

Touristic Fluxes and Carrying Capacity

Tunisian scale





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

Tourism Fluxes and Carrying Capacity Tunisian scale



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



CPMP
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 3.1.4.3** (Tourism Fluxes and Carrying Capacity– Tunisian scale) of the **Activity 3.1.4**(Threats and Enabling Factors at National scale: Overview) under the **Output 3.1** (Integrated analysis of Threats and Enabling Factors for sustainable tourism at MED scale) of the project.

REVIEW

Contributors

Mohamed HELLAL, PhD

📍 University of Sousse, Tunisia

Moez SHAIEK, PhD

📍 Consultant, Tunisia

Reviewers

Leila BASTI, PhD

📍 Tokyo University of Marine Science and Technology, Tunisia

Moez KACEM, MSc

📍 University of Carthage, Tunisia

Supervisor

Béchir BEJAOU, PhD

📍 National Institute of Marine Sciences and Technologies, Tunisia

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
Abstract	vii
I. Introduction	1
II. Tourism and tourist fluxes	2
III. Characteristics of Tunisian tourism	14
III.1. Seaside tourism is the dominant product	14
III.2. Tourism dominated by TOs	14
III.3. Seasonality of Tunisian tourism	15
III.4. Destination and life cycle	16
IV. Carrying capacity and capacity management	20
IV.1. Carrying Capacity (CC): Definition and assessment	20
IV.2. Carrying capacity management in Tunisia	21
V. Conclusions	26
References	27

List of figures

Figure 1. Regional number of tourism establishments, on the Tunisian coast (North, East and South-East), 2019	3
Figure 2. Tourism establishments per governorate on the Tunisian coast, 2019	3
Figure 3. Number of tourist establishments per region (North, East and South-East), in Tunisian coasts, according to their category/number of stars, 2019	4
Figure 4. Regional number of beds on the Tunisian coasts (North, East and South-East), 2019	4
Figure 5. Number of beds per governorate on the Tunisian coasts, 2019	5
Figure 6. Regional tourism establishments, on the Tunisian coast (North, East and South-East), 2014–2019	5
Figure 7. Tourism establishments' growth per governorate, on the Tunisian coast, 2014–2019	6
Figure 8. Regional number of tourist arrivals, on the Tunisian coast (North, East and South-East), 2019	7
Figure 9. Number of tourist arrivals per year and per governorate, on the Tunisian coast, 2019	7
Figure 10. Regional growth of tourist arrivals, on the Tunisian coast (North, East and South-East), 2014–2019	8
Figure 11. Growth of tourist arrivals per year and per governorate, on the Tunisian coast, 2014–2019	8
Figure 12. Total number of overnight tourists stay (day) per region (North, East and South-East) and per year in Tunisia, 2019	9
Figure 13. Total number of overnight tourists stay (day) per governorate and per year in Tunisia, 2019	9
Figure 14. Average tourist length of stay (%) per region (North, East and South-East) in Tunisian coasts, 2019	10
Figure 15. Average tourists' length of stay per governorate in Tunisian coasts, 2019	10
Figure 16. Distribution of tourism markets for Tunisia, 2019(TNTO, 2019)	12
Figure 17. Border arrivals of non-residents per month in Tunisia, 2019	15
Figure 18. Evolution of global overnight stays per tourist region and per month (TNTO, 2019)	16
Figure 19. Life cycle of the tourist destination(Butler, 1980)	17
Figure 20. Types of flow management in tourist destinations(Butler, 1980)	19

List of tables

Table 1. Overall tourist arrivals by country (in thousands)	11
Table 2. Arrivals by category of transportation (TNTO,2019)	12

List of abbreviations

APDC	Agency for the Protection and Development of the Coastline
BOP	Beach Occupancy Plan
CC	Carrying Capacity
CPP	Coastal Protection Program
FTH	Federation of Tunisian Hoteliers
GCP	Gross Domestic Product
PAP	Priority Action Program
TNTO	Tunisian National Tourist Office
TO	Tour Operators
TOMM	Tourism Optimization Management Model
VERP	Visitor Experience and Resource Protection
VIM	Visitor Impact Management
UNWTO	United Nations World Tourism Organization

Abstract

This report aims to identify the different tourism fluxes and carrying capacity at the Tunisian scale.

Tunisia receives important flows of visitors interested in beaches while it does not manage to improve or exploit other types of tourism, such as cultural or congress tourism.

Tunisian tourism, which plays an important role in Tunisian economy, is destined to become richer to face international competition. It should not be limited to the classic seaside package for a modest and little remunerative European clientele.

The results of studies on the Carrying Capacity evaluation for recreational purposes (tourist, Summer, and seaside attendance) highlight the need to reduce the number of users for several over-saturated beaches and seaside resorts. In this context, for several Tunisian beaches and resorts, commercial concessions should no longer be granted systematically as beaches are witnessing retreats at varying rates, endangering property, entrepreneurial investments and even people's lives. All that remains to be done here is to try to contain and slow down this phenomenon of coastal degradation and to use coastal resources in a way that produces the least impacts, so as not to accelerate its destruction. As far as vehicles are concerned, it has been demonstrated that they are a factor of degradation and a limiting factor in the use of beaches due to their inappropriate nature from an environmental point of view and due to their incompatibility with quality standards for recreational activities.

In addition to the alarming illegal nature of the several initiatives for coastal fringe exploitation (often with significant damage to the environment, landscape and surrounding coastal ecosystems), these coastal sites are indeed extremely fragile and existing spaces on which complex hydro-geomorphological mechanisms for coastal zone are based. Thus, coastal areas in direct contact with the coastline, in particular beaches, must be protected effectively and with all the means available at the highest level, as the greatest environmental changes in the entire coastal region are very often dependent on these spaces.

I. Introduction

Tourism is a major phenomenon in contemporary society. In 2019, a reference year, worldwide tourism reached 1,461 billion people. The number has jumped by 3.8% compared to the previous year (2018). It is the 10th year of continuous growth, according to UNWTO. One of the characteristics of tourism is that it benefits both advanced economies (776 million tourists) and emerging economies (685 million tourists; UNWTO, 2020), stressing a narrow gap between them. Moreover, nowadays tourism is the leading economic sector in the world and even in e-commerce. Thus, it should have a bright future: even the most conservative forecasts predict exceptional results for the next twenty years.

Touristic activity aims to take advantage of landscape and cultural potentialities of the given host territory. It has important social and economic impacts on such a territory. Travel and stay are therefore fundamental in the tourist activity constitution, as well as the activities linked to it: transport, accommodation, trade, and entertainment. To this end, UNWTO, an international institution created in 1973 and specialized in tourism studies, defines a tourist as “any person away from his or her usual residence for a period of at least 24 hours (or one night) and no more than four months for one of the following reasons: enjoyment (holidays and weekend stays), health (thermal- and thalassotherapy), missions or meetings of any kind (congresses, seminars, pilgrimages and sports events), business trips, professional trips and school trips” (UNWTO, 1978).

Indeed, it should be known that there is no tourism without tourists and only their presence can identify a tourist place or a place in the process of becoming one. This is why tourism is defined as a human activity. It is based on a displacement that is, literally, a change of place and by geographical extension a change of inhabitation. This characteristic distinguishes it from leisure activities for which displacement is not a necessary condition for their realization. Tourism therefore introduces a special relationship to space if it generates fluxes of people between receiving and sending countries.

However, these allogenic impacts are sometimes brutal and badly borne by natural environment, especially coastline, which is a sensitive area, by host societies, through disturbances introduced into their lifestyles and value systems. The economic spin-offs of tourist activities are sometimes badly redistributed or captured by distant interests, linked to emitting countries rather than receiving countries. To this end, in this report, tourist activity impacts was assessed on natural environment and local society in the southern Mediterranean basin, particularly in Tunisia, through the concept of carrying capacity.

The document is structured as follows: Section 1 provides an overview of tourism and tourist fluxes. Section 2 highlights the characteristics of Tunisian tourism and Section 3 focuses on tourism fluxes and carrying capacity parameters.

II. Tourism and tourist fluxes

Being situated in the heart of the southern shores of the Mediterranean basin and at the crossroads of multiple cultural environments, Tunisia has several assets to attract international tourists. Tunisian tourism therefore has at its disposal varied landscapes and a favorable climate most of the year. The coastline benefits from average temperatures of 7°C in Winter and 32°C in Summer. Political context is calmer in Tunisia than in its two neighboring countries.

Since its independence in 1956, the Tunisian State has bet on international tourism development so that Tunisia may gradually become a touristic destination marked by mass seaside tourism. In this perspective, international tourism has become one of the pillars of the national economy. In 2018, it contributed 7% of GDP to national economy, covering 35.3% of the trade deficit and represented 10% of national exports (TNTO, 2019), despite the poor economic situation and the transition period, even the political dithering, which the country has been experiencing. This sector, of an extroverted nature, remains a priority in the state's development policies to ensure foreign currency inflows and equilibrium of the balance of payments.

In the 1960s, the watchword of international development agencies was to take advantage of the fashion for seaside tourism in the West. The UN declared in 1963 that tourism could contribute to the economic growth of developing countries. At the time, tourism appeared to be an opportunity for economic development for Tunisia as for the rest of the developing countries, particularly in the southern Mediterranean basin. Indeed, the World Bank(2002)expert David Davis declared in 1966 that “tourism represents for developing countries the real engine of development in the same way as heavy industry was for 19th century Europe” (Bulletin Economique et Social du Maroc, 1973).

In Tunisia, tourism has appeared, in view of state officials, as a source of income in foreign currency in the absence of other sources of income. After an experience of more than 60 years in mass seaside tourism development, Tunisia has become one of the first countries to receive tourists in the southern shores of the Mediterranean basin. Europe proximity has been a very important factor in the development of tourism in Tunisia.

Tunisian touristic offer remains mainly hotel accommodation. Its seaside units are aligned parallel to shoreline, most of the time as the “foot in the water” type. For these reasons, most of the different categories of touristic establishments and beds are concentrated on the coast (Figs. 1–5). Over the 17 touristic regions considered by Tunisian National Tourist Board, 9 are dedicated to beach tourism. Tunisia totals 2,290 km of coastline divided in 68% continental, 20% island linear and 12% artificial linear (APAL, 2019). Thus, there are about 80 km allocated to tourist-real estate complexes which represent 6 to 7% of the entire coastline. Over the period 2014–2019, the tourism establishment growth varied by region and governorate. The highest growth was registered for the Northern region, moderate growth for the Eastern and South-Eastern regions and negative growth for Sousse and Monastir (Figs. 6 and 7).

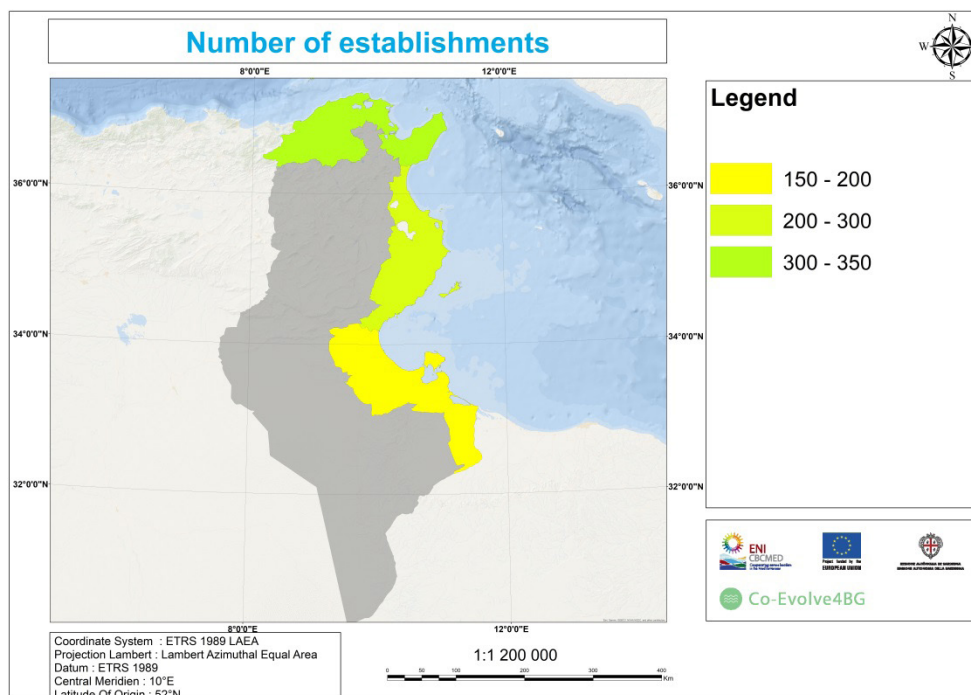


Figure 1.Regional number of tourism establishments, on the Tunisian coast (North, East and South-East), 2019

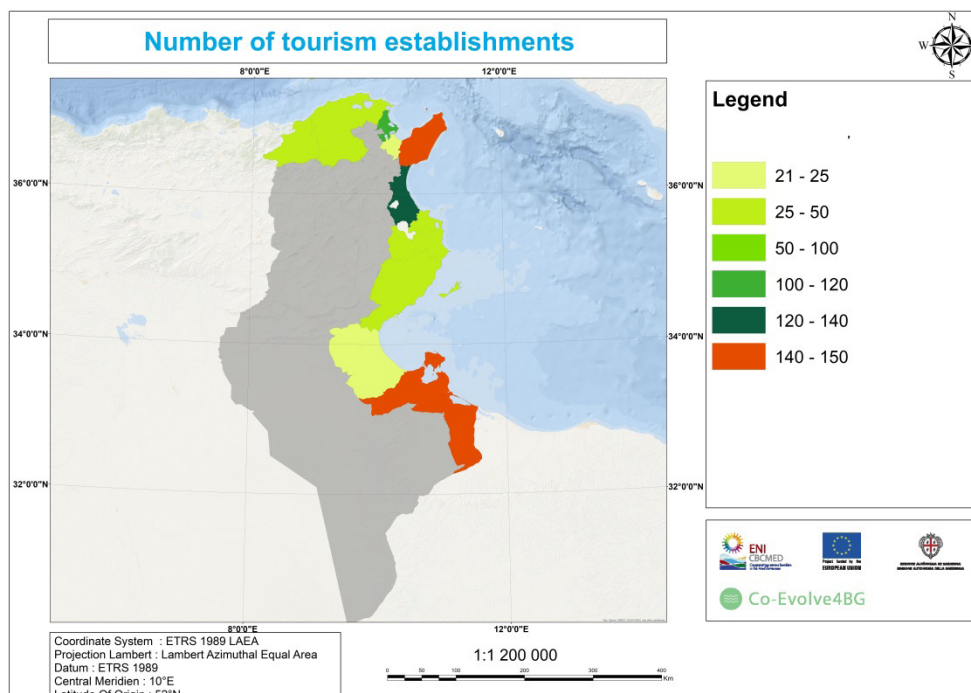


Figure 2.Tourism establishments per governorate on the Tunisian coast, 2019

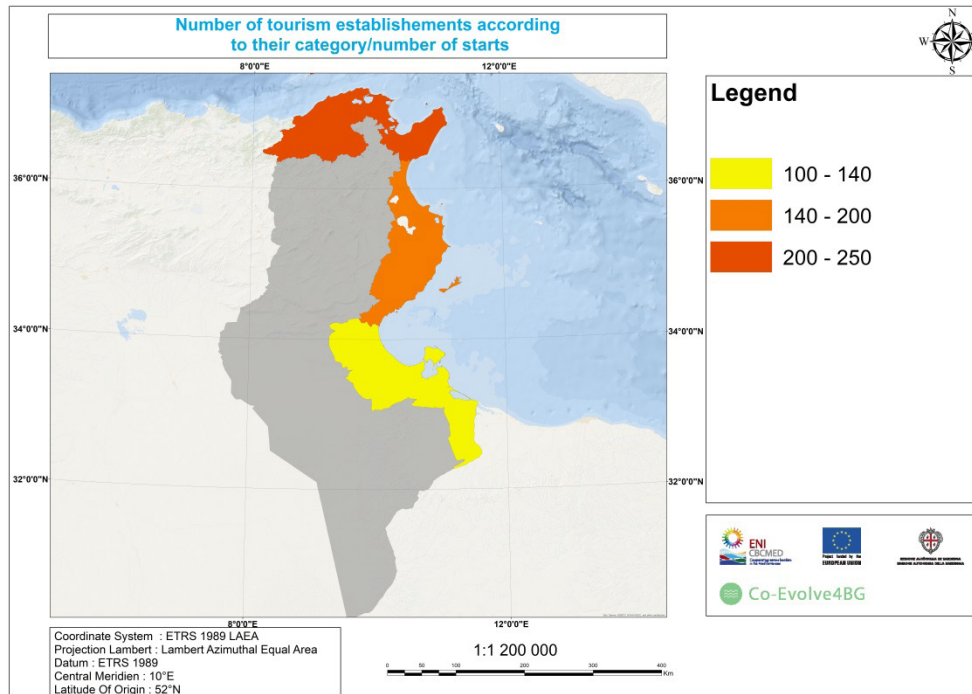


Figure 3. Number of tourist establishments per region (North, East and South-East), in Tunisian coasts, according to their category/number of stars, 2019

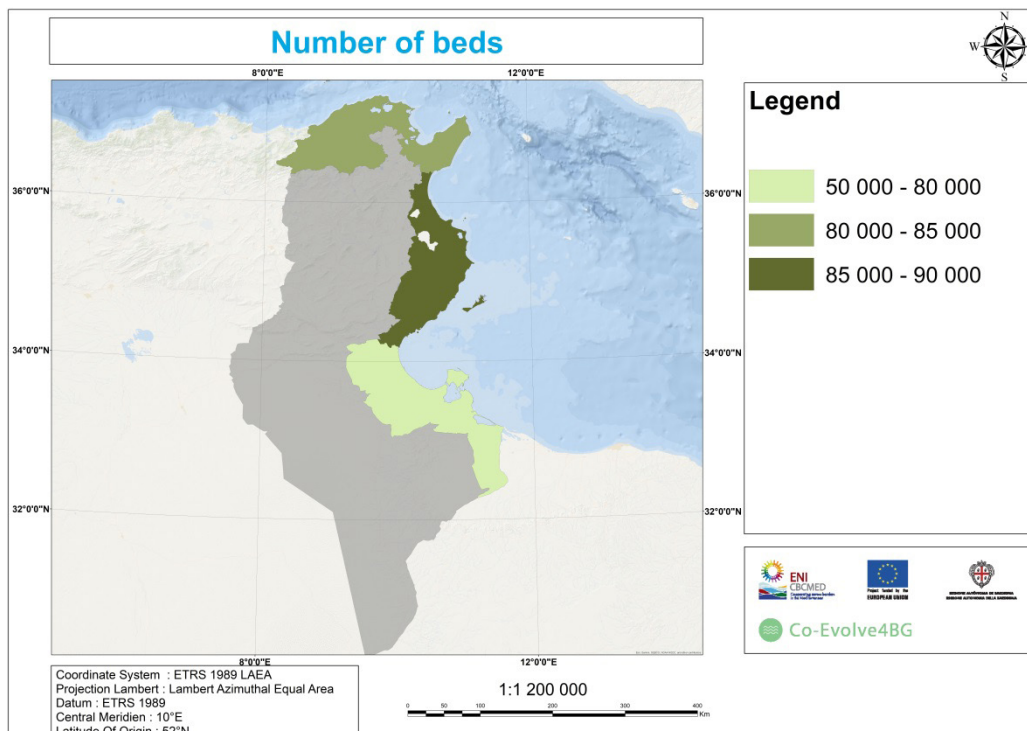


Figure 4. Regional number of beds on the Tunisian coasts (North, East and South-East), 2019

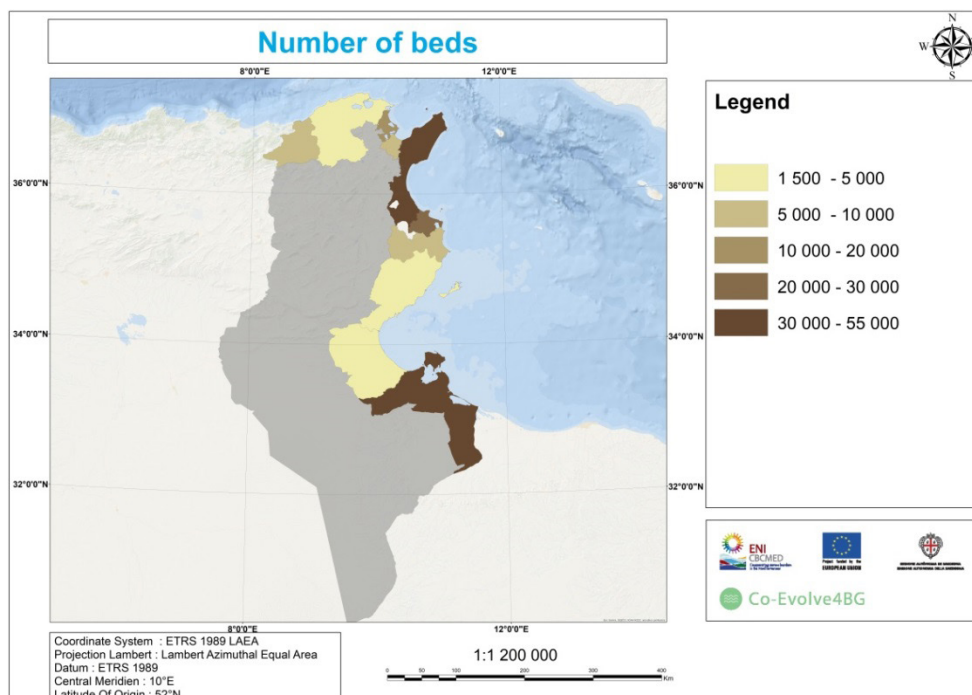


Figure 5.Number of beds per governorate on the Tunisian coasts, 2019

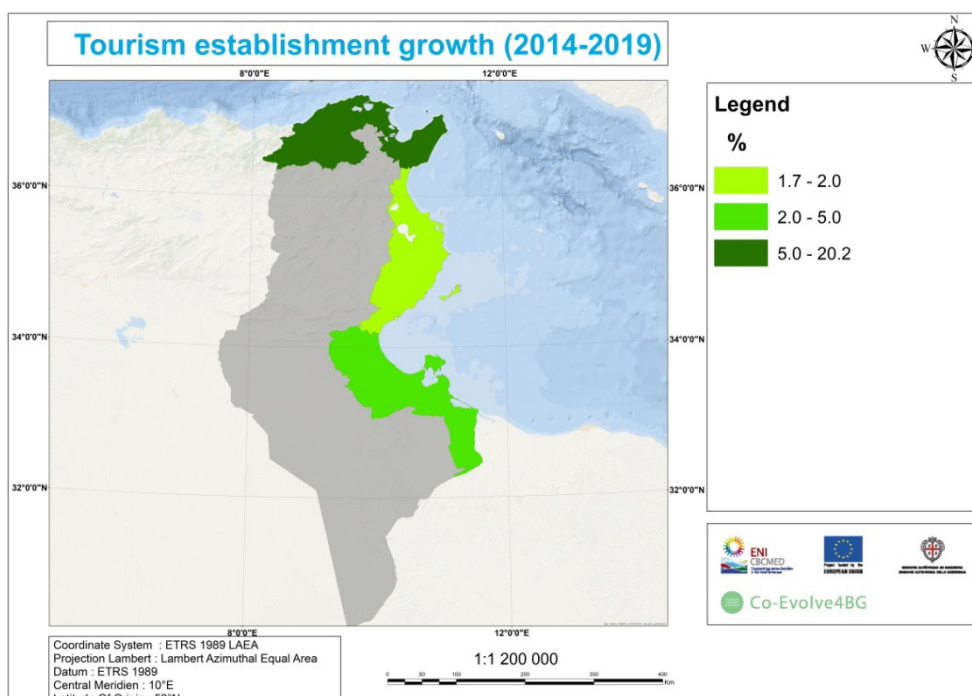


Figure 6.Regional tourism establishments, on the Tunisian coast (North, East and South-East), 2014–2019

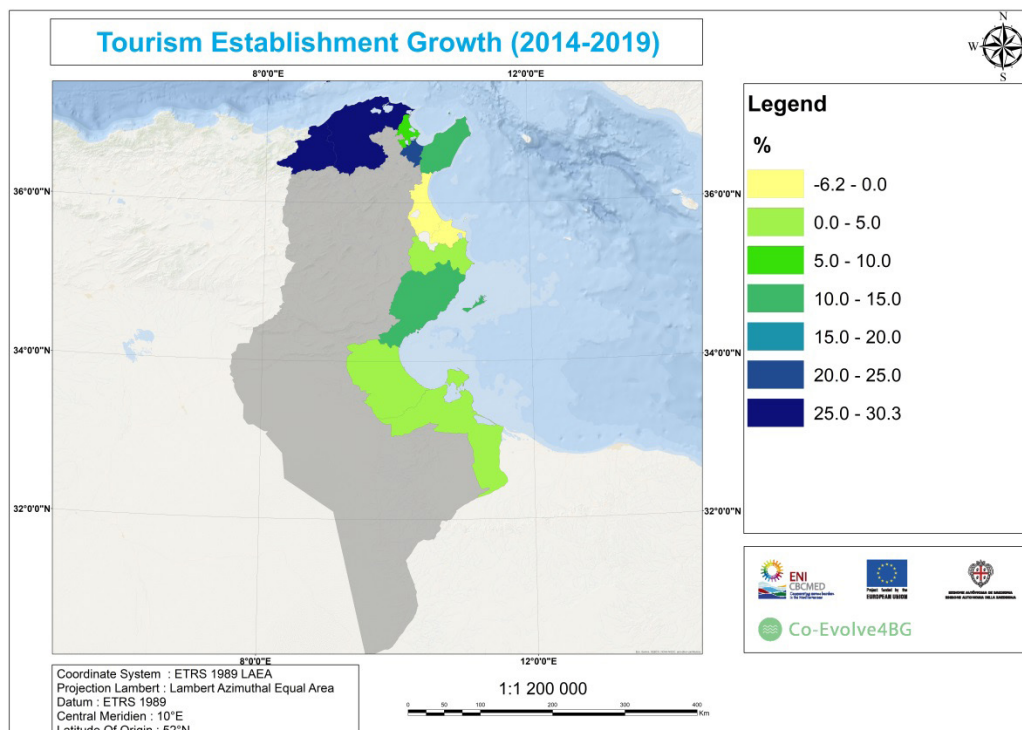


Figure 7. Tourism establishments' growth per governorate, on the Tunisian coast, 2014–2019

According to the Tunisian National Tourist Board (2019), the tourism sector was marked in 2019 by a clear growth observed compared to 2018, at all levels (Figs. 7–10):

- Tourist arrivals: 9,429,049 (+13.6%).
- Overnights spent in hotels: 30,018,511 (+10.9%).
- Touristic receipts in foreign currency: TND 5,628 million (+35.9%) or € 1,713 million (+29.4%).

In 2019, a reference year, Tunisia received 7,985,000 global entries from non-residents, not counting the 1,445,000 Tunisians residing abroad. Thus, the number of global touristic overnight stays reached 30,018,511, which means that the tourist who comes to Tunisia spends an average of 5.4 nights (Figs. 8–15). Thus, the average occupancy rate is 44.6%, if national hotel capacity is 236,015 beds. Touristic receipts in foreign currency are evaluated at 5,628.2 MDT (TNTO, 2019).

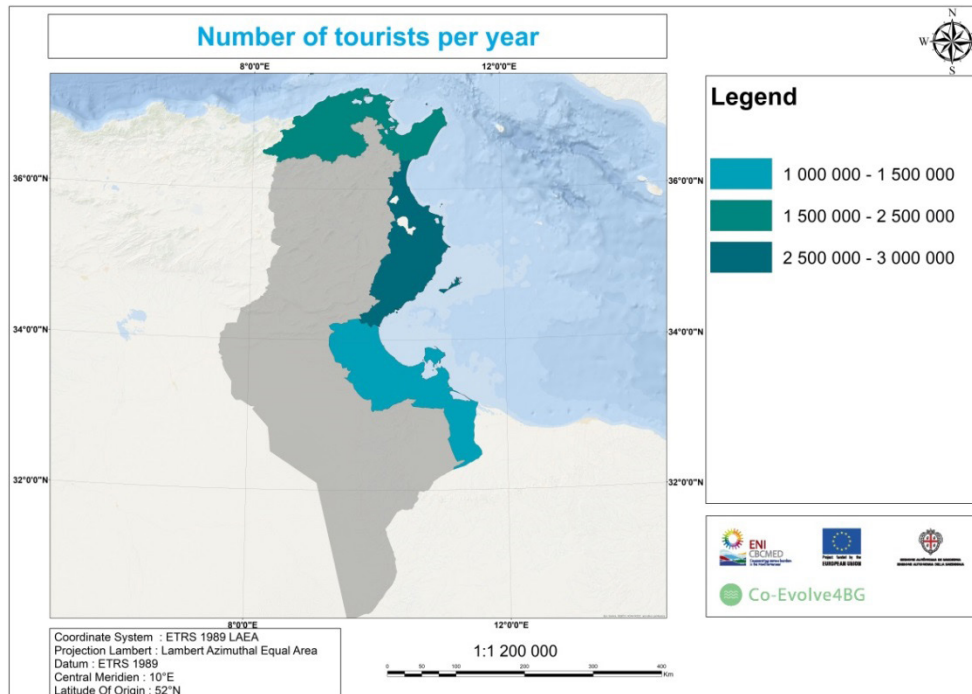


Figure 8.Regional number of tourist arrivals, on the Tunisian coast (North, East and South-East), 2019

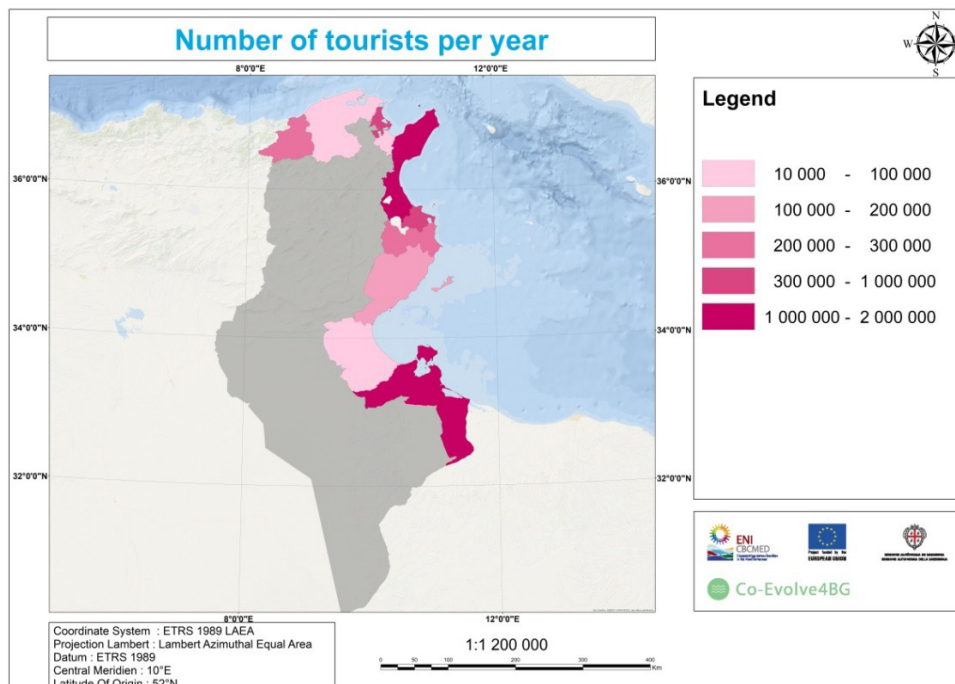


Figure 9.Number of tourist arrivals per year and per governorate, on the Tunisian coast, 2019

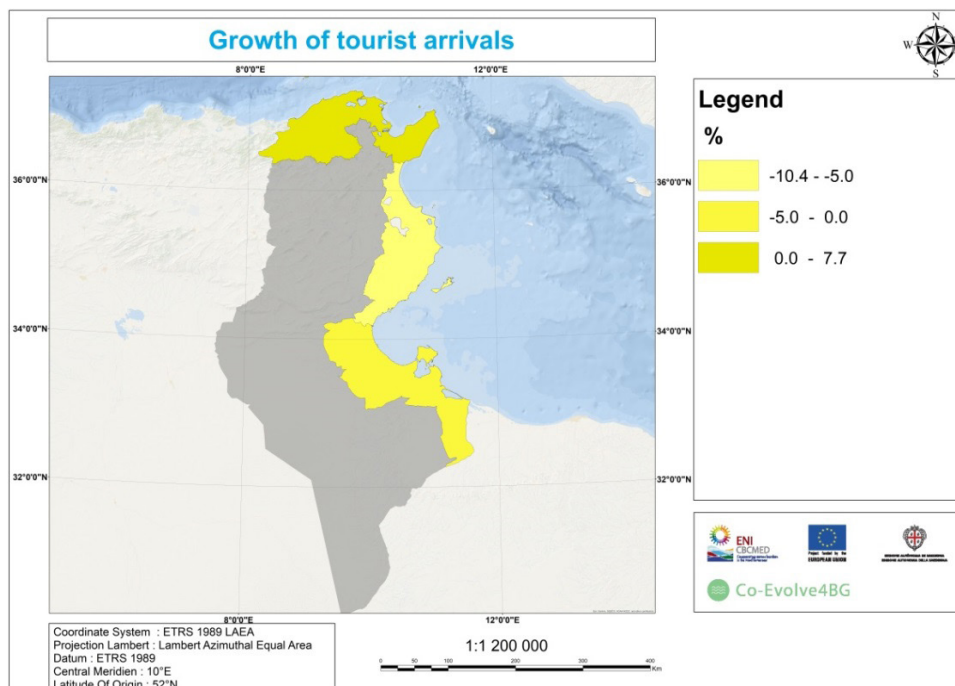


Figure 10.Regional growth of tourist arrivals, on the Tunisian coast (North, East and South-East), 2014–2019

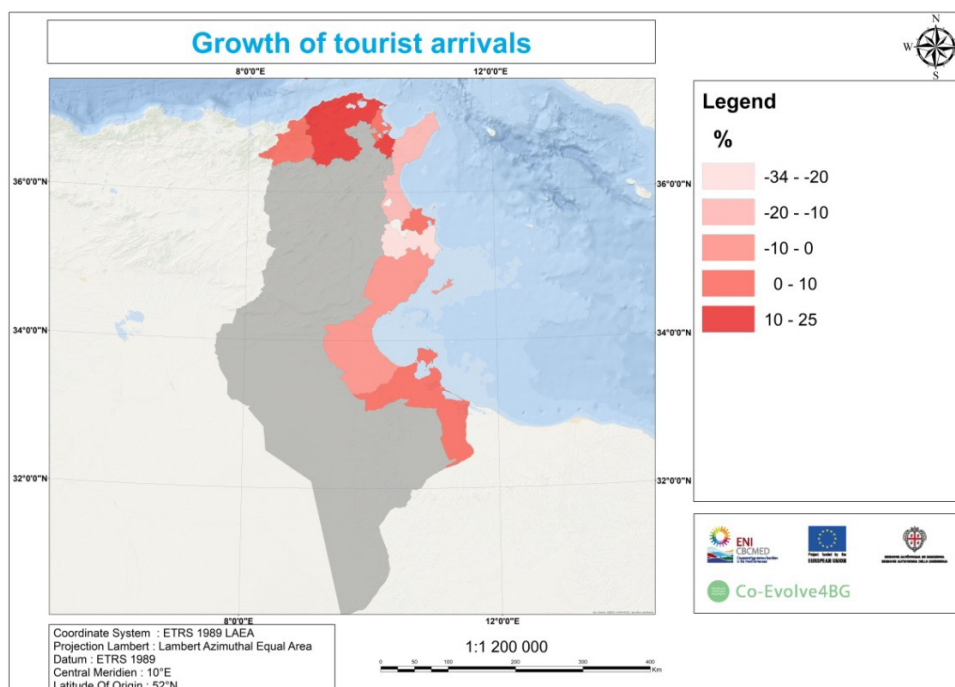


Figure 11.Growth of tourist arrivals per year and per governorate, on the Tunisian coast, 2014–2019

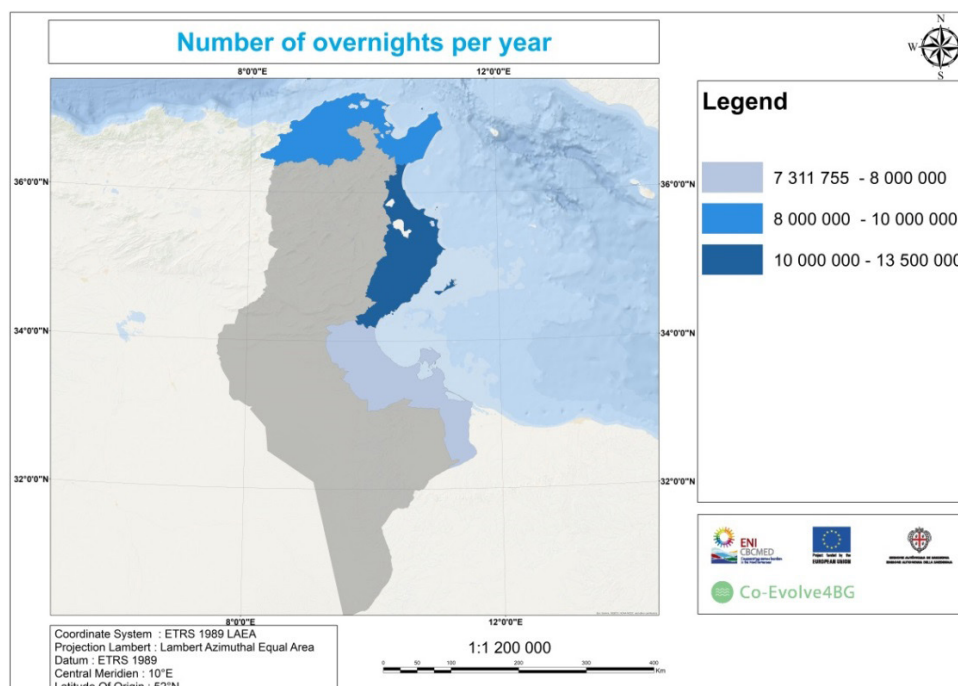


Figure 12.Total number of overnight tourists stay (day) per region (North, East and South-East) and per year in Tunisia, 2019

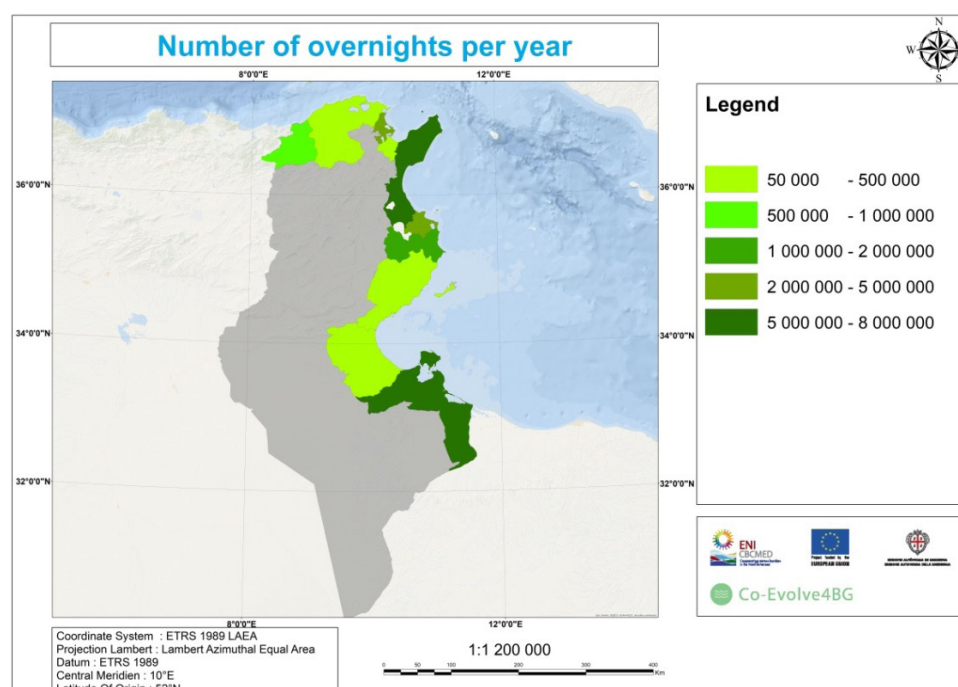


Figure 13.Total number of overnight tourists stay (day) per governorate and per year in Tunisia, 2019

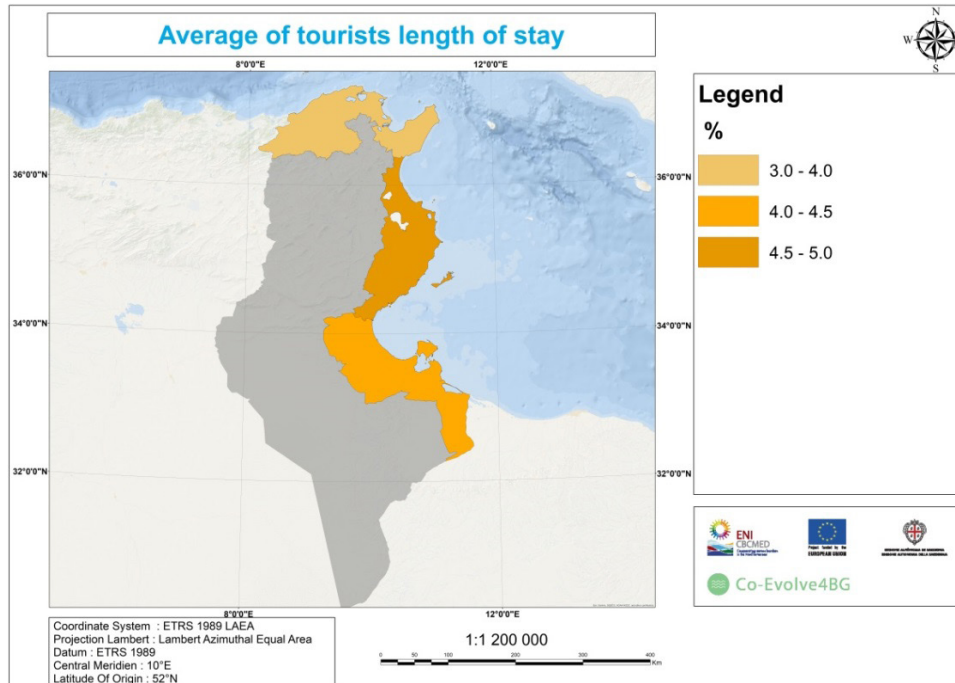


Figure 14. Average tourist length of stay (%) per region (North, East and South-East) in Tunisian coasts, 2019

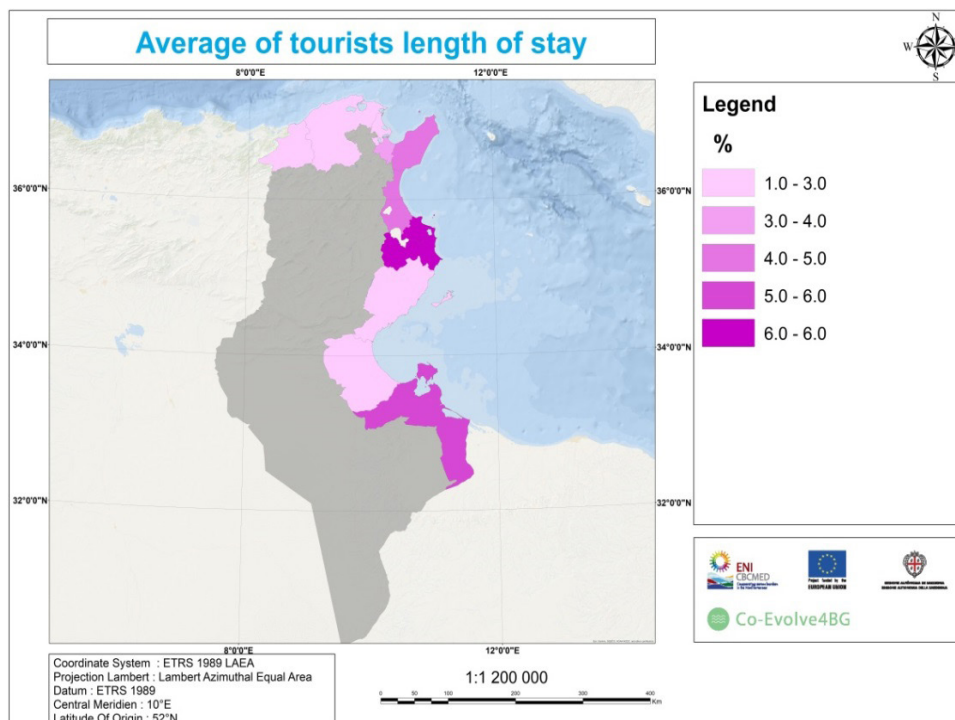


Figure 15. Average tourists' length of stay per governorate in Tunisian coasts, 2019

FTH mentions that 91% of European visitors go to hotels, contrary to North Africans (only 25%) or Tunisians residing abroad (only 4%). Details of statistics relating to touristic frequentation, in 2019, are appended in annex 1 & 2 at the end of this document.

In southern Mediterranean basin, Tunisia (9,429,049 global entries) occupies 4th place after Turkey with 45.1 million tourists, which is in first place, followed by Egypt with 13.6 million tourists and Morocco with 13 million tourists. On the one hand, it is ahead of Palestine with 2951216 entries, then colonized Arab lands with 2,799,000 and Algeria with 1,710,000 entries. On the other hand, Libya only received 34,000 tourists and no figures are available for Syria.

Tunisia was one of the main destinations which started to market beach tourism in the Mediterranean for European markets from the 1950s onwards. However, in recent years, Tunisia has made less progress than other Mediterranean destinations such as Turkey and Egypt (Table 1).

Table 1. Overall tourist arrivals by country (in thousands)¹

Country	1994	1999	2019
Egypt	2,356	4,489	13,600
Morocco	3,465	3,950	13,110
Tunisia	3,856	4,880	9,429
Turkey	6,033	6,800	45,100

Tunisia has gone through several cyclical and structural crises which have made it vulnerable compared to other competing destinations: security crises linked to Djerba attack in 2002, political revolution of January 14th, 2011, as well as Bardo and Sousse attacks in 2015, have seriously shaken the touristic sector through the drop in the occupancy rates of hotel units. Since then, the development choices of the touristic sector have been increasingly criticized, because of their weaknesses, in terms of revenue and territorial traceability: almost zero contribution to State coffers, high indebtedness of hotel promoters and craft industry crisis in touristic towns.

The year 2017 marks Tunisian rebirth as a destination, which has resulted in an upward and encouraging trend, compared to the reference year 2010. Thus, 2018 is part of this positive and promising continuity and ends on a year of real recovery with an increase in arrivals at the borders of non-residents with 17.7%. Despite this recovery, Western Europe classic markets have not yet recovered their places at podium top, as was already the case before January 14th, 2011, revolution (Fig.16). They are still outstripped by North African markets 52.8%. However, European markets contributed with 29.6% of global arrivals, while Tunisians living abroad recorded 15.3%.

1

Geotourweb. Retrieved from http://geotourweb.com/nouvelle_page_34.htm

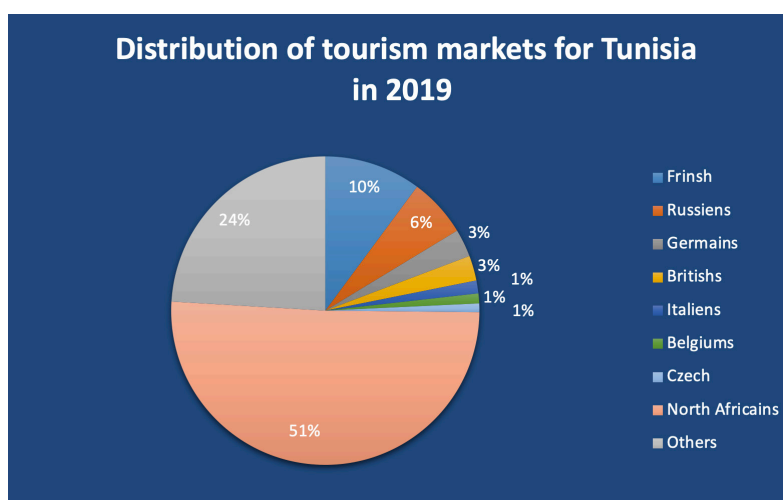


Figure 16. Distribution of tourism markets for Tunisia, 2019(TNTO, 2019)

The first tourist motivation for tourists visiting Tunisia remains seaside resorts, especially for Western tourists who spend more nights there than North Africans. As a result, the seaside areas of Djerba-Zarziss, Sousse, Nabeul-Hammamet and Monastir have seen more touristic arrivals and overnight stays in hotels (Table 2). Consequently, the coastal environments of these seaside areas, which are fragile, are under more pressure.

The international airports are Tunis-Carthage, Monastir-HabibBourguiba, Djerba-Millita, Tozeur-Nafta, Sfax-Thyna, Tabarka, Gafsa El Ksar, Gabes-Matmata and Enfidha. Thanks to this infrastructure, Tunisia is positioned among the most accessible touristic destinations in the southern Mediterranean basin.

In terms of performance of these airports, Tunis-Carthage is in first place with 6,441,886 passengers, Djerba-Zarziss is in second place with 2,014,589 passengers and Monastir-HabibBourguiba is in third place with 1,591,874 passengers and Enfidha-Hammamet in fourth place with 1,443,677 passengers. Most European tourists pass through these airports (96.7%), while most North African tourists, especially Algerians and Libyans, pass through land borders (86.5%). Besides, 79.37% of the Diaspora prefers air transportation to visit their home country.

Table 2. Arrivals by category of transportation (TNTO,2019)

	Air	Land	Sea
Europeans	2,698,819	3,352	86,535
North Africans	656,429	4,304,843	15,554
North Americans	46,378	171	617
Middle Eastern	47,447	686	612
Diaspora	1,146,538	13,824	284,171
Others	153,432	770	15,249
Total	4,702,665	4,323,646	402,738

The national company Tunisair has one of the most modern and safest fleets on the continent, with 30 aircraft in 2020. It is active in the segment of regular lines. It is also active in charter niche. Thus, in Tunisia, there are two private airline companies: Nouvel Air (11 aircrafts) and Jasmine Airways (2 aircrafts).

Since the entry into force of open sky agreement with European Union on January 1st, 2008, Tunisian companies have been facing strong competition. Indeed, the introduction of this regime will totally liberalize air transport and abolish the distinction which still exists between national and foreign flags. Consequently, all European companies, including low-cost and charter companies, will be able to serve all the lines of the Tunisian market. Tunisair-Express, a subsidiary of Tunisair, is trying to move towards a low-cost scheme to respond to competing European companies such as Air France subsidiary, Transavia.

Tunisia continues to benefit from its dominant position as one of the most popular Mediterranean seaside holiday destinations for Western Europe. It receives large flows of visitors interested in beaches. Yet, it has not managed to improve or exploit other types of tourism, such as cultural and congress tourism which are already well developed in competing destinations such as Morocco and Egypt.

Tabarka would experience major development problems. Airline companies have abandoned its airport, including national companies, although this region could be the leader of “green tourism” in Tunisia. As a result, the TOs appear to be increasingly reluctant to include this destination in their catalogues. The same air service problem explains the relatively low occupancy rate of hotels in Tozeur. Indeed, it is difficult for airline companies to offer flights to this destination because it is mainly in demand for short weekend stays (from Thursday to Sunday). Faced with this demand, companies are confronted with the phenomenon of “empty legs” (e.g., the level of demand does not currently make it possible to fill the return flights on Thursdays).

III. Characteristics of Tunisian tourism

III.1. Seaside tourism is the dominant product

Seaside resort remains the dominant holiday model, although the types of stay are tending to diversify. Thus, seaside tourism is often mass tourism. The quality and the beauty of beaches and seas are the main selection criteria for Tunisia. But in general, the evolution of the touristic product expectations of different outbound markets highlights the erosion of traditional seaside holidays limited to the “sun & sea” formula.

For international demand, there is a craze for more active holidays, integrating more diversified activities, based on the discovery of the natural environment, culture heritage and local cultural traditions (*e.g.*, festivals), itinerant activities (*e.g.*, excursions and organized circuits) and sports activities (*e.g.*, diving and spa). There is also a trend towards a demand for accommodation that is more integrated into the local fabric (*e.g.*, typical architecture, small hotels, guest houses and cottages). Moreover, seaside touristic areas in Tunisia extending along the coast have not generated inland development. Accommodation there is composed in the very great majority of hotels. The positioning appears to be high-end, but the services correspond, according to international standards, to a lower level that can be described as medium. However, customers are increasingly interested in more flexible stays, giving them a feeling of freedom to choose the areas to which they attach great value for the success of their holidays. Except for El Kantaoui (Northern Sousse), resorts lack entertainment and conviviality; there are few restaurants outside hotels offering local gastronomy. Enriching today the Tunisian seaside products has become a necessity to enhance the image and positioning of the country.

III.2. Tourism dominated by TOs

In terms of product, the best-selling type of stay is a weekly (8 days/7 nights) half-board stay with a departure on Saturday or Sunday. These stays are mostly sedentary stays, as itinerant tours are not in great demand. Indeed, most touristic packages are currently sold by TOs. The latter dominate touristic flows to Tunisia with a rate of 88%. The marketing dominated by TOs “leads to significant downward pressure on prices which could explain the deficiencies of the services offered in hotels in terms of services, catering and activities”. The spirit of Tunisian hoteliers is characterized by a high degree of independence which reveals little professional solidarity, but more of a spirit of competition. The profession is therefore poorly organized in the face of the various difficulties it encounters, especially in coping with the price dumping imposed by the TOs.

III.3. Seasonality of Tunisian tourism

Tourism in Tunisia is marked by a strong seasonality which reflects European clientele behavior, its main market, and the characteristics of the offer, highly concentrated on the coast. Thus, the study of the occupancy rates per month reveals a high season which lasts from June to August, corresponding to seaside product and a shorter low season, from September to March which does not have sufficient diversification products. Also, a second short high season is usually observed in the second half of December regarding winter and Christmas holidays. However, there is a difference in seasonality from one touristic region to another. In fact, the southern region is more appropriate to visit during spring (March and April) where several festivals are scheduled into this season; while the ideal time to visit the northwest region is usually the winter season as it is the only area where visitors can see snow.

85% of European tourists visited Tunisia at summer season and only 15% came at the low season. Unlike Europeans, both North Africans and Tunisians residing abroad do not prefer touristic season. They come in almost similar numbers in high and low seasons.

In Fig. 18, we can see a similarity in seasonality for the pilot touristic areas: Sousse, Monastir and Djerba-Zarziss. To this end, a high season is during the two summer months of July and August, a first average spring season between March and June and a second autumn season from September to October. As a result, beaches of the seaside touristic areas are under great pressure during the summer season, especially during July and August.

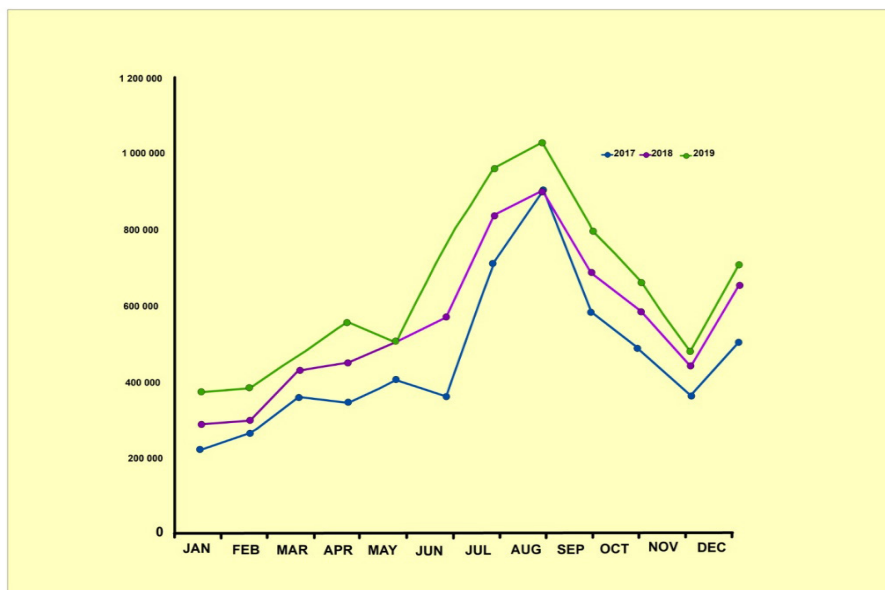


Figure 17. Border arrivals of non-residents per month in Tunisia, 2019
(TNTO, 2019)

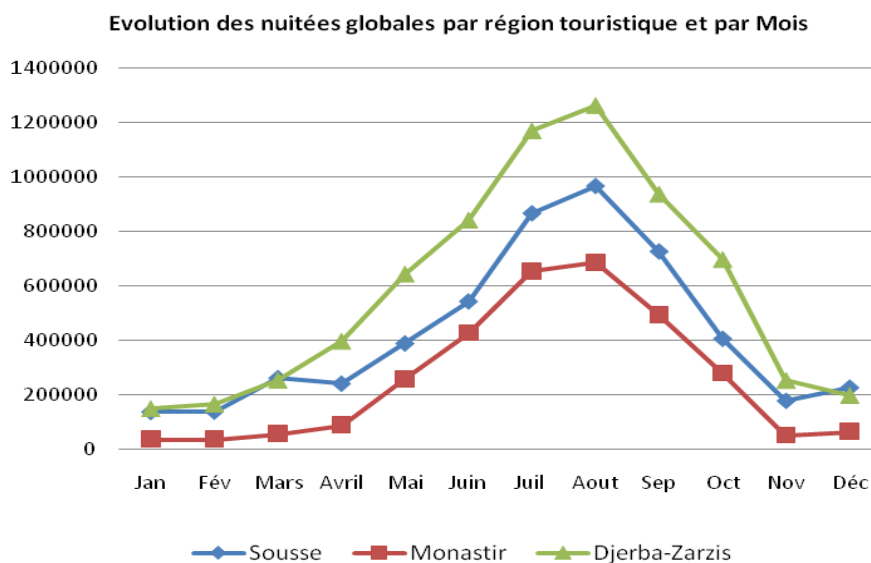


Figure 18. Evolution of global overnight stays per tourist region and per month (TNTO, 2019)

III.4. Destination and life cycle

The most elaborate definition of the word destination is provided by the Encyclopedia of Tourism (Jafari, 2000): “Destination, as distinct from origin or market, refers to the place where tourists intend to spend their time away from home. This geographical unit visited by tourists can be an autonomous center, a village, a town, a city, a region, an island, or a country. Furthermore, a destination may be a tour or even a moving destination such as a cruise”.

Indeed, it considers destination as a broad, diverse, and complex concept. However, this definition emphasizes geographical aspect, the aspect of functioning in economic (market, product) and psychological (consumer motivation) terms.

The life cycle model of touristic destinations produced by Canadian geographer Richard Butler (1980) and taken up by other specialists (Foster and Murphy, 1991) shows that a destination, once ‘invented’ by a group of pioneer tourists, goes through several phases: take-off, growth, then maturity and finally senescence (or eventual revival). According to Butler’s model of cycle (1980), tourists would exert their weight (impact or deformation) on space. For this purpose, the phases are defined in relation to touristic frequentation level. In relation to emerging destinations, competition pressure is not yet considerable, technologies are improving, but the best strategy has not yet been defined. First entrants have some advantages over the next ones. For example, reputation effect can bring the advantage of differentiation; short experience effect brings the advantage of low-cost. Entering the “development” stage, there are many new touristic destinations. A clear feature of this stage is competition emergence through which some destinations become leaders. Competition opposes and combines at the same time. A good knowledge of & understanding of the strategies adopted by competitors is very important. The general strategies of the destination are:

- Resource rationalization.
- Innovation competence strengthening.
- Increase tourism product range, branding, and specialization.

A declining destination is characterized by declining profits, product ranges, advertising, and competitors. In this case, four strategic choices are proposed:

- Abandon the destination immediately.
- Focus on certain profitable segments to restrict spending.
- Take advantage of a profitable segment after the departure of most competitors; and/or
- Encourage competitors' departure by making them uncompetitive by lowering prices.

Indeed, for exploration, involvement, development and consolidation phases, the absolute volume of visitors is still increasing, but not the growth rate. In the first two periods, the growth rate increases rapidly, while the consolidation phase corresponds to its slowdown. Growth rate becomes zero in stagnation phase. After this stage, a touristic destination which does not renew itself is doomed to disappear and therefore finds another function. There is therefore no irreversibility of process, as can be seen in obsolete touristic destinations or destinations closed to tourism (Fig.19).

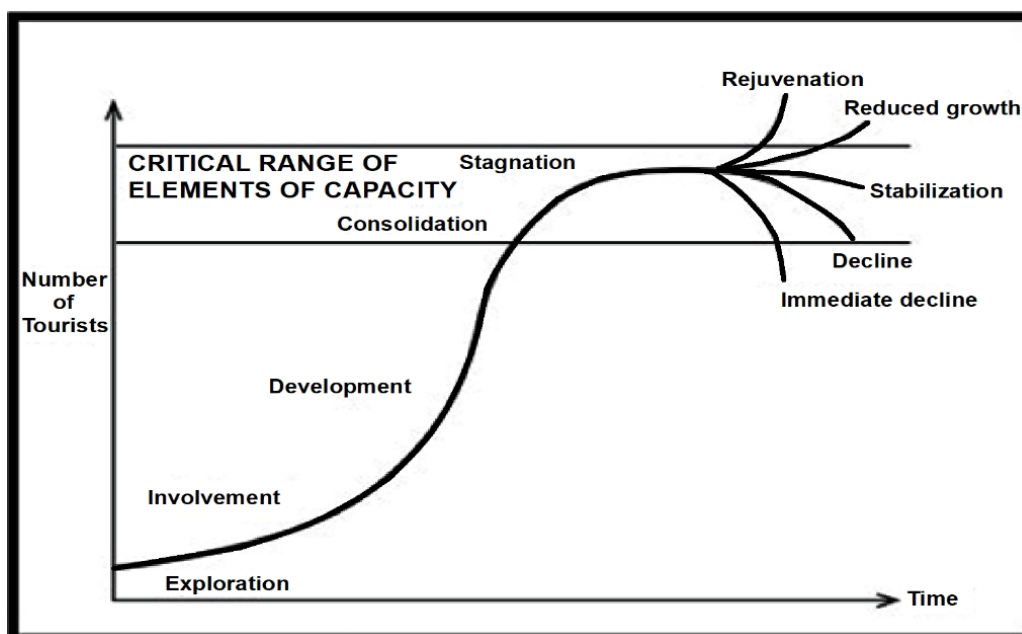


Figure 19. Life cycle of the tourist destination(Butler, 1980)

In the Tunisian case, it is very difficult to determine tourist areas which have recorded a recovery since 2017, following the political instability of the country after the revolution of January 14th, 2011, the attacks in Bardo and Sousse which left several dead in 2015.

However, this model does not only describe a growth curve. It also proposes an interpretation of population-limit or carrying capacity notion. Researchers have not defined tourist carrying capacity threshold. In fact, this capacity calculation is a major problem. Its difficulty lies in the ambition to consider simultaneously the physical, ecological, socio-psychological, economic, and cultural parameters (Deprest, 1997). To show the complexity of this theory, Krippendorf(1977) noted that “despite improved methods of approach, it will never be possible to determine the carrying capacity of a site objectively or even mathematically”.

However, the idea that tourism activities effects are proportional to the causes (impacts) has been put forward. Such an interpretation uses an example borrowed from physics. Up to a certain point, when the constraint is removed, the object returns to its original form. In contrast, from a threshold of elasticity, even in an absence of stress, it remains deformed. On this physical model, the cycle of Butler(1980) induces two propositions:

- The impact would be proportional to the number of tourists, i.e., when the number of tourists is low, touristic space remains unchanged; on the contrary, a higher number of tourists induces important modifications; and
- Beyond a certain limit, there is irreversibility. In other words, a tourist destination has a resistance limit to pressure, beyond which it deteriorates. The load-bearing capacity therefore plays the role of elasticity and rupture thresholds.

There are two solutions to increase the level of limit-resistance of any tourist destination. The most obvious one is to reduce the number of visitors. The management of tourist flows is mentioned for two reasons:

- It is a means of providing tourists with better visiting conditions by avoiding saturation phenomena,
- It is a means of better control and thus better protection of sites against the undesirable consequences of tourist hyper-frequentation (e.g., pollution, degradation of flora and fires).

If the level of visitor numbers is to be maintained or even increased, the number of visitor impacts must be reduced, or the resistance of the destination concerned must be boosted. For example, the establishment of strict pathways prevents walkers from making new, untimely gaps in vegetation. The creation of related sites and the resulting relative dispersion can alleviate pressure on the main site by spreading the number of visitors over space and time (Fig. 20).

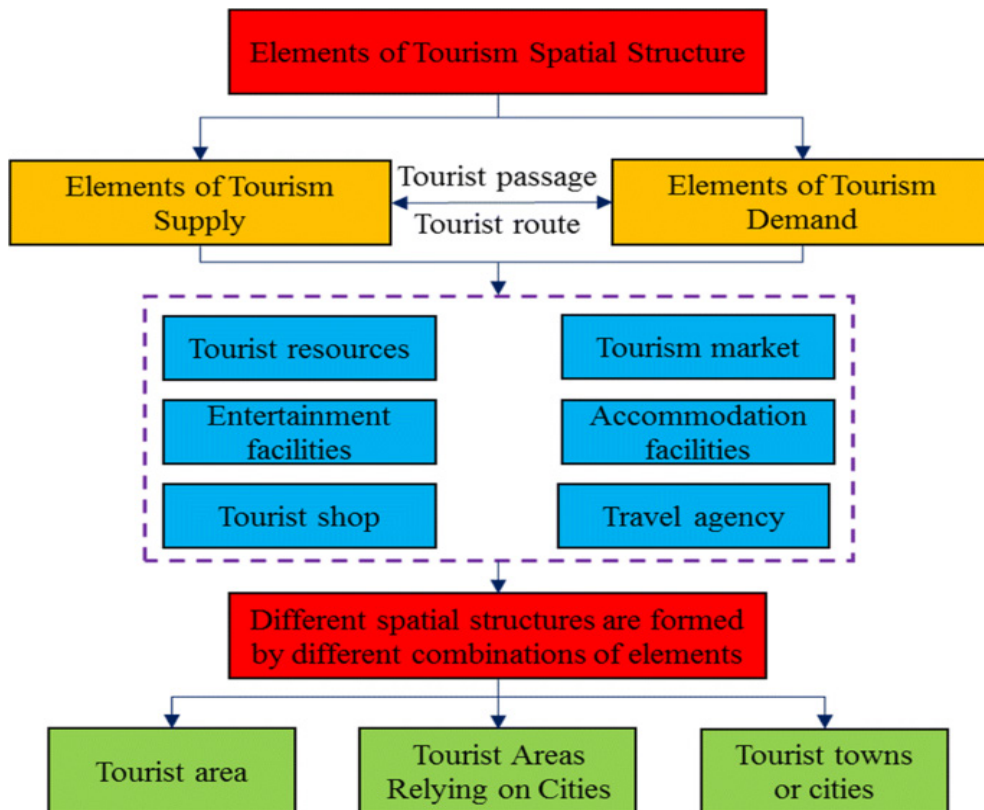


Figure 20.Types of flow management in tourist destinations(Butler, 1980)

IV. Carrying capacity and capacity management

IV.1. Carrying Capacity (CC): Definition and assessment

The concept of Carrying Capacity (CC) emerged in the early 1960s as an attempt to set limits on the maximum number of visitors a tourist attraction or destination could handle. Despite the different approaches in definitions and ways of measuring CC, the concept of carrying capacity is based on the perception that tourism cannot develop indefinitely in a particular region without causing irreversible damage to the local system (Coccossis and Mexa, 2004).

The debate on tourism sustainability has been going on since the 1990s, which has led to the linking of the two concepts, namely that of sustainable tourism development and that of carrying capacity given that both concepts share the idea that sustainability itself implies a limit (Jurado *et al.* 2012).

There have been many attempts to define carrying capacity according to the perspective of each study. In this respect, Coccossis and Parpairis (1992) suggested an approach to tourism capacity that integrates ecological, economic, social, cultural and resource availability factors. Thus, UNWTO defines the carrying capacity, as adopted in 2003 by PAP Priority Action Program (2003; www.unwto.org/technical-cooperation), as “the maximum number of people who can visit a touristic destination at the same time”. They are done so without leading to the destruction of physical, economic, or socio-cultural resources and without leading to an unacceptable reduction in the quality of visitor satisfaction.

Thus, the concept itself is generally accepted at the theoretical level. However, in operational terms, particularly in its use as a management tool, CC faces skepticism and considerable difficulties. These difficulties explain limited experience with the application of the carrying capacity in European touristic destinations. However, growing concern about the development of sustainable tourism underlines the importance of a threshold in tourism activities and the need to determine the capacity of local systems to support sustainable tourism (Coccossis *et al.* 2002).

The capacity of these can be defined by different limits based on three main groups of indicators reflecting their parameters: (a) physical-ecological, (b) social-demographic and (c) political-economic. Since there are variations between the different uses and types of destinations, the carrying capacity should be considered both use-specific and site-specific. In this context, different weights should be assigned to the above dimensions in different destinations, depending on the characteristics of the locality, the type of tourism and the tourism-environment interface (Coccossis *et al.* 2002).

Recognition of factors that modify and diversify touristic destinations is of vital importance in assessing carrying capacity limits and developing sustainable destinations and planning strategies. Different destinations face different problems and require more targeted policy measures. Especially in the Mediterranean, six types of destinations seem to attract most tourist flows: coastal areas, islands, protected areas, rural areas,

mountain resorts and historic settlements. Policy issues and carrying capacity assessments should focus on different aspects according to the type of each destination and its particularities (Coccossiet *al.* 2002). These destinations, which tourism can impact at different levels especially through their frequentation, influence the potentialities of these sites in different ways leading to different problems directly related to CC of these destinations.

According to Castellani and Sala (2012), there have been a few attempts to make the concept of CC operational and produce results that can be applied in the planning process. Several models representing practical tools for decision-making frameworks have been developed with the aim of producing quantitative assessments of CC limits in tourist destinations, such as Visitor Impact Management (VIM), Visitor Experience and Resource Protection (VERP) and Tourism Optimization Management Model (TOMM). The main challenge of tourism CC is the development of a model that can be applied in all touristic areas and allows the selection of indicators and the definition of standards according to each specific destination.

Finally, it is stressed that tourism CC should be considered as a management and planning tool for tourism development and not as a numerical limit. CC limits do not necessarily have to be defined in advance and may change according to the set objectives and the sensitivity of the study areas. In addition, particular attention should be paid to spatial scale definition in CC assessments. CC scale should be limited from medium to small-scale areas. Although in some cases, CC may concern entire areas such as islands or river valleys, it may also vary in different parts of the same area.

IV.2. Carrying capacity management in Tunisia

For a given sector of the coastal fringe (*e.g.*, seaside resort, beach, tourist area, marine and coastal protected area, and coastal wetland), once the “real capacity” has been established, then tool implementation in the field remains. Limiting factors related to administrative management issues (*e.g.*, technical, budgetary, service, administrative, legal and security) need to be re-examined. This process is also called “effective reception capacity”. These factors may considerably reduce the number of daily visitors already being determined.

This type of analysis cannot be weighed precisely. What is important is to know the administrative difficulties and to overcome them as much as possible to improve the management of a given site, especially beaches or more generally seaside resorts and touristic areas.

In this context, management aspects that need to be considered for managing the beaches CC for recreational purposes have been listed in accordance with guidelines established by Viñalset *al.* (2017).

IV.2.1. Technical limitations

Irregularity of spatial units: In general, beaches are different; not uniform, depending on their geo-biological, physical, and spatial characteristics. This situation requires a differentiated approach when carrying out planning and management tasks. From a technical point of view, this implies an additional difficulty which repeatedly prevents particular attention to be paid to each problem. As has been observed throughout the work related to CC assessment on coastal fringe and especially on beaches, strict protection measures are proposed for all sectors of the beach, to ensure at least some erosion control and, if possible, regeneration of ecosystems of a target beach. These technical measures undoubtedly imply strict control of activities carried out in the area (staff of security forces) and economic investment in restoration projects.

Lack of physical protection for certain elements (fences and physical barriers): On beaches or elsewhere in the coastal wetlands, physical barriers that should protect areas of ecological value are absent. Some sub-ecosystems, such as dunes, are in a highly vulnerable situation to road traffic and visitor trampling. These ecosystems will remain under threat if these physical protections are not in place. On many beaches, it is common for dune areas to be protected by deterrent barriers (a simple rope); the reason of which is indicated (information signs) to users. This type of action should be accompanied by awareness campaigns.

Lack of basic and recreational facilities (trails, signage, and deterrent parking areas): On a given beach, especially beaches subject to heavy tourist and summer traffic, there is a lack of information and interpretation panels.

The absence of an information board. This is a missed opportunity to better organize traffic and visitor flow. This is also a missed opportunity to provide visitors with indications on expected attitudes and behavior (code of ethics and deontology), on the risks and dangers of the sea and beach, on key facilities location such as parking areas and first aid post and to provide information on certain aspects of beach management. This is an additional missed opportunity to inform visitors about the international value of these ecosystems and then to create a strong identity that develops a sense of pride in local communities. The lack of interpretive panels deprives public knowledge and appreciation of coastal wetlands and heritage sites. It should be noted that there is no touristic offer of guided interpretive tours in wetlands; therefore, interpretive signage is the main public awareness facility, and subsequently the design and implementation of a signage system for wetlands, beaches and heritage sites is necessary.

Lack of impact studies: There is a lot of high-quality information available on the hydro-morpho-dynamics of a coastal zone and adjacent coasts, but precise data on anthropogenic activities effects on ecosystems are needed. This type of information is very important for decision-making in site management and should be shared by all the administrations responsible for a given site. During this CC evaluation and elaboration for recreational purposes, some scientific and technical studies related to environmental impacts on coastal touristic areas and beaches (e.g., cumulative environmental impact studies, analysis of sea water quality, flora affection, eutrophication and degradation of wetlands, effects of climate

change on coastal areas, environmental indicator, and conservation standards) were identified as necessary. This type of study needs to be addressed in short term, as ecosystems evolution is occurring at a high speed and some of the adverse effects on property and people could be avoided if these studies were available.

Lack of preventive and corrective measures: About corrective measures, it should be noted that the actions detected are related to groins construction to reduce coastal strip erosion, although these measures did not solve the problem, but caused it to drift down stream. In addition to corrective measures that need to be urgently applied, preventive measures must also be considered to preserve the ecological values of coastal ecosystems.

Inappropriate user allocation model: The distribution of users over a given range is conditioned by available road access so that polarization is detected at its extremities. Depending on the sectors of a given beach or coastal fringe (on a local scale), space is available, and users are freely distributed between commercial concessions and open spaces. For vehicle circulation and parking, a demarcation would be necessary to organize their parking on the beach. There is an urgent need for public administrations to develop planning and management tools to preserve beach and its users' safety.

IV.2.2. Budgetary limitations

Limited financial resources for public use: There is no clear information on public investment amount in wetlands and beaches. But if it exists, it is insufficient. However, it should be borne in mind that the beach generates significant revenues from permits for commercial concessions and parking fees (under the Beach Occupancy Plan). Beyond the beach cleaning problem (often carried out seasonally as a mechanical cleaning program by APDC and/or coastal municipalities), greater investment is needed in life-saving and other security and emergency services.

Lack of financial means for maintenance and restoration: Ecosystem conservation and restoration is necessary because of their degradation state. International funding should complement regular public funds to undertake restoration work by the APDC's Coastal Protection Program (CPP). However, ecosystem restoration only makes sense if the uses and attitudes of beach visitors are changed. In the case of conservation and restoration projects of beaches and their natural resources, it would be interesting to make them visible to the public.

IV.2.3. Limitation of services

During summer season, which is beach use peak period of touristic and seaside areas (generally from 10:00 am to 06:00 pm), given the large number of users on the coastal fringe, it would be necessary to mobilize many more rescue personnel to ensure bathers' and other users' safety by National Guard and the police (rescue police and touristic police in touristic areas), patrol beaches and control traffic at congestion points. But due to the coastline inherent characteristics, these actions are often insufficient, and this is in view of the:

- Lack of staff to control access: Access roads and beach entrances need more control, so that in case of traffic congestion or beach saturation, staff are on hand to deal with these problems properly. Congestion problems should be resolved upstream of places where they occur by restricting vehicle access as soon as car parks are saturated. Consequently, it would be necessary to regulate traffic (with more staff) from several kilometers before beaches, tourist areas and seaside resorts.
- Lack of public transport services to beaches: It will be necessary to create a shuttle service (public or private) taking users to beaches. A reduction in the excessive number of vehicles on beaches is necessary, with users having to access them by public transport. This would be an opportunity to welcome beach users and contribute to local economy.
- Lack of parking areas near beaches and in seaside towns: Municipalities in localities most frequented by summer seaside resorts should undertake necessary procedures, including investments, for the implementation of this service.

IV.2.4. Administrative limitations

Lack of implementation of coastal zone management plan: For some coastal cities with recognized summer and seaside activities, coastal management plans have been prepared by APDC. These plans do exist; however the scope of their application is not known. It would also be appropriate for APDC to prepare and implement MGP for these localities. Specific studies for tourist frequentation evaluation and CC of beaches and seaside resorts can constitute a solid basis for the preparation of this BOP.

Lack of communication and coordination between different administrations: Most often beaches are areas whose management is made complex by different competent administrations: Ministry of Agriculture, Directorate of Water Resources and Fishing, Ministry of Local Affairs and Environment, Ministry of Public Works, Housing and Town and Country Planning, The Interior Ministry, Ministry of Tourism and Handicrafts, Ministry of Cultural Affairs, Ministry of Foreign Affairs, Governorates and Municipalities. Among these, the direct involvement of APDC and DGF should be highlighted.

The most important task of these administrations should be to set common objectives for nature conservation and local economic interests. The current coastal situation in Tunisia clearly shows the need for a coordinated and energetic intervention.

IV.2.5. Legal limitations

Lack of national conservation protection: The main limitation from a legal point of view is the lack of specific legislation for coastal wetlands. For the time being, the regulations in force are limited to the 1995 legislation of the Ministry of the Environment, Forest Code and Marine and Coastal Protected Areas Act, which primarily regulates and protects the Public Maritime Domain areas. In other words, legal protection at the highest level of national protection would be necessary as well as its rigorous enforcement.

Lack of local regulations for beaches: None of the municipal authorities mentioned the existence of municipal regulations for beach management. Municipal beach ordinances would be extremely useful from sustainable and environmentally friendly management perspectives.

Lack of restrictions in self-protection plans: One example of such plans is the emergency plans at the beach level. A self-protection plan is an indispensable management instrument, as it focuses on people's safety and health and sets limits to certain uses.

V. Conclusions

After more than 50 years of experience, Tunisia has become one of the leading touristic countries on the southern shore of the Mediterranean basin. In the absence of natural resources, tourism is today a strategic sector in the Tunisian economy. The proximity of Europe is a very important factor in tourism development in Tunisia.

Tunisia continues to benefit from its dominant position as one of the most popular Mediterranean destinations for seaside holidays for Western Europe. It receives important flows of visitors interested in beaches. While it does not manage to improve or exploit other types of tourism such as cultural and congress tourism which are already well developed in competing destinations such as Morocco and Egypt.

Tunisian tourism, which plays an important role in the Tunisian economy, needs to become richer to face international competition. It should not be content to offer a classic seaside package for a modest and little remunerative European clientele.

Tunisia remains a destination very much focused on seaside activities and lacks cultural activities and entertainment but has also a negative “cheap” image. Nevertheless, these shortcomings can be avoided with better training of management and professional staff, diversification of the product by improved exploitation of the natural, cultural, and historical resources. Thus, this prospect of diversifying the tourist product in Tunisia is justified by the negative impact of mass seaside tourism on coastal environments.

In this context, the studies relating to the evaluation of the carrying capacities and touristic frequentations in coastal areas will aim at rationalizing the management of coastal natural resources. At ensuring that everyone has the right to exploit them in an orderly manner today and tomorrow, as they constitute the natural heritage of future generations who aspire to enjoy them under the best conditions.

The results of these studies on the Carrying Capacity evaluation for recreational purposes (summer and seaside tourist frequentation) highlight the need to reduce the number of users for several over-saturated beaches and seaside resorts. In this context, for several Tunisian beaches and resorts, commercial concessions should no longer be granted systematically as beaches are receding very rapidly from the coasts, thereby endangering property, entrepreneurial investments and even people’s lives. All that remains to be done here is to try to contain and slow down these phenomena of coastal degradation and to use resources in a way that produces the least impact, so as not to accelerate its destruction. As far as vehicles are concerned, it has been demonstrated that they are a factor of degradation and a limiting factor in the use of beaches due to their inappropriate nature from an environmental point of view and due to their incompatibility with the carrying out of quality recreational activities.

In addition to the alarming illegal nature of several initiatives for coastal fringe exploitation (often with significant damage to the environment, landscape and surrounding coastal ecosystems), these coastal sites are indeed extremely fragile and present spaces on which complex hydro-geomorphological mechanisms for the coastal zone in the

background are all based. Thus, coastal areas in direct contact with the coastline, in particular beaches, must be protected effectively and with all means available at the highest level, as the greatest environmental changes in the entire coastal region very often depend on these spaces. Furthermore, leisure activities promotion in this space without any control or safety measures guaranteeing the health and life of people in ordinary situations (not necessarily in emergencies) is an irresponsibility to which public authorities cannot turn a blind eye and remain on the side-lines.

References

APAL, 2019. Le littoral de Tunisie - Chiffres-clés. Agence De Protection et d'Aménagement du Littoral (APAL).Projet « AddressingClimate change vulnerabilities and risks in vulnerablecoastal areas of Tunisia » APAL-PNUD-FEM. Réédition Décembre 2019, 74.

Bulletin Economique et Social du Maroc, Maroc n°127, 1973.

Butler R., 1980. The concept of a tourist area cycle of evolution: implication for management of resources, University of Western Ontario, 8.

Castellani V.,Sala S., 2012. Ecological footprint and Life Cycle Assessment in the sustainability assessment of tourism activities. Ecological Indicators. 16: 135-147.

Coccossis H.N.,*et al.* 2002. Multi-dimensional evaluation and ranking of coastal areas using GIS and multiple-criteria choice methods.Science of the total Environment. 284: 1-17.

Coccossis H.N., Mexa A., 2004. The Challenge of Tourism Carrying Capacity Assessment: Theory and practice, Ashgate, Aldershot.

Coccossis H.N.,Parpairis A., 1992. Tourism and the Environment: Some Observations on the Concept of Carrying Capacity, Tourism and the Environment, 91-105.

Deprest F., 1997. Enquête sur le tourisme de masse. L'écologie face au territoire. Revue de Géographie Alpine, 85: 118-119.

Foster D.M., Murphy P., 1991. Resort cycle revisited: The retirement connection. Annals of Tourism Research. 18: 553-567.

Jafari J., 2000. Encyclopedia of tourism, Routledge, 712.

Jurado E.N.,*et al.* 2012. Carrying capacity assessment for tourist destinations. Methodology for the creation of synthetic indicators applied in a coastal area. TourismManagement.33:1337 -1346.

Krippendorf J., 1977. Les dévoreurs de paysage, Lausanne : Éditions 24 Heures.

TNTO, 2019, Tourisme tunisien en chiffres, 95.

Viñals Blasco M.J., *et al.* 2017. Sustainable tourism and heritage: Tools for planning and management, Publisher: Editorial Universitat Politècnica de València.

World Bank,2002. Stratégie de développement touristique en Tunisie ; rapport de troisième phase, 344.

UNWTO, 1978. www.unwto.org/technical-cooperation

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 *National Institute of Marine Sciences and Technologies* and *National Agency for Environment Protection*. In addition, under no circumstances it could be regarded as reflecting the European Union position of the programme management structures.

PARTNERS



Institut National Des Sciences
Et Technologies De La Mer



ASSOCIATES PARTNERS



CPMR
CRPM

