

UNSUSTAINABLE LITTORAL TOURISM IN TULUM, MEXICO

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Abstract

The principal aim of this paper is to examine the problems considered relevant in the context of unsustainable practices in the littoral area of Tulum, Mexico -a small town located approximately 81 miles (130 km) south of Cancun. Tulum is facing a rapid population growth without having strategies that guarantee sustainable development in this part of the Mexican territory. This study begins with a literature review and a description of the methodology; then the characteristics of Tulum related to tourism are explored, and finally outcomes are presented and discussed. The results help to understand the type of pressure that is being exerted in this zone by the tourism activity, the environmental damages and the social and economic effects on the Tulum area.

Keywords: Sustainability, coastal tourism, Tulum, Mexico

Resumen

El objetivo principal de este trabajo es examinar los problemas que se perciben como relevantes dentro de una práctica no sustentable en el litoral de Tulum, México, pequeña ciudad a 130 Km. al sur de Cancún, que enfrenta un crecimiento poblacional acelerado aunque sin estrategias para lograr el desarrollo sustentable de esta porción del territorio. El trabajo se inicia con una reflexión teórica y la descripción metodológica; a continuación se exponen las características de Tulum vinculadas con el turismo, y finalmente se presentan resultados y una discusión. Los resultados ayudan a entender la presión a que está sujeta la zona, los daños en el medio físico de acogida, y los efectos sociales y económicos locales.

Palabras clave: *Sustentabilidad, turismo costero, Tulum, México*

Introduction

At the beginning of the 21st century, tourism has become one of the world's major economic activities since it ranks fourth after fuels, chemicals and automotive products. Many developing countries emphasize tourism contribution to the gross domestic product (GDP) and the creation of much needed employment and opportunities for the development of the regions. Nevertheless, the benefits of tourism in terms of revenues and tourist arrivals still are not equally distributed around the world since 85% of the tourist flow is concentrated in developed countries in Europe and the Mediterranean coasts, North America and some Asian countries; all other countries share 15% of global tourism. As a consequence of this imbalance, the role of tourism as a key driver to fight against poverty is disputed (Lima, García, Gómez and Eusébio 2012; Zhao and Ritchie 2007).

In Mexico, tourism is considered a national priority and is included in the agenda of the federal government's public policies. Many efforts are made and resources are allocated to support, foster and increase the tourist services. These measures mainly concentrate in coastal tourist destinations in the Mexican Pacific like Puerto Vallarta and Acapulco, Los Cabos and Huatulco; in the Mexican Caribbean with destinations like Cozumel, Isla Mujeres, Tulum and Cancun as an Integrally Planned Center (CIP) (Propin and Sánchez, 2007). Tourism indicators are commonly used to highlight quantitatively the alleged benefits of the development of the tourist activity, but there is little evidence of a balanced growth in coastal areas. There can be no local development or an improvement in life quality, if there is no synergy between all the parts involved in the tourist activity (Buckley 2011; Castillo and Villar 2011; Deery, Jago and Fredline 2005; García 2009).

The purpose of the present study is to examine the problems considered relevant in the context of unsustainable practices in one of the most dynamic coastal destinations in Mexico: Tulum, Quintana Roo. The main premise of the present research is that there is, nationally and internationally, a strong dynamic that has contributed to the proliferation of tourist services along the coastal zone in Tulum, external capital flows, immigration and the fact that the tourist activity does not add to the sustainability of the destination. The results help to understand the type of pressure that is being exerted on this area by the tourist activity, the environmental damages and the social and economic effects on the Tulum area.

Literature review

Previous studies have analysed the vitality of mass littoral tourism in different contexts; for example, in Europe, there is strong criticism of the arguments that have supported its

impulse which has turned mass littoral tourism into a hegemonic model of growth in a large number of coastal communities. There are social, economic, cultural and environmental imbalances derived from these practices (Gartner 1987; Huete, Mantecón and Mazón 2008; Serrano 2003; Roig and Munar 2004; Vera 1997).

Navarro (2000) believes that the traditional tourist model of massification is gravely imbalanced as a consequence of a dysfunction in the offer, which will implicitly end in its own disintegration. Other authors like Murray, Rullan and Blázquez (2005); Rullan (2010) agree that the tourist organization in the region and the environmental degradation rest on a new post-Fordism era. In Spain, a country with a long tourist tradition, academic proposals have been made that try to shift the littoral model, which has been damaging to its environment, to models that contribute to sustainability (Exceltur 2005; Yepes and Medina 2005; Yepes 2002).

Relevant studies of mass littoral tourism in Mexico and the Caribbean show the disengagement of tourist activity from its host society. Meanwhile, particular interests bond with external economic forces and consequently, the impacts on the territory are generally negative. Some examples of these studies are: Benseny 2007; López, Cukier and Sánchez 2006; López and Sánchez 2002; Pérez 2010; Propin and Sánchez 2007, 2003; Valenzuela 2008; Vázquez and Propin 2004. Critics and reflections on the social, economic and environmental impacts of tourism, mainly in Cancun, are expressed in Castillo and Villar 2011; Córdoba and García 2003; Pérez and Carrascal 2000. Some pieces of academic work about the Cancun-Tulum Corridor are carried out by Dáchary, 2008; Frausto, Sippel and Chale 2004; Sánchez 2006; Sippel 2005; Vargas 1997. The common denominator in the previously cited studies is that they propose a shift to a sustainable tourism model as an unavoidable challenge.

Social, academic and environmental movements supported the establishment of the concept of sustainability that was created as a project of political will during the 70's (Lira 2003). Sustainability was consolidated at the UN Conference on the Human Environment held in Stockholm in 1972 to promote environmental conservation and revive the contribution of development theory for the multidisciplinary and holistic construction of sustainable development (Gasca, López, Palomino and Mathus 2010; Gutiérrez 2008; Quintero 2005). Other major efforts to continue consolidating the concept of sustainability were the UN Conference on Environment and Development in 1984, the Earth Summit held in Rio de Janeiro in 1992 and the World Summit on Sustainable Development held in Johannesburg in 2002, where its theoretical and practical premises gained importance.

The United Nations Environment Program and the International Union for Conservation of Nature, define sustainable development as the process that allows development that meets the needs of present generations without compromising the ability of future generations to meet their own needs (Meyer 2002). This development is also capable of preserving natural resources and maintaining proper economic benefits for local

communities (Page and Dowling 2002). In addition, scientific and institutional discourses highlighted the need for merging tourism growth with sustainable development models so that the tourist activity incorporates more complex criteria to consider first-time factors like the environmental, cultural and social aspects of tourist destinations (Sancho, García and Rozo 2007).

In this way, the emergence of guidelines like Agenda 21 for the Travel and Tourism Industry (UNWTO 1995), the Global Code of Ethics for Tourism (UNWTO 1999), the report of the World Ecotourism Summit that resulted in the Quebec Declaration on Ecotourism (UNWTO 2002), the Sustainable Development of Ecotourism: A Compilation of Good Practices in SMEs (UNWTO 2002 -2003) and in different UNESCO programs, posed the need for regulating sustainable development in a global context. This view integrates three dimensions: the economic, which aims to maximize the economic resources and positive growth that ensures a viable long-term development; the environmental, that promotes environmental preservation, awareness and the use of both the natural and socio-cultural values of the area, and finally, the social, which respects the identity and authenticity of local communities by incorporating the principles of justice and equality (Deery *et al* 2005). All of these three dimensions attempt to establish an integral vision of how to plan development (Gutiérrez 2008). According to Sotelo (2005), this is an idealistic model that aims to strike a balance between the ecological, economic and social aspects.

According to García (2009) and Quintero (2005), the model of sustainability can be reached only if there is a clear balance of these three dimensions and two basic objectives are achieved: 1) to preserve the quality of the environment and 2) to improve residents' quality of life. The latter is understood as a social group's ability to fulfil their needs with the available resources in a certain area. Residents see the benefits in factors like income, health and education.

These elements mentioned in García (2009) and Quintero (2005) are useful when studying the tourist destination of Tulum and in the attempt to determine whether there are unsustainable practices that affect the environment and the quality of life of the local people.

Tourism features: geographical and other

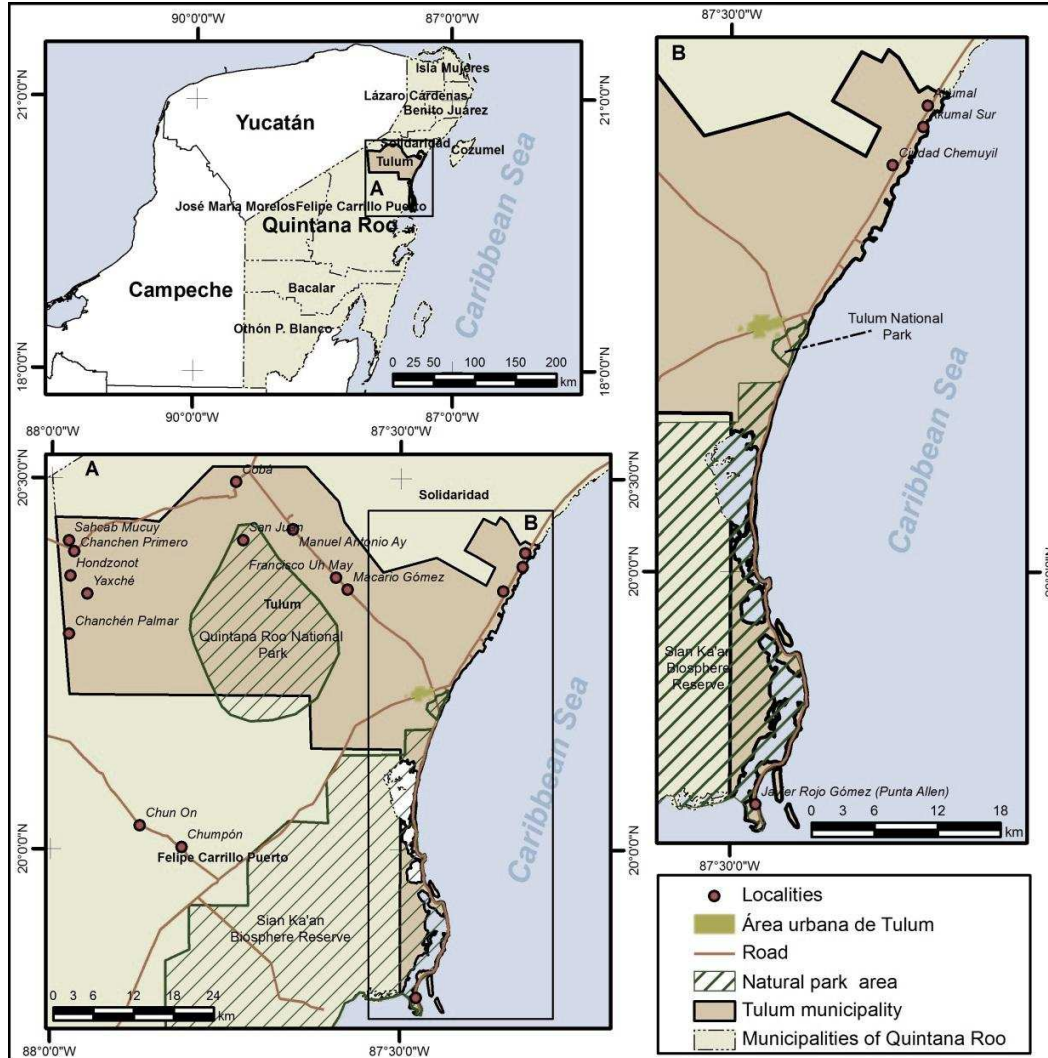
In the 1970s, the State of Quintana Roo received federal financial support to build infrastructure in traditional coastal destinations such as Cozumel and Isla Mujeres, and the strategic creation of new tourism centres like Cancun. In 2000, it started the mega tourism project called the Mayan Riviera that includes Playa del Carmen and Tulum. This new destination was planned according to the sustainability concept, but with objectives that encourage massification and enclaves (Castro 2007), as a consequence of the tourist, economic and population dynamics similar to other destinations along the Mexican

coastline. In this manner, the unique natural environment is being exploited and destroyed, favouring a short-term vision, in which the positive economic effects of tourism are overwhelmed by the negative impact of environmental degradation (Bringas 1999; Gartner 1987; Quintero 2005).

Tourism and the proliferation of tourist services in the coastal zone transformed the local and regional markets from being rural gum-producing communities to tourist destinations with a tertiary economy. In other words, 80% of the economically active population works in the tertiary sector. Employment participation is distributed as follows: commerce 24%, varied services 24%, restaurants and accommodation 20%, and 12% for governmental services and international organizations. In addition, 14% employment is in the secondary sector and 6% in the primary sector (Secretariat of Regional Development and Population [SEPLADER, by its acronym in Spanish] 2011; National Institute of Statistics and Geography [INEGI, by its acronym in Spanish] 2010).

This growth model focused on the economy does not consider the social and environmental dimensions, and has generated strong academic and political opposition demanding sustainable alternatives for tourist destinations like Cancun and Playa del Carmen. This study concentrates on Tulum, which is a small town located approximately 81 miles (130 km) south of Cancun. The municipality of Tulum borders those of Solidaridad to the north and Felipe Carrillo Puerto to the south. It also borders the municipality of Valladolid in the state of Yucatán to the northwest (Secretariat of Regional Development and Population [SEPLADER, by its acronym in Spanish] 2011; National Institute of Statistics and Geography [INEGI, by its acronym in Spanish] 2010) (Figure 1). The territory covers an area of approximately 1268m^2 ($2,040.94\text{km}^2$) that equates to 4.9% of the total area of Quintana Roo State. Tulum is made up of 170 communities, seventeen of which are growing faster than the rest (*Ibíd.*).

Figure 1. Study Area: Tulum Quintana Roo, México



Source: result of the field work, 2011; National Institute of Statistics and Geography (INEGI, by its acronym in Spanish) 2010

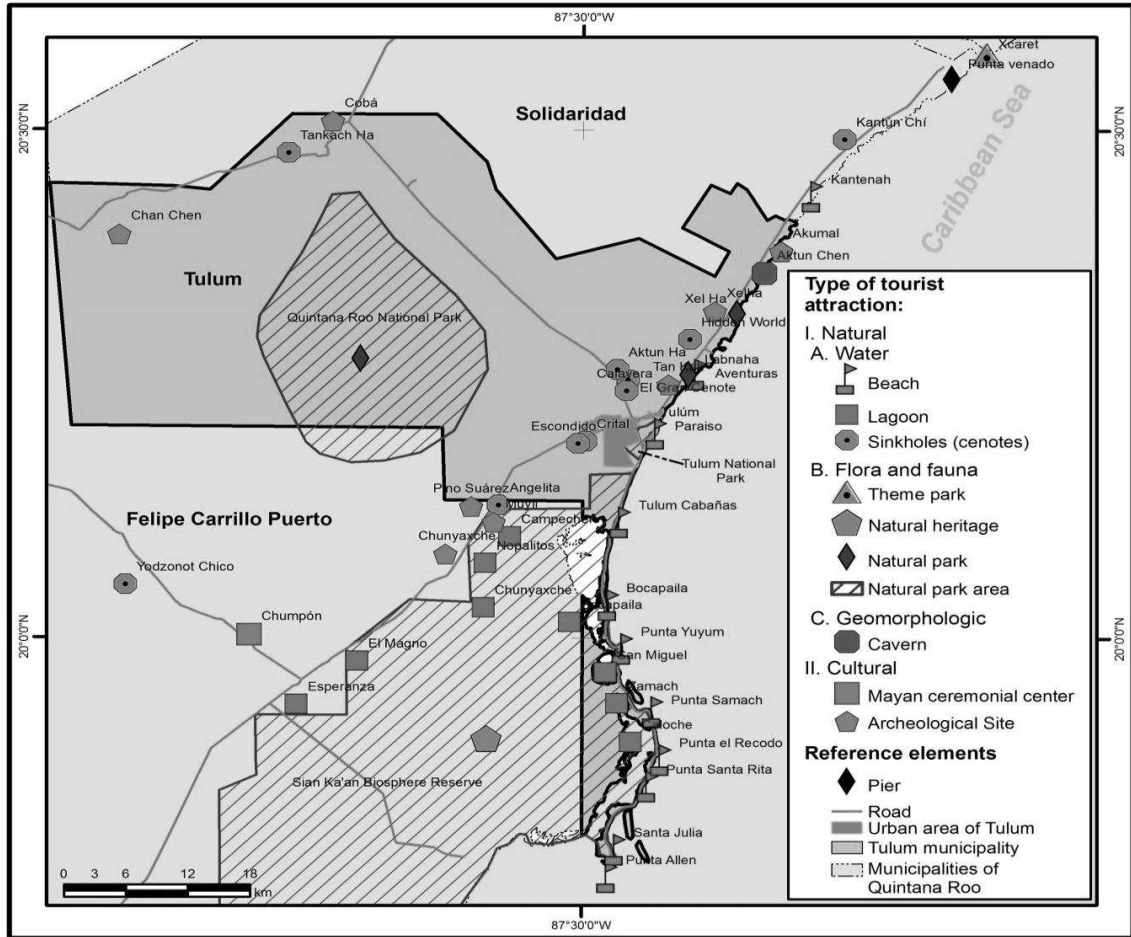
During the last century, Tulum showed slow economic growth when it was part of the municipality of Cozumel. Tulum became part of the municipality of Solidaridad when it was created in 1993. Finally, in 2008, Tulum was declared the ninth municipality by the State Congress (Marín 2012). Nowadays, it is one of the most important destinations of the Mayan Riviera and it faces a rapid population growth. In 1990, Tulum had few more than 2,000 residents. This number increased to approximately more than 30,000 in 2012 (State Population Council [COESPO, by its acronym in Spanish] 2012) and will likely grow further to 126,000 by 2030, according to the State Population Council (2012).

Tulum has a warm sub-humid climate, with an average annual temperature of 67.1°F (19.5°C), with the highest reaching 77.1°F (25.1°C) and the lowest to 56.8°F (13.8°C), which undoubtedly favours tourist activity (Tulum City Council 2011). The ecosystems in Quintana Roo are medium to low semi-deciduous and mangrove forests. The second type of predominant vegetation in the zone comprises a low arboreal stratum. Local species such as reptiles, birds, various species of monkeys, manatees, otters, wild hogs, ocelots and deer are included in the characteristic fauna of this territory. Marine life in this zone of the Caribbean Sea is diverse, including sea turtles, invertebrates and multicolored fish (National Institute of Statistics and Geography 2010; Zamudio 2009; Tulum City Council 2011).

Tulum's main tourism attractions are its archaeological zone, the National Park, declared a Protected Natural Area since 1981, and the Sian Ka'an Biosphere Reserve, which has a lake system known for its unique natural beauty. There is also a system of underground rivers, caverns and waterholes (cenotes), considered the largest in the world (Secretariat of Regional Development and Population 2011; National Institute of Statistics and Geography 2010), though few tourists visit these water bodies (Figure 2). Characteristic Caribbean Sea beaches with white sand, turquoise waters and a sunny coastline are part of the reserve known as the Mesoamerican Barrier Reef System (MBRS), which extends from Quintana Roo to Honduras. This system is just second in extension to Australia's Great Barrier Reef (Sánchez 2006; Marín 2012).

Tulum has a strip of beach on the coastline that extends approximately forty-nine miles (80 km). It is divided into three zones where restaurants, private beach clubs as well as public beaches are located. For instance, in the North zone, public beaches like Aventura DIF, Xcacel and Punta Solimán can be found. In the Central zone, public beaches such as Playa Maya, Pescadores (Mariachi, as it is also known) and Santa Fe can be found, all of which are approximately three miles (five km) from downtown. There are also private facilities, like restaurants and hotels. In the South coastal zone some public beaches include Boca Paila, Punta Yuyum, Punta Samach, Punta el Recodo, Punta Santa Rita, Santa Julia and Punta Allen (Figure 2).

Figure 2. Tourism Attractions in Tulum Area



Source: result of the field work, 2011; National Institute of Statistics and Geography (INEGI, by its acronym in Spanish) 2010

Here, there is an exotic combination of natural scenery and Mayan cultural heritage. There are still remnants of Mayan culture such as Tankah, Xel-Ha, Akumal, Muuil, Cobá, PinoSuárez and the largest one is Tulum's Archaeological Zone in downtown (Chart 2) (Sánchez 2006; Vargas 1997).

After the arrival of the Spanish in 1668, Tulum was abandoned for a long time, until Stephens and Catherwood rediscovered it. The former published two books about his travels between 1841-1843 and the latter illustrated the Mayan ruins surrounded by exotic vegetation (Campos 2000). This is how the image of Tulum as a mystical city began in Europe (Balam 2009). Along with the social conflicts in the area, Tulum reappeared as the backdrop to the Caste War (1847-1901), an armed rebellion of the Mayan people

against the *dzules* (foreigners, white people from Spain) (Xacur 1998; Vargas 1997). This frightening situation forced eight Mayan families to leave their hometowns and this is how Tulum was repopulated in 1859.

For many decades, the production of *chicle* (chewing gum) increased in importance in the whole region. After Hurricane Janet in 1955, the devastation of the flora and fauna in the area was evident. This speeded up the fall in *chicle* gum production and the export of copra and precious woods, according to an interview with a Mayan representative. Then, the era of modernization of the State of Quintana Roo began. Tulum was well connected with other parts of the region and the central part of Mexico by road. With the creation of Cancun as an Integrally Planned Centre (CIP), tourism replaced traditional economic activities and as part of a chain effect, the Cancun-Tulum tourism corridor was created, an approximately 99-mile (160 km) strip of coastline with a total surface of approximately 1988 mi² (3,200 km²). This corridor includes destinations such as Cozumel, Isla Mujeres, Solidaridad and obviously Tulum. Most of the investment was destined for Cancun, but the corridor attracted the interest of investors and positively influenced the rapid consolidation of tourist services in the area. This is the beginning of a stage of tourism expansion known for its extensive use of the coastal area by assigning larger stretches of land to tourist activity (Martinez 2008; García 2009).

The growth in the flow of tourists to Quintana Roo was exponential, increasing from 339,000 tourists a year in 1974 to more than 12 million in 2010. The most visited destinations are: Cancun, with 3 million and the Mayan Riviera with 3.8 million tourists. According to the Secretariat of Tourism (2012), 1.3 million visited Tulum. At the same time, there has been an increase in the number of hotel rooms in Quintana Roo State, mainly in the beach centres. In 1974, the total number was 2,250; by 2012, the number was 83,887 grouped in 907 hotels, the largest number in Mexico. The analysis shows that the Mayan Riviera with 48% of the total rooms (including Solidaridad and Tulum municipalities) and Cancun 34.5%, along with Isla Mujeres and Cozumel municipalities (they are part of Mexico's North Caribbean Region, [RCN, by its acronym in Spanish]) account for 96% of the total hotel rooms offer in the state, a clear example of polarization of this sector in the northern area (Secretariat of Tourism 2012).

According to these previous figures, it can be inferred that great pressure is being exerted on the region because of the intense use of littoral soil, where the offer of tourist services is even causing the segregation of the local population.

Methodology

With the objective of identifying the problems perceived as relevant in the context of unsustainable practices in the littoral zone of Tulum, the triangulation method (Donolo 2009) was used. Some other qualitative and quantitative techniques were required to

identify the ecological, social and economic problems. These problems were analysed in terms of the dimensions that the sustainability models cited above establish.

Based on the scale and due to the fact that the analyses of the social processes can be expressed in different forms and have different depths in a territory and that they operate in the local, regional, national and global contexts (Lira 2003; Riesgo, Gómez and Álvarez 2008; Delgado 2003), the main variable of the present research is explanatory and it emphasizes the local context, even when coastal tourism can be studied in a regional or even broader contexts (Vera 1997; Ancuta 2010). The main goal is to examine Tulum's specific geographical nature and the problems caused by unsustainable tourist practices in this destination (Marcelo, Hidalgo and Marquardt 2011).

The work was carried out according to the following methodological phases:

Phase 1: A revision was conducted of the literature on littoral tourism and sustainability in coastal destinations; plans and programs for development and economic and tourism indicators in the Tulum area.

Phase 2 : Exploratory field trips were completed between the 20th and 25th of August in 2010 with the main purpose of visiting the areas of tourist concentration and becoming familiar with the type of articulation between mass tourism and the region. Some other factors identified in this stage were: conflict zones; main participants in this tourist activity; aspects of the local administration involved in the tourist activity; photographs and basic cartographic elements.

Phase 3: A survey of a sample population focused on heads of household was conducted. The survey questionnaire consisted of eight sections: 1. General information; 2. Employment (job and income); 3. Housing (physical characteristics, water coverage, drainage); 4. Education (level of schooling, illiteracy, school dropout rate, quality of educational services); 5. Health (coverage, quality of health services); 6. Goods flow; 7. Local inhabitants' perception about the tourist activity; 8. Perception of social, ecological and environmental problems in Tulum.

Based on the finite population formula (Namak, 1995) for a total of 5037 inhabited dwellings in Tulum (Secretariat of Regional Development and Population 2011; National Institute of Statistics and Geography 2010) with a confidence interval of 92%, 5% of standard error and 3% of possible losses, it was decided to conduct 197 face-to-face interviews with the heads of household, of which 150 were validated. When applying the survey instrument, the sampling was categorized according to certain characteristics of the population considered important for the present study, such as: a) heads of household legally of age, b) one survey per dwelling, c) heads of household with more than three years of residency in Tulum, d) the zones included in this study. Zones 1, 2, 3 and 4 have the largest number of dwellings and commercial units near the major tourist concentration area.

Other surveys were conducted in zones 5, 6, 7, and finally a lower number of surveys in zones 8, 9, 10, 11 and 12, which are farther from the major tourist concentration area and with a low population settlement rate. Survey instruments were applied according to the zone's population density. This work was done between September 11-14 and September 20-24 in 2011.

Phase 4: The lack of information about the topic required fourteen semi-structured interviews that were conducted with five civil servants, three presidents of different associations, a Mayan culture representative, two entrepreneurs and three workers in the tourist industry; all these interviewees understand the current issues in Tulum in depth.

Phase 5: Information processing was carried out as well as the interpretation of the results of the quantitative and qualitative analysis, allowing the problem to be better understood and reflected upon.

Results and Discussion

Table 1. Sustainability issues in Tulum, Mexico

Type of problem-Problem	Answer (percentage)	Type of problem-Problem	Answer (percentage)	Type of problem-Problem	Answer (percentage)
Environmental		Socio-cultural		Economic	
Untreated wastewater	48	Lack of urban drainage system	58	Job instability	45
Inappropriate management of solid wastes	24	Poor health services	15	Company closures and loss of jobs	25
Pollution in marine and continental bodies of water	12	Lack of schools	12	Low payment	20
Overuse of land-natural scenery deterioration	8	No access to public beaches	8	Low-paid Jobs	5
Loss of flora and fauna	6	Loss of cultural identity and traditions	5	The municipality not retaining enough money for public services	5
Others	2	Crime and insecurity	2		
Total	100%		100%		100%

Source: result of the field work, 2011.

According to García (2009) and Quintero (2005), sustainability can be achieved only when three elements considered in Chart 1 converge in an equitable way to preserve the quality of environment and residents' quality of life. In the discussion of the results, each of these three elements is considered in turn.

Environmental aspects

Residents and public administrators accept the obvious contradiction of trying to consolidate Tulum as a sustainable destination since one of the main problems is untreated wastewater. There are more than 136 lodgings along the coastline and more than 196 food and beverage establishments with only four wastewater plants to handle the demand. More than 46 gallons of water (175 litres) per resident a day are produced. The volume of water treated annually is approximately between only 5% and 10 % according to the Commission for Drinking Water Network and Sewage System Management [CAPA, by its acronym in Spanish](2011).

The second major problem is the pollution caused by an inappropriate management of solid wastes. 80 tons of solid waste is generated daily. This waste ends up in open garbage pits that just by themselves generate the third major identified problem: pollution in the continental bodies of water in Tulum and Solidaridad municipalities, as well as all artificial and natural wells used by the population and that are located approximately 1093 yards (1 km) from the open landfill.

The origin of the loss of flora and fauna and even cultural assets is the increasing privatization of the use of soil for the creation of the infrastructure for tourist services; deforestation to open roads to access to the tourist facilities; wood extraction and more.

In 2009, on Tulum's coastline, 800 entrepreneurs, all with official authorization from the Secretariat of Environment and Natural Resources (SEMARNAT, by its acronym in Spanish) were using that area, but only 68 of them had permission. In 2008, tax revenues were 57,307 euros (76, 880 dollars) and in 2009 they were 1,162,830 euros (1,560,000 dollars). In 2010, 935 tax payers registered to obtain authorization to use the coastline and the tax revenues were 1,830, 589 euros (2,456,000 dollars), which makes it clear that there is an increasing interest in using the coastline for economic purposes (Tulum City Council 2011). These actions directly affect the coastline and the marine species that inhabit this zone. An example of the negative results of tourism can be found in the interruption in the reproductive cycle of marine turtles, destroying their nests due to the massive tourist concentration (interview with Henry Alvarado, tourist police officer in Tulum). Among other problems are skin diseases and indiscriminate lobster fishing by poachers.

Social aspects

The main problems identified in this category are the lack of a proper urban drainage system; poor health services; the lack of schools in all educational levels; the lack of access to beaches due to concession owners who have blocked access to them; transculturation; crime and burglary in all the zones of Tulum. With the results gathered, it was found that the current health system only covers 20% of the population's needs. There is just one hospital in town that has only basic facilities and also a small Red Cross unit. Residents say that they need to go to other cities to get adequate medical attention for a number of reasons; mainly because they do not have access to medical specialists, there are not enough beds in the hospital, there is no special equipment or simply because there was no doctor present at that time.

As for education, the main problem is the lack of schools at all educational levels, the lack of a proper training program for the faculty that ends in a low level of learning achievement. There is little attention paid to achievement in the kindergarten and high school levels and there is no attention at all in the higher learning levels. The coverage for the university level is 1.7%. There is just one private college so that people have to move to other cities like Cancun, Playa del Carmen, Chetumal and Valladolid, among others.

According to the results, there is an increasing lack of access to beaches due to concession owners who have blocked access to them by restricting the public access, unless people are charged a fee established by these enterprises. There is no free access to the beach since concession owners have walled a countless number of properties with wire fences, concrete walls, leaving the residents excluded from their own territory.

Concerning transculturation, it is mainly the young population who are not getting involved in local festivities and traditions. They stop wearing their traditional clothes and are losing the Mayan language. As for the alarmingly increasing crime rate, this is something that prevails in the massmedia both nationally and internationally and it affects all economic sectors, and tourism is no exception. In Tulum, a decrease of the European tourist market can be observed, possibly due to the crime rates.

Economic aspects

There has been a lack of tourist policies and governance to improve tourism practices. The fluctuation in demand of the destination ranges from low (from April to June and September to November), to intermediate (March and August) and high (in December, February and July). There is a high dependency on tourism which jeopardizes the flexibility of economic activity, but tourism administrators lack strategies to mitigate the effects that come with these seasonal variations. During the low season, the hotel occupancy rate drops to 30%, which forces owners to take austerity measures like downsizing, in which workers "voluntarily leave" their work for long periods with the promise of being hired again and even closing their businesses for maintenance in order to wait for the end of the

season. Other measures include reducing salaries or closing the business completely. In addition, respondents mentioned the increase of prices of products and services, income, land and housing as affecting them economically.

Jobs for local people are usually of low income. These are examples of some of the positions commonly offered: clerk, taxi driver, waiter/waitress, receptionist, cook, cleaner, cashier, police officer, bartender, electrician and maids. Most of the job positions in the tourism industry are poorly paid and low qualified and are on the borderline of the level of subsistence (Secretariat of Tourism-Colegio de México 2011; Arroyo and Gutiérrez 2007). Only 8% of the economically active population receives five times the daily minimum wage.

In the developmental stage of this destination, there is a strong presence of foreign capital since more than 60% of the investments in Quintana Roo come from Spain. These foreign investors do all their transactions and supply their own products in their home country, which means very little revenue for the Mexican tax system and little benefit for the destination, according to an interview with the Technical Secretary of Tulum City Council, German Gallegos in 2011.

The destination will be immersed in an increasing tourist dynamics over the coming years if projects like the construction of an international airport are carried out. This project will allow the connection with different destinations. Hypothetically, this will bring new methods of development, as well as the incorporation of Tulum to the program of Magic Towns, as a strategic line to practice local sustainable tourism and to move from the global market models. The Regional Department of Tourist Programs of the State Secretariat of Tourism establishes strict requirements for all these projects to take place.

Conclusion

It was observed that the political decisions tend to favour a sustainable management of tourism activity. The use of the coastline in Quintana Roo is regulated by different environmental laws and regulations like the Regulation of Protected Natural Areas (ANP by its acronym in Spanish), the General Law of Ecological Balance and Environmental Protection, the Planning Regulation and the Urban Law. Other laws include those regulating property and land use and 14 other decrees concerning the conservation of flora and fauna in Mexico's North Caribbean Region. Nevertheless, laws to protect the environment are applied but they are also used to accomplish tourism objectives without creating benefits for the destination or solving problems in the present day. In fact, the allowed flexibility to loosely follow regulations such as the cutting of mangroves, using dunes to build tourist infrastructure and setting fires in the area have caused a certain degree of damage in the short term, which will obviously affect the environment in the long term.

The use of the soil bypasses planning and geographically speaking, it is a grid-like space model with a lineal occupation of the coastline, as in Tulum's National Park, in an archaeological zone, and mainly, in a densely populated area in downtown. This has favoured a constant tourist flow, immigration and capital flows with a high dependency on foreign and domestic investors trying to establish businesses that only replicate unsustainable patterns of consumption. Moreover, tourist residential complexes have been developed along the coastline, trying to attract domestic and international customers with high purchasing power. In this area, it is evident that all the basic services are provided; it is different in the urban area where local population is concentrated. This is a clear unbalance caused by unsustainable practices in this destination.

In Tulum, there is no promotion of any comprehensive development and the destination is far from consolidating the concept of sustainability, as stated in Silva (2003). The tourist dynamics of this coastal destination follows a vertical division logic: multinational enterprises connecting with the world, in which privileged selective criteria and strategic factors support their expansion and overall competitiveness. Scarce or non-existent horizontal logic has been identified: networks and organizations in this territory should modify the system of production and equally give an impulse to the process of economic growth.

The area surrounding the municipality of Tulum is offered in the tourist market as the most attractive area in the world, since it combines both diverse natural scenery and cultural tourist options. The Tulum destination was thought to have the potential to develop diversified tourist products. It highlights the coastline as its main asset but the archaeological sites, options for alternative and ecological tourism, still do not get the proper exposure to be commercialized. The lack of a consolidated tourist product that differentiates this destination and that offers an added value to the experience has caused a drop in the number of potential European visitors interested in the Mayan culture.

It is true that education must be considered as a key element to raise environmental awareness, and there is an urgent need of it in Tulum. Some measures to mitigate these environmental problems are: workshops and seminars to raise environmental awareness in entrepreneurs and residents, to encourage good environmental practices and to establish the norms to use their natural and cultural resources properly.

After presenting and discussing the evidence, there are two clearly identified alternatives: on the one hand, to follow the same mass tourism model that is degrading the natural resources and excluding the host society, or on the other hand, in the face of all the challenges that this exponential growth is causing and with the help of research, to take local action that makes enterprises, society and the three levels of government work for more alternatives of development, to promote more environmental awareness and to solve the problems of the lack of a drainage system, landfills and wastewater treatment. In addition, it is paramount to orientate local economy to more traditional activities that allow the Mayan identity to be revived based on the same principles of sustainability and

the proposal of public policies to improve tourist practices. All of these actions should attempt to eventually increase the residents' quality of life and preserve the cultural and natural resources of this destination.

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References

Ancuta, C. (2010): Territorial Disparities in the Romanian Banat: Assessment, Dynamics and Impact on the Territorial System, *Journal of Urban and Regional Analysis* 2010(11/2), pp. 45-62.

Arroyo, L., & Gutiérrez, E. (2007): El empleo en el sector hotelero de Cozumel y su impacto en la comunidad, *Teoría y Praxis* 2007 (3), pp. 65-76.

Balam, Y. (2009): Quintana Roo: turismo y cambios en su mapa político, *Ketxalcalli* 2009 (2), pp. 29-37.

Benseny, G. (2007): El turismo en México. Apreciaciones sobre el turismo en espacio litoral, *Aportes y Transferencias* 2007 (11/2), pp. 13-24.

Buckley, R. (2011): Tourism and Environment, *The Annual Review of Environment and Resources* 2011 (36), pp. 397-416.

Bringas, N. (1999): Políticas de desarrollo turístico en dos zonas costeras del Pacífico mexicano, *Región y Sociedad* 1999 (XI/17), pp. 2-50.

Campos, L. (2000): Reseña: De cómo los mayas perdieron Tulum, de Guillermo Goñi Mortilla, *Revista Mexicana del Caribe* 2000 (5/9), pp. 259-263.

CAPA. Comisión de Agua Potable y Alcantarillado, Organismo Operador de Tulum. (2011): Volumen de agua tratada anualmente, Gobierno del Estado de Quintana Roo, Chetumal, Quintana Roo, México.

Castillo, O., & Villar, A. (2011): La configuración del espacio urbano de Cancún: una aproximación al estudio de la segregación socio-espacial, *Quivera* 2011 (13/1), pp. 83-101.

Castro, Ulises. (2007): El turismo como política central de desarrollo y sus repercusiones en el ámbito local: algunas consideraciones referentes al desarrollo de enclaves turísticos en México. *Revista de Investigación en turismo y desarrollo local, TURYDES*

[online]. Octubre 2007 (1/1) [Consulta/Retrieved on: 12 Marzo 2012]. Disponible en/Available at: <<http://www.eumed.net/rev/curydes/01/uca.htm>>. ISSN: 1988-5261.

COESPO. Consejo Estatal de Población de Quintana Roo. (2012): Pirámide de Población 2012 de Tulum [online]. [Consulta/Retrieved on: 10 Enero 2013]. Disponible en/Available at:<http://coespo.qroo.gob.mx/portal/datos_estadisticos_cartograficos/piramides2012/piramide2012Tulum.pdf>.

CONAPO. Consejo Nacional de Población. (2012): Proyección de la Población 2010-2050 de las Entidades Federativas. [online]. [Consulta/Retrieved on 10 Enero 2013]. Disponible en/Available at:<http://www.conapo.gob.mx/es/CONAPO/De_las_Entidades_Federativas_2010-2050>.

Córdoba, J., & García, A. (2003): Turismo, globalización y medio ambiente en el Caribe, *Boletín del Instituto de Geografía* 2003 (52), pp. 117-136.

Dáchary, A. (2008): Los límites del desarrollo local en una región de turismo global, el caso del Corredor Cancún-Tulum, México, *Aportes y Transferencias* 2008 (12/1), pp. 41-56.

Deery, M., Jago, L., & Fredline, L. (2005): A framework for the development of social and socioeconomic indicators for sustainable tourism in communities. *Tourism Review International* 2005 (9), pp.69-77.

Delgado, O. (2003): Debates sobre el espacio en la geografía contemporánea, Unibiblos, Universidad Nacional de Colombia, Bogotá.

Donolo, D. (2009): Triangulación: procedimiento incorporado a nuevas metodologías de investigación, *Revista Digital Universitaria* [online], agosto 2009 (10/8) [Consulta/Retrieved on: 16 Mayo 2012]. Disponible en/Available at: <<http://www.revista.unam.mx/vol.10/num8/art53/art53.pdf>> ISSN: 1067-6079.

Exceltur. (2005): Impactos sobre el entorno, la economía y el empleo de los distintos modelos de desarrollo turísticos del litoral Mediterráneo Español, Baleares y Canarias [online]. Resumen Ejecutivo, Madrid: Deolitte en colaboración con el área de estudios e Investigaciones de Exceltur [Consulta/Retrieved on: 23 Agosto 2012]. Disponible en/Available at: http://www.exceltur.org/excel01/contenido/portal/encuentro/Sumario_residencial_completo.pdf.

Frausto, O.; Sippel, M., & Chale, G. (2004): Sustainable Tulum, Tourism en México. IX Coloquio de Geografía del Turismo, Ocio y Recreación. Universitarias de Zaragoza, en Antonio Javier Lacosta Aragûes (Coord.).

Gasca, J., López, G., Palomino, B., & Mathus, M. (2010): La gestión comunitaria de recursos naturales y eco turísticos en la Sierra Norte de Oaxaca. UNAM, México.

García, H. (2009): Turismo y planeación urbano-ambiental en el corredor Cancún-Tulum [en línea]. II Coloquio Internacional Ciudades Turísticas, Centro de Estudios de América del Norte Colegio de Sonora, abril 2009 [Consulta/Retrieved on: 29 Julio 2012]. Disponible en/Available at: <<http://topofilia.net/coloquio09garciazamora.html>>.

Gutiérrez, E. (2008): De las teorías del desarrollo al desarrollo sustentable: historia de la constitución de un enfoque multidisciplinario, *Ingenierías* 2008 (XI/39), pp. 21-35.

Hall, M., & Lew, A. (1998): *Sustainable Tourism*, Prentice Hall. Harlow, England.

Honorable Ayuntamiento de Tulum. (2011): Plan Municipal de Desarrollo del Municipio de Tulum, PMDT 2011-2013. Tulum, Quintana Roo. Gobierno del Estado de Quintana Roo, México.

Huete, R.; Mantecón, A.; & Mazón, T. (2008): La percepción de los impactos del turismo residencial por parte de la sociedad receptora [en línea]. II jornadas sobre turismo y sociedad IESA-CSIC, Córdoba, febrero de 2008 [Consulta/Retrieved on: 18 Marzo 2011]. Disponible en/Available at: http://rua.ua.es/dspace/bitstream/10045/14453/1/huete_mantecon_mazon_C%3b3rdoba_2008.pdf.

INEGI. Instituto Nacional de Estadística Geografía e Informática. (2010): Censo de Población y Vivienda, INEGI, México.

Ibarra, R. (2007): Segregación socio-espacial en ciudades turísticas: el caso de Cabela (RS), Brasil, *Estudios y Perspectivas en Turismo* 2007 (16), pp. 195-215.

Lima, S., García, C., Gómez, D., & Eusébio, C. (2012): El turismo como una estrategia para el mundo en desarrollo: el Programa UNWTO, voluntarios, *Pasos Revista de Turismo y Patrimonio* 2012 (10/3), pp. 303-314.

Lira, L. (2003): La cuestión regional y local en América Latina. CEPAL-SERIE gestión pública No. 44. Santiago de Chile.

López, A., Cukier, J., & Sánchez, A. (2006): Segregation of tourist space in Los Cabos, México, *Tourism Geographies* 2006 (8/4), pp. 359-379.

Marcelo, H., Hidalgo, R., & Marquardt, E. (2011): Vivienda social y segregación espacial en la ciudad de Pucón, Chile: entre el enclaustramiento vía integración con el hábitat turístico, *Revista Invi* 2011 (71/26), pp. 15-55.

Marín, G. (2012): Turismo, áreas naturales protegidas y apropiación territorial: el caso del Parque Nacional Tulum en Marín, G. García, A. y Daltabuit, M. Coords. *Turismo, globalización y sociedades locales, PASOS revista de Turismo y patrimonio Cultural* 2012 (7), pp. 139-156.

Martínez, A. (2008): El ecoturismo y su conceptualización, Geocalli, Cuadernos de Geografía. Año 9. núm. 17, Universidad de Guadalajara, Centro Universitario de Ciencias Sociales y Humanidades, México.

Martínez, C. (2008): Configuración territorial del turismo en las costas de la isla de Cozumel, *Teoría y Praxis* 2008 (5), pp. 343-357.

Meyer, D. (2002): Turismo y Desarrollo sostenible. Universidad externado de Colombia. Bogotá, Colombia.

Murray, I.; Rullan, O., & Blázquez, M. (2005): Las huellas territoriales del deterioro ecológico. El trasfondo oculto de la explosión turística en Baleares, *Scripta Nova* [online]. 15 de octubre de 2005 (IX/199) [Consulta/Retrieved on: 11 Marzo 2011]. Disponible en/Available at: <<http://www.ub.edu/geocrit/sn/sn-199.htm>>.

Namak, N. (1995): Metodología de la investigación, 2da. Edición. Limusa, México.

Navarro, E. (2000): La capacidad de carga básica. Piezas clave para la planificación del territorio turístico: El caso de la Costa del Sol Occidental, II Congreso Universidad y Empresa, Tirant Blanc, Valencia.

OMT. Organización Mundial del Turismo (2012): Barómetro del turismo mundial, [online], *Portal de la Organización Mundial del Turismo*, [Consulta/Retrieved on: 17 Marzo 2012]. Disponible en/Available at: <http://dtxtq4w60xqpw.cloudfront.net/sites/all/files/pdf/unwto_barom12_02_march_excerpt_sp.pdf>.

(2003): Desarrollo sostenible del ecoturismo: una compilación de buenas prácticas en las pymes, OMT, Madrid, España.

2002. *Cumbre Mundial del Ecoturismo: informe final, ciudad de Québec (Canadá)*. Organización Mundial del Turismo y el Programa de las Naciones Unidas. Madrid, España. ISBN: 92-844-0565-3.

(1999): *Código ético mundial del turismo*. OMT, Madrid, España.

(1995): *Agenda 21 para la industria de los Viajes y el Turismo*. OMT, Madrid, España.

Page, S., & Dowling, R. (2002): *Ecotourism*, Prentice Hall, Harlow, England.

Pérez, G., & Carrascal, E. (2000): El turismo en Cancún y sus consecuencias sobre la cubierta vegetal. *Investigaciones Geográficas, Boletín del Instituto de Geografía* 2000 (43), pp. 145-166.

Pérez, E. (2010): Segregación socio-espacial en ciudades turísticas, el caso de Puerto Vallarta, México, *Región y Sociedad 2010* (XXI/49), pp. 143-176.

Propin, E., & Sánchez, A. (2007): Tipología de los destinos turísticos preferenciales en México, *Cuadernos de Turismo 2007* (19), pp. 147-166.

Quintero, M. (2005): La actividad turística como base económica del desarrollo sustentable de la comunidad de Gavidia ubicada en el parque nacional Sierra Nevada, *Economía 2007* (21), pp. 59-84.

Riesgo, P., Gómez, J., & Álvarez, D. (2008): Región, Comarca y Lugar: escalas de referencia en la metodología del paisaje. *Cuadernos Geográficos 2008* (43), pp. 227-255.

Roig, F., & Munar, E. (2004): Etiquetas de calidad en playas: Nuevo marketing sobre espacios turísticos litorales maduros y artificializados. IX coloquio de Geografía del Turismo, Ocio y recreación. Universitarias de Zaragoza, en Antonio Javier Lacosta Aragües (Coord.).

Rullan, O. (2010): Los efectos territoriales de las dinámicas globales en unas islas turísticas mediterráneas: las Baleares, *El Periplo Sustentable 2010* (18), pp. 119-160.

Sánchez, W. (2006): Alcances de la cultura turística en Tulum, Solidaridad, Quintana Roo, Tesis de Maestría en Ciencias Sociales aplicada a los estudios regionales, Universidad de Quintana Roo. México.

Sánchez, A. & Propin, E. (2003): Dependencias regionales del turismo en Cozumel, *Cuadernos de turismo 2003* (11), pp. 169-180.

Sancho, A., García, G., & Rozo, E. (2007): Comparativa de indicadores de sostenibilidad para destinos desarrollados, en desarrollo y con poblaciones vulnerables. *Annals of Tourism Research 2007* (9/1), pp. 150-176.

SEPLADER. Secretaría de Planeación y Desarrollo Regional. (2011): Cuaderno Estadístico de la Región Caribe Norte [online]. Tercer trimestre, 2011 [Consulta/Retrieved on: 25 Octubre 2011]. Disponible en/Available at: <<http://seplader.seige.qroo.gob.mx/seigeweb/CuadernosRegionales.php>

SECTUR y Colegio de México (2011): Análisis económico del mercado laboral en el sector turístico: hacia una política pública para la igualdad entre mujeres y hombres, Secretaría de Turismo, Gobierno Federal, México.

SEDETUR. Secretaria de Turismo Estatal de Quintana Roo (2012): *Indicadores turísticos*, [en línea], Portal de la secretaria de turismo del estado de Quintana Roo, [Consulta/Retrieved on: 17 Marzo 2012]. Disponible en/Available at: <<http://sedetur.qroo.gob.mx/>

(2010): Turismo motor de desarrollo 2005-2011, Gobierno del Estado de Quintana Roo, México.

Serrano, J. (2003): El turismo residencial en la región de Murcia frente a los nuevos retos, *Cuadernos de Turismo* 2003 (12), pp. 53-75.

Sippel, M. (2005): Sustanaible Tulum, en *Desarrollo Sustentable: turismo, costa y educación*, Ed. Frausto, O. Universidad de Quintana Roo. México.

Sotelo, J. (2005): Las políticas del medio ambiente hoy. *Anales de la Geografía* de la Universidad complutense 2005, (25), pp. 27-50.

Vázquez, V., & Propin, E. (2004): Las relaciones regionales de la economía turística en Bahías de Huatulco, Oaxaca. *Investigaciones Geográficas, Boletín del Instituto de Geografía* 2004, (55), pp. 143-163.

Vargas, E. (1997): Tulum, organización político-territorial de la costa oriental de Quintana Roo, Instituto de investigaciones Antropológicas. UNAM. México.

Vera, F., Coord. (1997): La dimensión territorial y ambiental del turismo. Análisis territorial del turismo: una nueva geografía del turismo. Barcelona: Ariel.

Xacur, J. (1998): *Enciclopedia de Quintana Roo*, Tomo 8. S-W, México.

Yepes, V., & Medina, J. (2005): Land Use Tourism Models in Spanish Coastal Areas. A Case Study of the Valencia Region, *Journal of Coastal Research* 2005 (49), pp. 83-88.

Yepes, V. (2002a): La explotación de las playas. La madurez del sector turístico. *OP Ingeniería y Territorio* 2002 (61), pp. 72-77.

(2002b): Estrategias y política turística de la Comunidad Valenciana: su incidencia en el litoral, *Cuadernos de Turismo* 2002 (9), pp. 165-173.

Zhao, W., & Ritchie, J. (2007): Tourism and poverty alleviation: an integrative Research framework, *Current Issues in Tourism*, 10 (2), pp. 119-143.