main strategies: mitigating measures, which tackle the causes of climate change, such as renewable energy, environmentally friendly infrastructure, and best practices in solid waste and water management; and adaptation measures to cope with its effects, such as constructing seawalls, planting trees, and building water storage for adaptation to erosion and the risk of storm surge, as well as drought (Becken, 2005; UNWTO-UNEP, 2008; CREST, 2012; Michailidou *et al.* 2016). These measures can be synergetic in addressing adaptation and mitigation, including urban greenery, building insulation, water efficiency, and storage, distributed, and renewable energy systems (Sugar *et al.* 2013).

Applying the blue economy concepts serves Lebanon Rural Tourism Strategy 2015-2020 in making rural areas and major urban areas successful sustainable destinations for travel including cultural, historical, religious, culinary, nature, sports, agricultural and adventure tourism. It includes expanding the income of regions and local communities by receiving more visitors and offering more competitive tourism products, services and experiences to tourists while preserving their natural environment and cultural heritage.

V. Conclusions

Tyre is a southern Lebanon coastal urban agglomeration with an urban area defined by a continuous built-up morphology that constitutes 40% of Tyre city. Agriculture constitutes the largest category (44%) within the urban complex. Most of the built-up Urban areas can be classified as fair to good quality. The city includes 4 refugee camps presence, increasing population pressure.

However, from an opportunistic point of view, the structure of land property explains the preservation of some parts of the seashore from urban sprawl. Indeed, the littoral is still generally free from any form of residential construction, although some touristic establishments have been implemented.

Urbanization has had a substantial influence on coastal ecosystems in Tyre. The uncontrolled spreading of populated zones and the high market value of sand due to the extensive building, threatened ecosystem health in Tyre.

Tourism can be one of the key contributors to rapid urbanization, contributing to climate change and environmental impacts. While tourism urbanization brings economic and social benefits to the region by providing new job opportunities, it can also damage the local ecological environment.

Applying the Blue Economy concept can improve maritime governance and intensify joint efforts and can help to manage the linear and coastal urbanization (littoralization) spread.

On this basis, developing protection measures to promote the development of sustainable tourism, vigorously pursuing urbanization and improving the ecological environment are important measures for Tyre. Accomplishing common development of the tourism industry and urbanization within the context of the ecological environment to maximize tourism advantages and optimize urbanization construction has emerged as a pressing issue.

The development of the tourism industry can bring significant economic benefits to cities and improve urban infrastructure construction. Moreover, the expansion of urbanization benefits the tourism industry in terms of people, transportation, and communication. The tourism industry and ecological environment influence each other. The development of the tourism industry relies on the development of resources and ecology. A good ecological environment provides a solid foundation for the tourism industry. However, the excessive development of the tourism industry inevitably has adverse consequences on the ecological environment.

Policies at the level of the Union of Tyre Municipalities (UMOT) could be developed through projects such as a regional park with a binding agreement (charter) adopted by the different municipalities engaging themselves in sustainable policies and practices that can allow for conciliating between tourism development and environmental protection.

VI. References

Abou Dagher M., Nader M., El Indary S., 2013. Evolution of the coast of North Lebanon from 1962 – 2007: mapping changes for the identifications of hotspots and future management interventions. Fourth Symposium "Monitoring of Mediterranean coastal areas: problems and measurement techniques" - Livorno (Italy) 12-13-14 June 2012 Proceedings.

Andres M.D., Barragan J.M., Sanabria J.G., 2017. Relationships between coastal urbanization and ecosystems in Spain. Cities. 68: 8-17.tran

Andres M.D., Barragan J.M., Scherer M., 2018. Land use policy urban centers and coastal zone definition: which area should we manage? Land Use Pol, 71: 121-128.
Becken S., 2005. Harmonising climate change adaptation and mitigation: the case of tourist resorts in Fiji. Glob. Environ. Chang. 15: 381-393.

Bower B.T., Turner R.K., 1998. Characterising and analyzing benefits from integrated coastal management (ICM). Ocean Coastal Management. 38: 41-66.

Burak S., Doğan E., Gazioğlu C., 2004. Impact of urbanization and tourism on the coastal environment. Ocean Coastal Management. 47: 515-527.

CDR/DAR/IAURIF, 2005. National Physical Master Plan of the Lebanese Territory (NPMPLT) – Final Report.

CREST (Center for Responsible Travel), 2012. Alternative Development Models and Good Practices for Sustainable Coastal Tourists: A Framework for Decision Makers in Mexico. Washington, DC.

CRI H.D., *et al.* 2015. Elaboration of STRATEGIC SUSTAINABLE Regional Development PLAN (SSRDP) FOR THE CAZA OF TYRE - Final Strategy Document, Tyre.

Doxa A., Albert C.H., Leriche A., Saatkamp A., 2017. Prioritizing conservation areas for coastal plant diversity under increasing urbanization. Journal of Environmental Management. 201:425-434.

Gouda E.A., 2012. Problems that impede sustainable tourism development in Egypt. World Academy of Science, Engineering and Technology. 71: 251-258.

Hajj N., 2016. A Theory of Property Rights Formation in Palestinian Refugee Camps. In Protection Amid Chaos, 7-30. Columbia University Press.

Kurniawan F., Adrianto L., Bengen D.G., 2016. Vulnerability assessment of small islands to tourism: the case of the marine tourism park of the Gili Matra islands, Indonesia. Global Ecology and Conservation. 6: 308-326.

Lemmen D.S., Warren F.J., Mercer Clarke C.S.L., 2016. Introduction in Canada's Marine Coasts in a Changing Climate. Government of Canada, Ottawa.

McLean R. F., Tsyban A., Burkett V., Codignotto J.O., Forbes D.L., Mimura N., Ittekkot V., 2001. Coastal zones and marine ecosystems. Climate change. 343-379.

Merhaby D., Ouddane B., Net S., Halwani J., 2020. Assessment of persistent organic pollutants in surface sediments along Lebanese coastal zone. Marine Pollution Bulletin, 153: 110947.

Michailidou A.V., Vlachokostas C., Moussiopoulos N., 2016. Interactions between climate change and the tourism sector: a multiple-criteria decision analysis to assess mitigation and adaptation options in tourism areas. Tourism Management. 55: 1-12.

MOE/UNDP/ECODIT, 2011. State and Trends of the Lebanese Environment (SOER) 2010.

Nara P., Guan-Guay M., Tsair-Bor Y.P., 2014. Applying environmental management policy for sustainable development of coastal tourism in Thailand. International Journal of Environmental Protection and Policy. 2: 19.

Schuhmann P.W., Bass B.E., Casey J.F., et al. 2016. Ocean & coastal management visitor preferences and willingness to pay for coastal attributes in Barbados. Ocean & Coastal Management. 134, 240-250.

Sugar L., Kennedy C., Hoornweg D., 2013. Synergies between climate change adaptation and mitigation in development: case studies of Amman, Jakarta, and Dar es Salaam. International Journal of Climate Change Strategies and Management. 5: 95-111.

TIFS (The International Federation of Surveyors), 2010. Rapid Urbanization and Mega Cities: The Need for Spatial Information Management. Copenhagen, Denmark.

Tolba M.K., Saab N.W., 2009. Arab environment: CC impact of CC on Arab countries. Annals of Physics. 54.

Tran T.T., Nitivattananon V., 2011. Adaptation to flooding risks in Ho Chi Minh City, Vietnam. International Journal of Climate Change Strategies and Management. 3: 61-73.

UN-Habitat, 2017. Tyre City Profile.

UNWTO-UNEP, 2008. Climate Change and Tourism: Responding to Global Challenges. Madrid.

Voronkova N.M., Burkovskaya E.V., Bezdeleva T.A., Burundukova O.L., 2008. Morphological and biological features of plants related to their adaptation to coastal habitats. Russian Journal of Ecology. 39: 1-7
UNEP, 2009
NOAA, 2016

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 *Amwaj NGO* and can under no circumstances be regarded as reflecting the position of the European Union of the program management structures.

PARTNERS

ASSOCIATES PARTNERS