



END OF DEGREE WORK

Faculty of Legal Sciences.

Tourism Degree.

**Analysis about the impacts and
consequences of climate change in
the tourist sector at the
Mediterranean Sea.**

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Part I:

Introduction

Justification and objectives

Methodology and theoretical framework

1. Introduction

Today, there are still people who discuss about the existence of climate change, saying the slight but constant changes in temperatures and precipitation of our planet due to different theories because in the periods between glaciations the Earth temperature is increased very softly but constant and that's part of normality.

However, there are many more sources who indicate that climate change is a very real phenomenon, reporting evidence that linking constant temperature increases with increasing pollution levels and emissions of gases that produce the greenhouse effect.

Of the factors that influence climate change, it is clear that the most important is human activity. From it derived the major causes like the emissions of greenhouse gases, pollution in overcrowding areas, the indiscriminate use of the petroleum and his by-products, overexploitation of resources...

Based on the above discussion, tourism is one of the phenomes that most influences and power climate change because, for example, it foments the massification in different specific points, produce overexploitation of resources and increased pollution, or abuse of the ecosystem of the host country created at the moment to transforming the site to its recreational use for tourism. All these conditions can be traduced in future disaster at the ambient conditions, like the loss of value landscapes or tidy beaches and loss of comfort, like have more warm nights, massification of people in reduced spaces or excessive increased of the costs for the visitor.

In particular, knowing the possible impact of a worsening climate change is of particular impact in an area like the coast European Mediterranean, where tourism attracted by the same sea and weather conditions represents one of its main incomes. So it is illustrative observe examples of how they face these problems.

The reason for choosing these three populations is based on belonging to three countries other than the Mediterranean coast. Share the weather, but no legislation, culture, ideology, or GDP measures taken concerning good practices, which provide different views on the measures taken, different content and scope.

Therefore, a good reason for this study is to prevent and analyze how the characteristics of a problem such as climate change can affect a part of the world where tourism is a basic part of the economy and purpose measures to mitigate or try

to revert his negative effects that the same countries or a good coordination of the communities interested in the areas can apply easier.

2. Objectives and justification

- Objectives:

This project wants to conduct an impartial analysis of the phenomenon of climate change and how it tries to stop its effect on different touristic destinations Mediterranean without falling into catastrophism or sensationalist opinions that are not founded, only based on objective and actual sources.

The goal of this paper is to analyze the various measures taken by some receiving municipalities to mitigate the polluting effects of tourism in the area, check the extent they have and whether it is mandatory guidelines or simple recommendations that businessmen may choose not to comply. In this work only the points that make direct tourism reference will be analyzed, the other points with these guidelines but dealing with issues only related to tourism such as transport, recycling waste or construction among others, are not treated due the transversality that includes tourism, and for do it need a much more extensive work than would be required.

So it is an as unbiased as possible study on the current state of the subject to be treated, both environmentally and solutions in the process, is not to glorify a catastrophic future because the climate change today it is uncertain or not try to refute the many theories that try to deny climate change and yet have not been denied by other more professional sources in the field or in-depth studies.

- Justification:

The main purpose of the preparation of this EOD work is to analyze some of the measures that have been implemented in the tourism sector in some Mediterranean countries trying to reduce pollution levels, and especially the pollutant effects thrown into the ecosystem of our planet.

For this purpose, the choice of the Mediterranean Sea is not only because his closeness, also because it brings some of the countries with a sun, sea and sand tourism very important and basic in their touristic model such as France (despite the importance of sun, sea and sand tourism on the French Blue Coast, his main focus is urban tourism model: the city, Paris) Spain, Italy or Greece. Except the last one, specially punished by the global crisis, all placed in the "top 10" of tourist arrivals in 2014 and with an upward trend in the same report.

Table 1: International arrivals of tourists in the year 2014

Llegadas de turistas internacionales					
Rango	Series ¹	Millones		Variación (%)	
		2013	2014*	13/12	14*/13
1 Francia	TF	83,6	83,7	2,0	0,1
2 Estados Unidos	TF	70,0	74,8	5,0	6,8
3 España	TF	60,7	65,0	5,6	7,1
4 China	TF	55,7	55,6	-3,5	-0,1
5 Italia	TF	47,7	48,6	2,9	1,8
6 Turquía	TF	37,8	39,8	5,9	5,3
7 Alemania	TCE	31,5	33,0	3,7	4,6
8 Reino Unido	TF	31,1	32,6	6,1	5,0
9 Federación de Rusia	TF	28,4	29,8	10,2	5,3
10 México	TF	24,2	29,1	3,2	20,5

(Organización Mundial del Turismo 2014)

“En la Europa Meridional y Mediterránea (+7%), tanto Grecia como España ganaron 4 millones de llegadas internacionales en 2014. Las llegadas a Grecia crecieron de manera excepcional, un 23%, hasta alcanzar los 22 millones. España, el principal destino de la subregión y el segundo mayor de Europa, arrojó un crecimiento del 7% y obtuvo un récord de 65 millones de llegadas internacionales. También tuvieron un sólido crecimiento otros destinos mediterráneos consolidados, como Portugal (+12%), Malta (+7%), Croacia y San Marino (ambos +6%). Los destinos europeos que ocupan los puestos tercero y cuarto por número de visitas, Italia y Turquía, registraron un crecimiento del 2% y del 5% respectivamente en cuanto al número de llegadas, mientras que destinos emergentes como Albania y Serbia registraron incrementos de dos dígitos.”

(Organización Mundial del Turismo 2014)

So, the Mediterranean Sea is an ideal place, because it is one of the most important tourist centers in the world in terms of sun, sea and sand tourism, his own climate with very suitable temperatures that cause the appearance of this type of tourism with an already built and planned infrastructure and some of the past cases of abuse of resources subject to laws or proposals from governments and employers for mitigate these effects they are already beginning to take place in some of the coaster municipalities.

To do this, the factors to be considered in this work will be for try to explain the best possible way the phenomenon of climate change, analysis and characteristics of the Mediterranean climate and the characteristics of the type of sun, sea and sand tourism. Both factors have been chosen because the geographical and environmental closeness of the first one and the importance of a second one, both as a basic elements of economic engine of these countries as being a key factor that increases the climate if done out of control.

The central body of work tries to focus and deeper into the factors discussed above, so three Mediterranean destinations and their characteristics are analyzed. The second part of the analysis is how actions can affect climate change and how this tourist destinations tourism is seen as a potentiating factor of pollution and emissions in these locations. Finally, measures will be analyzed to combat these issues taken by these destinations, trying to summarize and extract the most important parts affecting more relevantly d in tourism.

At the end of the work, the conclusions, which will try to analyze the measures taken and their results will be displayed. And some proposals for improvements considered relevant will be presented.

3. Methodology and theoretical framework

- Methodology:

For the writing of this work it has been primarily used information on the subject of Google Scholar taken, so it is contrasted sources. It looks for the most recent documents related to the subject. Has consulted various Internet sources to acquire additional information on the different topics that have not been included in this work to be considered unreliable sources, mixing useful information opinionated sensationalist or partial, or because information although reinforces knowledge or add other approaches to some of the materials discussed in this work are very general in nature and not directly related to the subject to be treated (such as political and social situation of countries, population data ...). It was also found account updating information sources used, especially for statistics and figures, and discarding documents that have been consulted but have not been included in this work not to be recent.

The order has been searching for general information, reading all this to choose which is used for work and what is read as additional information within the framework of the work explained at this point, management points, start with writing linking the own text with graphics and information found citing it properly and applying the knowledge acquired in the corresponding degree at each point, draw appropriate conclusions and annotate the bibliography used, trying to analyze and comment on the information cited by the heuristic method and working it to reach clear conclusions about the point where the relationship between tourism and climate change, also their possible interactions is evolving follow the latter phenomenon.

- Theoretical framework:

For the first part of the theoretical considerations, it has been consulted about the sun, sea and sand tourism in particular but has also taken into consideration the phenomenon of mass tourism in general, as the modality of sun, sea and sand tourism is the main mode of mass tourism. It has also looked for history of the origins of the phenomenon for its better understanding. Finally, recent studies on passenger figures to coastal destinations and intention holiday destination, reinforcing the theory that the sun, sea and sand tourism is still a strong modality and of fundamental importance, contrary to what some reports claimed the late 90s that at the beginning of the new century would experience a significant decline.

On the second point it has been extracted information on climate change in general, not only for tourism. To understand how it can affect climate change to tourism, is necessary understand the phenomenon and its global consequences for the world's population and analyze their impact now and the expected consequences for this, as well as see the arguments of the specialists who reject the existence this phenomenon.

For the last part of the theoretical considerations, a general analysis of the Mediterranean climate, with special emphasis on the characteristics of the coastal Mediterranean climate is taken. temperature and precipitation mainly analyzes although the vegetation and rivers are also named, after discarding add more extensive information on these elements as it is not considered relevant.

The first part of the analysis is on the areas in which sun, sea and sand tourism contributes to increasing climate change, including the extraction of information on tourism and pollution in general and has adapted to sun, sea and sand tourism in particular. The emission factors treated are overexploitation of aquifers, the waste, deformation of the landscape and changing temperatures.

The final part of the analysis presents examples of how internationally; in the countries and destination populations specifically deal with climate change mitigation. Examples have been located on conferences and analyzed the points that refer directly to tourism and how to mitigate the negative effects of the sector, even if measures are mandatory or not character. Finally, exemplary actions of how some Mediterranean destinations in different countries have mitigated the abusive effects of sun, sea and sand tourism exercised over its natural environment and its replacement by economically and ecologically sustainable models are analyzed.

Part II:
Theoretical considerations

4. Theoretical considerations

4.1. Sun, sea and sand tourism

For this work, we must focus especially on this type of tourism, since both the subject proposed as the target area (Mediterranean Sea) are closely related to sun, sea and sand tourism, because it is the type of tourism more developed in the region and usual and because is one of the most polluting types of tourism and directly affected if the climate changes dramatically.

The first thing is to define this type of tourism:

“Se considera turismo de sol y playa a la tipología turística basada en el descanso en zonas marítimas y con buen clima. Está compuesta por actividades que basan su desarrollo en el medio litoral (baños de sol y de mar, buceo, náutica, etc.), e incorpora otras relacionadas con la actividad turística en el litoral: golf, ocio nocturno, degustaciones gastronómicas, visitas a recursos y centros de ocio, etc. “

(Montaner, J, 1998)

The origins are recounted in the text of "El turismo de sol y playa en el Siglo XXI" from the authors Ayala, Martin and Masiques:

“A mediados del siglo XVIII el agua de mar adquirió la primera preferencia por su carácter curativo. Scarborough y Margate en la costa de Inglaterra se popularizaron, originando la costumbre de viajar en vacaciones a la playa para disfrutar de sus propiedades medicinales. Con el tiempo y la mejoría de las comunicaciones en Europa empezó a viajar más lejos para disfrutar de las playas y especialmente, los que vivían más al norte de Europa y tenían posibilidades de sufragarse los gastos de viaje, se dirigían al Mediterráneo en busca de sus playas de temperaturas más agradables.

A fines del siglo XIX y principios del XX el mayor éxito europeo ya correspondía a estaciones situadas en la costa francesa e italiana como Niza, Cannes, Sorrento y otras, constituyendo la élite de varios países de Europa la afluencia turística principal a estas ciudades y provocando con su demanda las transformaciones que se producirían en los frentes de mar con los paseos marítimos, la primeras carreteras paralelas a la costa y destacadas construcciones de alojamientos y hoteles.

Sin embargo en relación con el consumo de sol y playa “...es tras la segunda Guerra Mundial, y como consecuencia del proceso de industrialización, cuando se produce un cambio cuantitativo y cualitativo en la emisión de flujos turísticos.” Los grandes cambios socioeconómicos, el avance del transporte, el incremento del nivel de vida, la mayor extensión de las vacaciones pagadas a los trabajadores, la existencia de un mayor tiempo libre, etc. condicionaron el acceso al turismo de un número considerablemente mayor de personas, y ya no sólo de las élites más pudientes, conformando lo que más recientemente se ha llamado el turismo masivo, moderno, convencional, industrial, fordista, pasivo, etc. a pesar de que masivo no quiera decir de que la mayoría de los habitantes, en masas, hicieran turismo, sino que los grandes volúmenes de turistas implicaban la industrialización y homogenización de los servicios, la creación de los “paquetes turísticos” y su organización en grupos, la poca diferenciación de las ofertas de los destinos y a la larga a partir de una evolución indiscriminada de los destinos, a la degradación del entorno natural y social y de la calidad de la oferta, además de los fenómenos de marcada estacionalidad.”

(Ayala, H; Martín, R; Masiques, Jorge .2003)

From this text, we can extract primarily that it is a model that began as a derivative of medical tourism and has always been closely linked to the economic level of the traveler, his free time and weather factor in the place of destination, as in the text, refers to the first tourist migratory flows from northern Europe to the French or Italian coast in search of better climate and how the cycle of feedback begins: the tourist spends at the destination and destination spent on infrastructure for attract tourists.

Another important point that the text is in reference to the relationship between economy and tourism is due to the boom produced upon Industrial Revolution, which allowed the working class to join as tourists to have means of transportation and money for it, being created the first Holiday Packages and organizing tour groups. This leaves two visible consequences: the inclusion of sun, sea and sand touristic model in the denominated mass tourism and tourism as a key economic engine in some areas and Mediterranean coastal enclaves.

We can also see by this graphic that the beach was the favorite destination of European tourists intending to travel during 2015, so that the preference of the masses for the sun, sea and sand touristic model is still so much alive.

Graphic 1: Intend to travel of European tourists for 2015

For your summer holiday, do you intend to go mainly...

Base: People stating they will go away on holiday in summer 2015 (2,386 respondents)

Several answers possible



(Ipsos 2015)

As can be observed in the graph, the importance of sun, sea and sand tourism is reflected as it is during the last 10 years the choice of approximately 60% of the tourists, making this mode in the chosen, 3 times higher than its nearest rival in intent, the mountain tourism.

4.2. Climate change (CC)

The phenomenon of climate change is another main point to be addressed in this project, but to find out how can it affect the other big analyzed phenomenon, tourism, and the reverse is first necessary to analyze this phenomenon separately.

So, on the website of the Spanish Ministry of Agriculture, Food and Environment (MAGRAMA) This phenomenon is defined as follows:

“Se llama cambio climático a la variación global del clima de la Tierra. Es debido a causas naturales y también a la acción del hombre y se producen a muy diversas escalas de tiempo y sobre todos los parámetros climáticos: temperatura, precipitaciones, nubosidad, etc.”

(Ministerio de Agricultura n.d.)

As can be extracted from the definition of MAGRAMA, the phenomenon of climate change is not new; it is a natural process that affects the normal climate parameters, modifying them. The problems relating to climate change starts due to human action, which decompensates this function of the planet by increasing the causes that increase as the natural, which implies that the planet cannot eliminate as many factors of climate change (greenhouse gases, pollutants, resource recovery ...) as those occurring. This creates an imbalance that causes abnormal variations in climate parameters, with unpredictable consequences.

- The Greenhouse Effect:

Like the climate change definition, the MAGRAMA, define the greenhouse effect as follows:

“El término "efecto de invernadero" se refiere es la retención del calor del Sol en la atmósfera de la Tierra por parte de una capa de gases en la atmósfera. Sin ellos la vida tal como la conocemos no sería posible, ya que el planeta sería demasiado frío. Entre estos gases se encuentran el dióxido de carbono, el óxido nitroso y el metano, que son liberados por la industria, la agricultura y la combustión de combustibles fósiles. El mundo industrializado ha conseguido que la concentración de estos gases haya aumentado un 30% desde el siglo pasado, cuando, sin la actuación humana, la naturaleza se encargaba de equilibrar las emisiones.”

(Ministerio de Agricultura n.d.)

The greenhouse effect is one of the main factors that make Climate Change, and also the most influenced by humans, due to the high amount of emissions discharged into the atmosphere since the beginning of the industrial revolution and that even though it's to control relatively recently, it continues to rise due to the increasing consumption of goods and services society.

The probable consequences of continuing to increase global emissions are estimated in the Guide to the Framework Convention on Climate Change and the Kyoto Protocol of 2005.

Table 2: Probable changes and his consequences if greenhouse effect still growing up.

Cambios proyectados	Efectos proyectados
Temperaturas máximas más elevadas, más días calurosos y oleadas de calor en casi todas las zonas terrestres Prognosis: muy probable	<ul style="list-style-type: none"> ▲ Incidencia de defunciones y graves enfermedades en personas de edad y en la población rural pobre ▲ Estrés térmico en el ganado y en la flora y fauna silvestres ▲ Riesgo de daños a varios cultivos ▲ Demanda de refrigeración eléctrica ▼ Fiabilidad del suministro de energía
Temperaturas mínimas más elevadas, y menos días fríos, días de heladas y oleadas de frío en casi todas las zonas terrestres Prognosis: muy probable	<ul style="list-style-type: none"> ▼ Morbilidad y mortalidad humana relacionada con el frío ▼ Riesgo de daños para varios cultivos ■ Distribución y actividad de algunas plagas y vectores de enfermedades ▼ Demanda de energía calorífica
Episodios de precipitaciones más intensas Prognosis: muy probable, en muchas zonas	<ul style="list-style-type: none"> ▲ Daños provocados por inundaciones, desprendimientos de tierras y avalanchas ▲ Erosión del suelo ▲ La escorrentía de las inundaciones podría aumentar la recarga de los acuíferos de algunas llanuras de inundación ▲ Presión sobre los sistemas públicos y privados de socorro en caso de desastre y de seguro frente a inundaciones
Mayor deshidratación veraniega en la mayor parte de las zonas continentales interiores de latitud media y riesgo asociado de sequía Prognosis: probable	<ul style="list-style-type: none"> ▼ Rendimientos de los cultivos ▲ Daños en los cimientos de los edificios provocados por la contracción del suelo ▲ Riesgo de incendios forestales ▼ Cantidad y calidad de los recursos hídricos
Aumento de las intensidades eólicas máximas de los ciclones tropicales, y de la intensidad de las precipitaciones medias y máximas Prognosis: probable, en algunas zonas	<ul style="list-style-type: none"> ▲ Riesgos para la vida humana, riesgo de epidemias de enfermedades infecciosas ▲ Erosión costera y daños en los edificios de infraestructura de la costa ▲ Daños en los ecosistemas costeros, como los arrecifes de coral y los manglares
Intensificación de las sequías e inundaciones asociadas con El Niño en muchas regiones Prognosis: probable	<ul style="list-style-type: none"> ▼ Productividad agrícola y de los pastizales en las regiones expuestas a la sequía y las inundaciones ▼ Potencial de generación de energía hidroeléctrica en las regiones expuestas a la sequía
Mayor variabilidad de las precipitaciones del monzón de verano en Asia Prognosis: probable	<ul style="list-style-type: none"> ▲ Magnitud de las inundaciones y de la sequía y daños en las tierras templadas y tropicales de Asia
Mayor intensidad de las tormentas de latitud media Prognosis: poco acuerdo entre los modelos actuales	<ul style="list-style-type: none"> ▲ Riesgos para la vida y la salud humana ▲ Pérdidas de bienes materiales e infraestructura ▲ Daños en los ecosistemas costeros

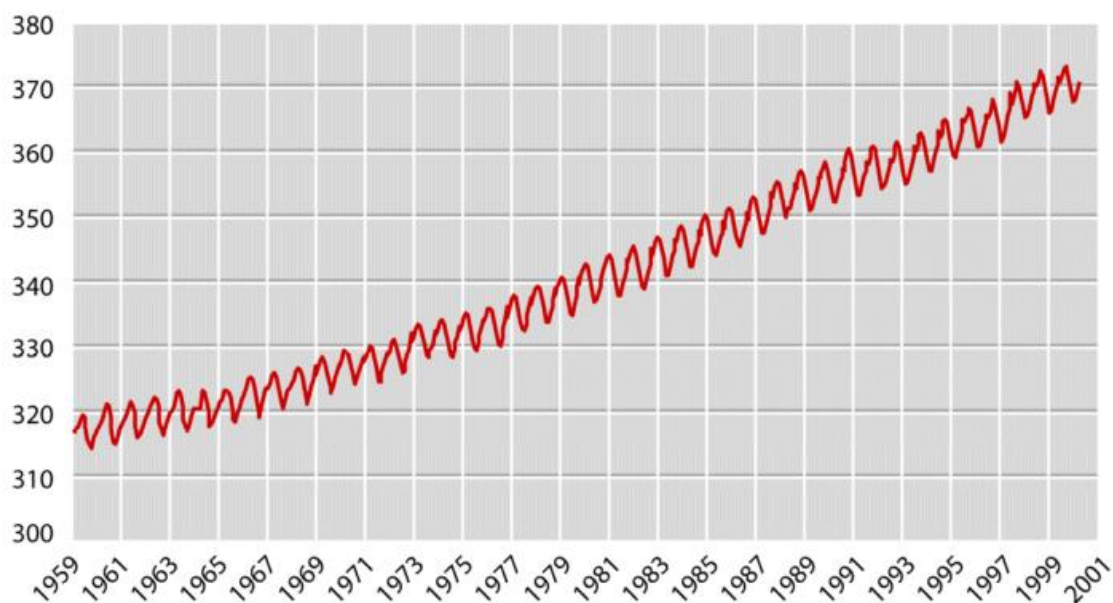
Claves:
 ▲ Aumento
 ■ Ampliación
 ▼ Disminución

(Depledge & Lamb 2005)

As shown in the table, the consequences are sorted by chance they happen, which does not mean for sure that will happen, but given some of them to a greater or lesser extent, many factors in society would be affected unpredictably . Among them is the sun, sea and sand tourism, closely linked to seasonality, weather conditions, temperatures and living conditions and social aspects of their host countries (such as, for example, the loss of travelers to the main centers of South America due to Zika virus today, and which we will know the scope behind the numbers of 2016).

As the following chart shows, the concentration of CO² in the atmosphere (measured in Samoa, one of the cleanest countries in the world), the main agent causing the greenhouse effect is increasing year by year, and while it is not today a threat, it can be if these levels continue to rise, so a multisector initiative and commitment is necessary to try to reduce it.

Graphic 2: Increases of CO² emissions in Samoa between 1959 and 2001.



(Depledge & Lamb 2005)

In the short term, the consequences that may most affect the tourism sector are reported in the UNTWO document *Turismo y Cambio Climático*:

“Los futuros cambios de la temperatura y de otros rasgos climáticos importantes se manifestarán de forma diversa de una región del mundo a otra. Según el Grupo Intergubernamental de Expertos sobre el Cambio Climático, es muy probable que cada vez sean más frecuentes las temperaturas altas extremas, las olas de calor y las precipitaciones intensas. Es también probable que los futuros ciclones tropicales (tifones y huracanes) ganen en intensidad, registrándose un aumento de las velocidades máximas de los vientos y precipitaciones más intensas derivadas del actual aumento de las temperaturas de la superficie de los mares tropicales. Inspiran menos confianza las previsiones de descenso a escala mundial del número de ciclones tropicales. La gran extensión de las regiones con destacados destinos turísticos que se verán directamente afectadas por esos fenómenos extremos pone de manifiesto la necesidad de crear conciencia y fomentar la preparación de ámbito local

para los peligros naturales mediante una capacitación sistemática y estrategias de gestión del riesgo de catástrofe. Está previsto que las trayectorias de las tempestades extratropicales se desplacen hacia los polos, lo cual modificará las pautas de los vientos, las precipitaciones y las temperaturas y consolidará las pautas generales de las tendencias observadas a lo largo de los últimos 50 años. También se prevé que prosiga la disminución de la capa de nieve observada.”

(Nicholls 2004)

- Theories that oppose climate change:

Today, the theory of climate change has most acceptances among the scientific community, although that acceptance is far from being unanimous. A portion of the scientific community known as deniers, rejects the theory of climate change mainly invoking this phenomenon is natural and inevitable origin or the theory of climate change is not sufficiently well- argued or demonstrated.

Over the years have been emerging negationist theories that reject climate change, although some have been rejected, other avenues remain open alternatives to the explanation of climate change.

Among the least supported negationist theories is the theory that climate change was stopped in 1998, since from there until 2008, temperatures had risen only 0.2 degrees, being the warmest year to date 1998 followed by 2005. Currently, this habit seems to have retaken in recent years, since at the expense of what happens to 2016, now the first 2 positions are filled by 2015 and 2014 respectively, with a variation of almost 1°C between the two, followed at some distance by 2010.

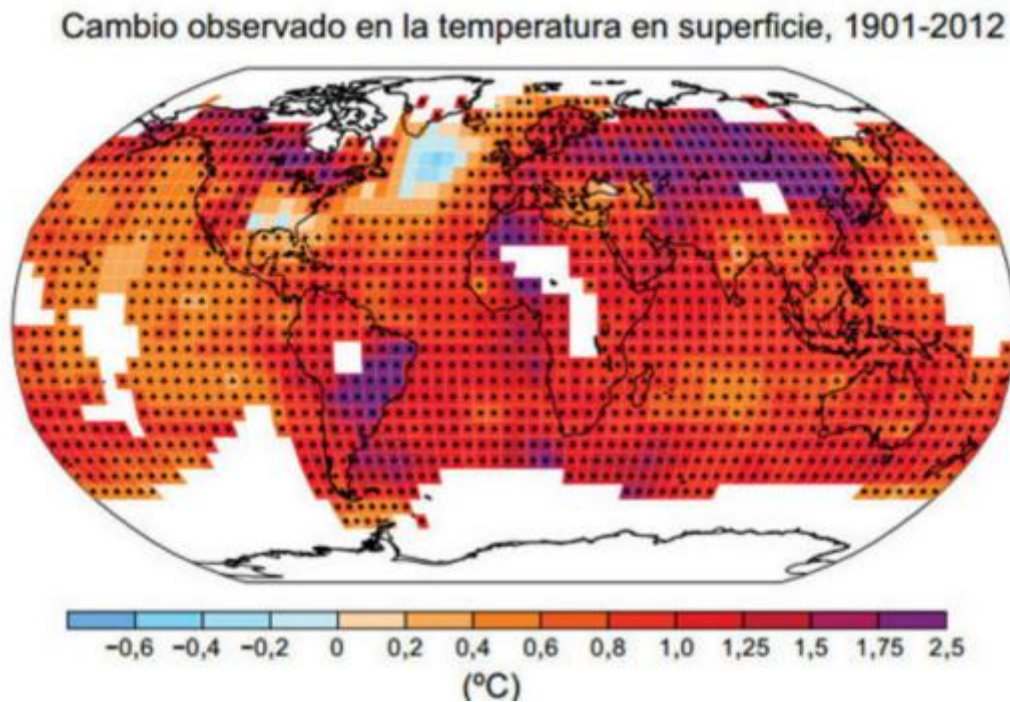
Another of the arguments is that there is no consensus on theories that explain climate change, for example, the anthropocentric origin of climate change. While it is true that isn't a total consensus in this point, it is estimated that more than 90% of the theories pointing in that direction. Other arguments claim that the current instruments are not accurate enough to predict climate change and cannot predict the influence of some random phenomenon, which can result in excessively alarmist and inaccurate predictions.

Moreover there are deniers theories which remain in force and which are currently valid alternatives, such as that suggests that we are in the hottest phase of a solar cycle, a phenomenon in which the sun emits an amount of energy greater than normal impinges on earth and can affect the earth's climate and introduce variations in

temperature and atmospheric events. If true the theory, although greenhouse gases contribute to aggravate the situation, this phenomenon lasts about 11 years or so, after which the situation should return to normal.

The latest theory is that argues that global warming is a natural phenomenon. The temperature between periods of glaciation tends to increase slowly but steadily, increased softly in some points, but not at warning levels.

Map 1: Changes in Earth's temperature observed between 1901 and 2012.



<http://habitat.aq.upm.es>

This process involves multiple factors such as ocean currents, retention sunlight or volcanic eruptions, human action would only be another factor to consider.

4.3. The Mediterranean climate

“El clima mediterráneo se sitúa entre los 30º y los 45º de latitud, tanto norte como sur, y en la fachada oeste de los continentes. Los centros de acción principales que dominan en este clima son los anticiclones subtropicales, y el Frente Polar. Así, las masas de aire dominante son las de tipo tropical marítimo, cálidas y relativamente húmedas, tropical continental, cálidas y secas y las masas de aire polar marítimo, frías y húmedas. En invierno pueden llegar masas de aire polar continental, frías y secas, procedentes del centro de los continentes.

Las lluvias dominantes en este clima provienen de la posición del Frente Polar. El paso del Frente Polar por estas zonas se produce en primavera, que sube de sur a norte, y en otoño que baja de norte a sur. Así, las épocas lluviosas son la primavera y el otoño. En las zonas costeras del clima mediterráneo, y debido al calentamiento del mar, se pueden producir violentos episodios de gota fría. El invierno es una época relativamente con pocas precipitaciones, pero lo más característico de clima mediterráneo son los tres o cinco meses de aridez estival. En verano, especialmente al final, son frecuentes las tormentas. Las precipitaciones oscilan entre los 400 y los 1 000 mm anuales, dependiendo de las zonas. Son lluvias muy irregularmente repartidas a lo largo del año.

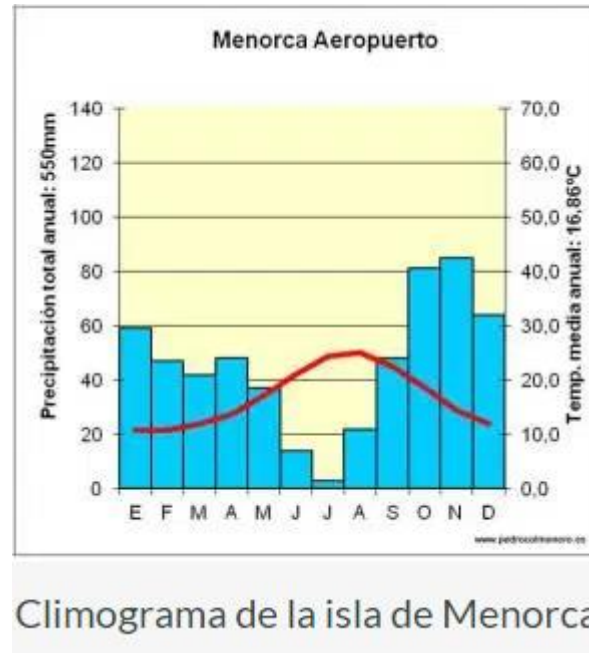
Las temperaturas son suaves durante todo el año. La amplitud térmica anual es entre reducida y moderada, y puede ir de los 5 a los 18 °C de diferencia entre el mes más frío y el más cálido. La amplitud térmica diaria puede ser moderada, especialmente en invierno y llegar a los 15 °C. El verano es la época más calurosa, pudiendo llegar a ser cálida. La época de aridez dura entre tres y cinco meses, en los que la evapotranspiración debida al calor supera a las precipitaciones, y, por lo tanto, se hace a consta de la reserva de agua. Esta circunstancia provoca que, recurrentemente, la sequía sea uno de los problemas de estos países.”

<http://geografia.laguia2000.com>

For this work and for sun, sea and sand tourism, the characteristics of the coastal Mediterranean climate are excellent. First we find a warm and humid climate with higher temperature peaks and second, the rainfall in this climate usually occur in the spring and autumn, leaving in summer ideal conditions for the development of sun, sea and sand tourism: good temperature, hot sense, sea water at an optimum temperature for bathing and possibilities of low rainfall.

As proof of what has been said in the previous paragraph, we have the annual climograph of the Spanish island of Menorca, located a few meters inside the Spanish Mediterranean in 2014.

Graphic 3: Climograph of the island of Menorca during year 2014.



<https://geobalears.wordpress.com>

Because of their generally warmer weather and less rainfall than the rest, the Mediterranean rivers are often usually short, fast flowing and accusing the dry season in summer, reaching the smallest of them even to dry out completely during the dry season . Their times of peak flow is the time to own rainfall this climate (usually fall, although spring) and in the rivers with birth in the high mountains, the spring thaws.

Mediterranean vegetation is also clearly marked by the climate of the region it is characterized by xerophilous (adapted to drought) or porous evergreen needle-shaped and long and deep roots. The dominant species depend on the particular area, but in general are the oaks and abundant thorny undergrowth with multiple flavors.

Part III:
Analysis

5. Analysis

5.1. How the tourism influences the climate change?

Tourism is one of the main factors contributing to climate change beside the industry due to various factors which occur during the tourist activity, such as mainly CO² emissions emitted during transport to and from the destinations and other lower as modification and exploitation of landscapes or overexploitation of resources and increased waste generation in the destinations.

As discussed in previous points, the CO² is the main gas that is part of the noxious emissions that increase the greenhouse effect, and tourism is one of the important outbound, as shown by this table of tons of CO² generated by the tourism concerning global emissions:

Table 3: Tonnes of CO² discharged from tourism to the total in year 2003.

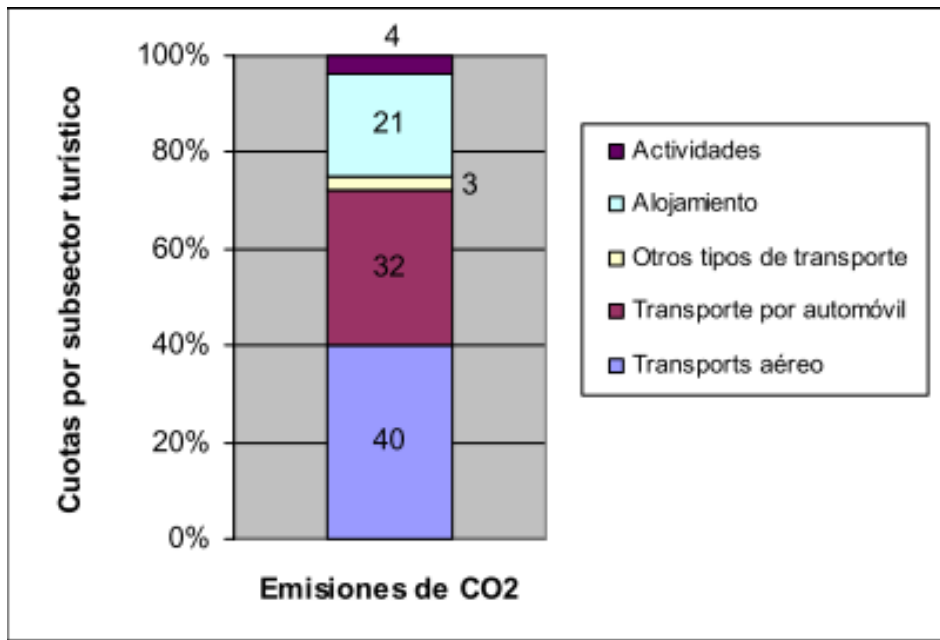
	CO ₂ (millones de toneladas)
Transporte aéreo	517
Otros tipos de transporte	468
Alojamiento	274
Actividades	45
TOTAL	1.307
Total mundial ¹	26.400
Cuota (%)	4,95

(Nicholls 2004)

As you can see, tourism emissions account for almost 5% of the tons of CO² emitted into the atmosphere annually, which places it among the sectors with the highest emissions generated, especially at the moment of the displacement when the tourists go to their the destination from their address and vice versa.

Disaggregating only tourist emissions, the main cause of emissions in tourism is transport. Due to the large of mass tourism boom that discussed above and lower prices in transport, especially aerial, the number of tourists traveling has increased every decade.

Graphic 4: Disaggregated CO² emissions from tourism in 2003.



(Nicholls 2004)

Transport produces 76% of the emissions of CO² by tourism, led by aerial (40%) and by car (32%), leaving only 3% for other ways of transport (maritime and train) really small compared to the previous two.

In the graph we can see that 21% of these emissions are due to the housing. These emissions emanate mainly from recent times in which we find most urban main tourist accommodations (hotels) equipped with air conditioning, heating, both or climatization modules. This "extra" although not mandatory in less than 4 star establishments, it is a very common and demanded service, so most 3 star hotels and some 2 also have already installed, which means there more hotels with this service and therefore are more polluting. It is also due to a lesser extent, to the large number of electrical appliances that are used in these establishments, especially if it is large establishments with laundry or a large own kitchen.

Besides emissions, tourism also causes other problems related to climate change, such as overexploitation of aquifers in the various duty stations. Due to rising temperatures, lower snowfall and erratic rainfall, abuse of these resources increases, especially in tourist times, when some destinations significantly increase the number of inhabitants. This, coupled with the slow increase of regeneration of aquifers, causes sometimes these are emptied and salinized, thus preventing future use. Apart from the tourist season, the destination can present problems of irrigation and worsening quality

of health of the population due to lower water quality caused by increased wastewater discharge to the beaches and rivers or waste of cruises that go into the Mediterranean Sea, very fashionable today.

Finally also it has impacts on vegetation and landscape, as in some enclaves the natural landscape is modified or destroyed for the sake of tourism infrastructure. In the present case, the Mediterranean, this effect is noticeable mainly in Mediterranean forest felling and destruction of crops and fens for construction of tourist enclaves near the coast or beachfront apartments. We also found the introduction of non-native or exotic species in these enclaves to areas of gardening or introduction of wildlife that can alter the landscape if it takes over the land, displacing native species.

Also the impact caused by increased consumption in the tourist season, resulting in an increase of garbage and wastes messing the landscape and may modify the pH of the soil when treated inadequately or should expect to be treated due to the saturation.

5.2. How the climate change influences the tourism?

In the previous section, it has been treated with negative influences that tourism can promote climate change, helping to make it a serious problem. But, in the same way, an increase in the phenomenon of climate change can also affect tourism very negatively, especially the model of sun, sea and sand.

According to Besancenot, the tourist has a number of requirements when choosing destination that would be affected negatively by increased current characteristics of the emerging climate change:

“-Exigencia de disfrute, plasmado en una abundancia de días de sol y, por ende, una exposición baja a la probabilidad de lluvia, especialmente en las horas centrales del día.

-Exigencia de confort y salud, esto es, el registro de unas temperaturas de confort con niveles de humedad relativa aceptables

-Exigencia de seguridad, es decir, la existencia en el destino turístico de niveles bajos de peligrosidad climática. En el contexto de cambio climático actual, la modelización climática en latitudes medias y, específicamente, en el ámbito mediterráneo, señala una serie de alteraciones que ponen en cuestión el “cumplimiento” de estas exigencias en los destinos turísticos.

-El aumento de días sin lluvia que, en principio, aumentaría las posibilidades de disfrute se verá contrarrestado por la reducción de volúmenes de agua disponible que puede poner en peligro los abastecimientos de espacios turísticos.

-Temperaturas más altas en verano y calor húmedo, poco soportable, en zonas litorales. Pérdida, por tanto, de confort climático.

-Incremento de extremos atmosféricos; por tanto, nivel de riesgo mayor.”

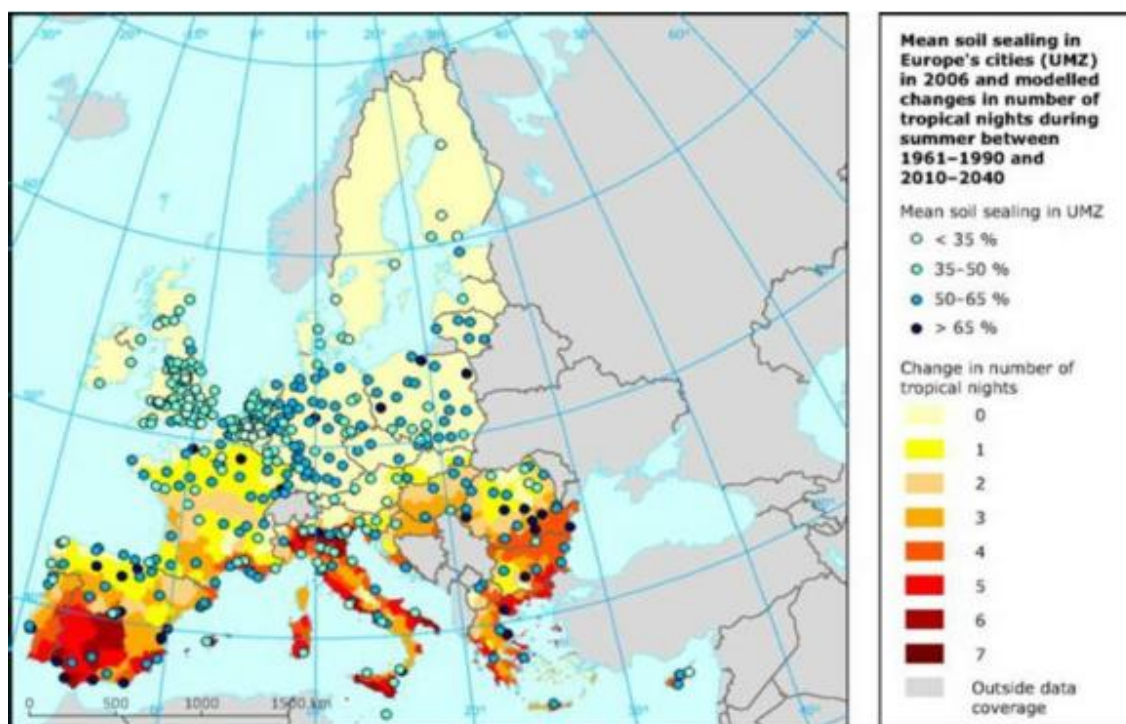
(Besancenot, J.P. 1991)

As planned, the change may cause long-term loss of the share of tourists received and the choice of ocean destinations located in warmer areas and milder and stable temperature (Cantabrian Sea, the Caribbean or Riviera Maya) in detriment of areas such as the Mediterranean Sea, which will become excessively warm.

One of the phenomena that contribute to climate change disfavor tourism is on the increase in the "tropical nights". This phenomenon called the summer nights with

more than 20°C temperature, this effect is retroactive, because although it is a consequence of climate change causing loss of comfort to tourists, is accentuated by excessive construction of housing stocks and apartments by area. The areas where this occurs are called "soil sealing".

Map 2: Increase of tropical night in Europe between 2010 and 2040 based in model of 2006.



Fuente: AEMA, 2011.

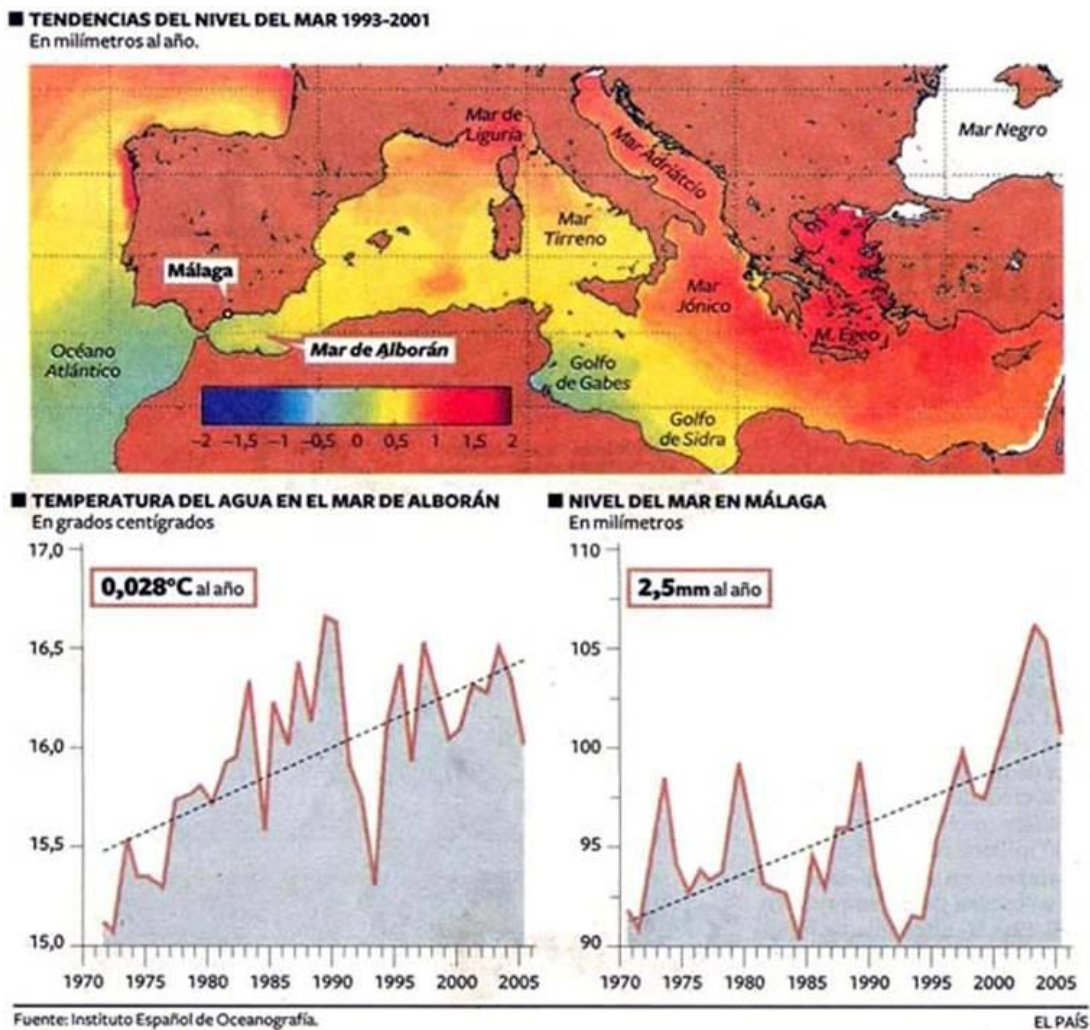
(Olcina Cantos 2012)

As shown on the map, the biggest increases in European tropical nights are located mainly throughout the Mediterranean coast (coast of southeastern Spain and the Balearics, French Riviera, Corsica and Sardinia, all the Italian coast and Sicily, Greece, Cyprus and Malta) and on the west coast of the Black Sea. They are all important tourist enclaves where most of the sun and beach tourism globally with Mediterranean climate and a great urban development both in terms of population and numerous tourist enclaves built following the boom of transport takes place.

Climate change also influences the temperature of the Mediterranean Sea. The increase in water temperatures, apart from an environmental problem is also counterproductive for tourism developed.

The increase in water temperature at having to absorb more CO² can cause problems that affect the life of marine ecosystems, such as the disappearance or migration of endemic species to colder areas, malnutrition marine animals and increasing acidification of the water. All this can generate dead zones on the seafloor, not suitable for marine life.

Map 3: Increasing of temperatures in Mediterranean Sea water between 1993 and 2001, with a special focus on sea level and temperature in Mar de Alborán (south of Spain) between 1970 and 2005.



<http://www.biogeociencias.com>

The increase in temperature at the Mediterranean Sea, if it continues to increase at this rate, may affect the underwater landscape and, therefore, adversely affect the tourist enclaves where scuba diving is a characteristic and main activity of its offer, such as the Costa French Riviera, the Greek islands or Sicily.

5.3. Measures to mitigate climate change: Sustainable Tourism

5.3.1 General measures

Since the UN point out on the phenomenon of climate change and how human activity is a key factor in its evolution, they have celebrated many meetings and resolutions concerning plans of action to stop it and even try to reverse it. Some of these plans include actions and guidelines that directly affect tourism.

The first of them is the plan of implementation of the decisions of the World Summit on Sustainable Development held in Johannesburg (South Africa) in 2002. This implementation plan refers to tourism issues in point 43, betting on environmental awareness in the tourist destination and promoting more environmentally friendly variants tourism and less harmful to the environment in a coordinated way by all tourism stakeholders through the following points:

“a) Aumentar la cooperación internacional, las inversiones extranjeras directas y las asociaciones con el sector privado y el sector público en todos los niveles.

b) Formular programas, incluso en materia de educación y capacitación, que fomenten la participación en el ecoturismo, habiliten a las comunidades autóctonas y locales para fomentar el ecoturismo y beneficiarse de él e intensifiquen la cooperación entre los distintos interesados en el desarrollo del turismo y la preservación del patrimonio, con el fin de aumentar la protección del medio ambiente, los recursos naturales y el patrimonio cultural;

c) Prestar asistencia técnica a los países en desarrollo y los países con economías en transición con el fin de apoyar el desarrollo de empresas de turismo sostenible, las inversiones en dichas empresas y los programas de creación de conciencia turística, mejorar el turismo interno y estimular el desarrollo empresarial;

d) Ayudar a las comunidades locales a administrar las visitas a sus atracciones turísticas de modo que obtengan el mayor beneficio posible con un mínimo de riesgos y de efectos negativos para sus tradiciones, su cultura y su medio ambiente, con el apoyo de la Organización Mundial del Turismo y otras organizaciones competentes;

e) *Promover la diversificación de las actividades económicas, incluso facilitando el acceso a los mercados y a la información comercial, así como la participación de las empresas locales incipientes, especialmente las pequeñas y medianas.*"

<http://www.un.org>

It also makes direct tourism the United Nations Conference on Sustainable Development in Rio de Janeiro (Brazil) held from 20 to 22 June 2012 in Articles 130 and 131. These articles reference again to emphasize the importance of capital investment and promoting sustainable tourism, including ecological and cultural tourism, more ecological modalities. Yet, as put in Article 131 does not propose or requires take any action, delegating this responsibility to the nations for their free application, but stressing the importance of support for these measures.

"131. We encourage the promotion of investments in sustainable tourism, including eco-tourism and cultural tourism, which may include, inter other things, to create small and medium enterprises and facilitate access to financial resources by means such as micro-credit initiatives for poor, indigenous and local communities in areas with great potential for ecotourism. In this regard, we stress the importance of establishing, where necessary, appropriate guidelines and regulations, in accordance with national priorities and laws, to promote and support sustainable tourism. "

(Naciones Unidas 2012)

In the following articles of the conference they explain references to measures for application in sectors linked to tourism, such as transport, industry and urban planning.

5.3.2 Examples of measures adopted in Mediterranean destinations

- Strategic Plan of Calvià (Balears, Spain)

Maybe the most illustrative example of what is to be treated in this work. The town of Calvià, in Spain, represented the real boom of sun, sea and sand tourism during the sixties and seventies of last century with the consequent construction of indiscriminate urban infrastructure and abuse that entailed the destruction of the landscape and a general decreased quality of life in town at long term. That is why late last century its appeal as a tourist destination suffered a situation of great deterioration.

That is why the City Hall of Calvià decided to install a new Agenda 21 dedicated to the mitigation of abusive use of resources of the town and direct it towards the

regeneration. Therefore proposed plans to control expense resources and landscape protection not only for local people but also for the touristic sector.

It can be summarized mainly in 10 lines of action:

1. *To contain human pressure, restrict the growth and promote the comprehensive rehabilitation of the territory and its coastline.*
2. *Promote the integration, coexistence and quality of life of the resident population.*
3. *Preserving land and sea natural heritage and promote the creation of a tourist-regional ecotax with environmental destination.*
4. *Recovering the historical, cultural and natural heritage.*
5. *Promote the rehabilitation of residential cores and tourist population.*
6. *Improve Calvià as a tourist destination: replace uncontrolled growth for sustainable quality, look for the elevation of spending per visitor and tend to balance the tourist season.*
7. *Improve public transport and encourage pedestrian and bicycle travel between and within the core of population centers.*
8. *Enter sustainable management in key environmental factors: water, energy and waste.*
9. *Invest in human resources and knowledge, stimulate and diversify the economic system.*
10. *Innovate the municipal government and expand the capacity of public-private investment agreed.*

<http://habitat.aq.upm.es>

Among these 10 lines of action are some that have impacts on tourism in Calvià more directly, as in the case of paragraph 6 or 3, which consist of the exchange on the type of tourist that town seeks to attract, replacing the quantity of uncontrolled sun, sea and sand tourism that is more classic, with little expense and generally less respectful of the environment and replace it with a tourism more focused on quality, concerned not only by the sun and beach, but also by the heritage of ecological value and

environmentally friendly, who often report a greater amount of spending per person, but not as abundant in number as the previous one.

The other points affecting tourism indirectly, such as 8, committed to contain the expenditure of resources by substituting abuse for more sustainable forms, the 1st which prevents the indiscriminate construction or 9, which bid to diversify an economy that at the end of the last century it depended on 95% of the tourism sector.

- Management of tourism in Çirali (Turkey)

Similar to Calvia, the small rural town of Çirali, located in the province of Antalya, in the Peninsula of Anatolia, received in the sixties and seventies a disordered tourist boom along with all the Mediterranean coastal strip of the Ottoman country . To mitigate the effects of abuse of resources and destruction of the landscape, was assigned between 1997 and 2000 a consignment of 714,000 euros from the Turkish Ministry of Culture and for the most part of European LIFE funds to be part of the pilot project tourism management along with the town of Belek. The purpose of this project was also replaced the uncontrolled model of sun, sea and sand tourism in the area by a more oriented to sustainability and environmentality kind of tourism form, controlling the expenditure of resources and strengthening other tourist attractions such as support for biodiversity area (eg, preservation of forest resources or marine turtles nesting areas) or the preservation of the landscape and cultural heritage (such as the nearby ruins of Olympos or the volcanic area of Mount Chimera.

- Cleaning and improving quality of beaches in Greece.

This project was conducted in 1994 in 130 km from the beaches of the country, particularly in the area of Salamis, Aegina and Attica, mainly funded by the European LIFE funds with the support of Greek capital. Due to the usual saturation on the coast both tourists and urban and industrial activity in the absence of an effective system of collection and disposal, the beaches of the Hellenic country were in a very poor state of cleanliness. After the design and successful implementation of system suitable characteristics for the area and a major effort to accelerate the collection, the plan was recognized as a success by visitors and residents, to add to its previous tourist offer a clean, safe and pleasant environment. The plan was maintained over the next year during which it was also extended to other beaches in the country, in areas of Hydra, Achaia, Helia, Chalkidiki, Andros and Kea.

(Bengochea Morancho et al. 2006)

Part IV:

Conclusions

Improvement proposals

Bibliography

6. Conclusions and improvement proposals

After everything analyzed and discussed throughout the work, it can be concluded, primarily, that although we cannot ensure 100% that the phenomenon of climate change is real, it is clear that the human is a clear modifier of landscape in detriment of nature and an avid consumer of resources that can damage the environment irreparably. Although the phenomenon of climate change is not given as provided or be given in more benign conditions, the consequences on the level of environment, health and comfort of the population can suffer severely if it is not to improve the current situation of the pollution in general and, more particularly greenhouse gas emissions.

Even that can be blamed primarily other major sectors such as transport or industry of these problems, it is clear that tourism is a field that requires control and improvements to reduce the pollution and resource exploitation. Due to the multisectoral nature of tourism, it can be a key pillar in the battle for mitigates the polluting effects of human action because educating tourists and tourism businesses can have beneficial effects with an impact on other sectors such as transport, waste management or the use of renewable energies.

It is a fact that in the past, especially since the industrial revolution and transport, ignorance of the consequences brought tourism to commit actions against the environment such as the indiscriminate construction, which affects the quality of setting and reaching such a degree of modification that destroys some areas of environmental interest, such as fens or loss of endemic vegetation, replaced by buildings and tourist infrastructure such as apartments, hotels or resorts.

The exposure of these events and their possible consequences in the mid-end of last century were used to show that to continue in this way, the effect may be retroactive and be climatic and environmental conditions which affect negatively on the tourism activity the Mediterranean region. Many effects, such as increased warm nights, worsening water both bathing and consumption, salinization of aquifers of potable water for drinking and hygiene, increasing water temperatures and especially the greenhouse gases emission can adversely change the opinions of tourists who flock to the Mediterranean sun and beach and make choose another destination more in line with their tastes, which in an area where income from tourism, attracted by their conditions of insolation and suitable for swimming, temperatures are a fundamental part of the economy of the country is running a big risk.

Environmental care and prevention for the conditions that generate tourist attraction to the Mediterranean area do not worsen, is a result of climate change or not, should be a priority considering the high incidence that this has on the economies of the countries where it develops , becoming a key and irreplaceable factor in some areas such as the eastern Spanish coast or the Greek islands, so although not count on compulsory measures, it is necessary awareness on the part of the entire sector on the importance of keeping everything in its current state.

While today, the economic recovery and the fact that the threats may bring climate change are still almost imperceptible to tourists, is a good time to implement measures to promote environmental sustainability to ensure tourism conscious that can appreciate the clean and sustainable environment. Countries and institutions have already begun to undertake such initiatives, resulting in the denominated sustainable tourism, which does not have to replace the old models like the sun, sea and sand, but it can be mixed with them to result in more conscious tourists who appreciate not only the sea and sun, but also the destination itself, creating more quality than quantity tourists.

Commenting that although these measures have produced positive and effects almost immediate as in the examples previously seen Calvia, Çirali or the Greek coast, yet there are few destinations in applying such measures in particular and regulations and proposals of the international community are no more than guidelines and recommendations for voluntary and free application which do not involve serious consequences if not subscribe or if they are breached. If efforts are not unified and not cooperation agreements are achieved happens what is currently taking place: if some sites do not implement these measures, what is gained by those that do, simply is compensate or isn't enough, producing the global situation does not change and continues.

So then measures to try to correct these points and keep trying to promote sustainable tourism and climate change mitigation are proposed.

7. Improvement proposals:

- Reducing greenhouse gases:

In the current situation this point it is of paramount importance and many countries have already been put to work in this area, trying to make society see this goal is not how corporate responsibility but as a global action on every little effort counts. It would be appropriate to implement general measures to encourage the use of public transport, especially in close movement coming within the routine, which are the majority: commuting to work, trips to beaches, one day hiking to other places nearby ... also bet long as it is possible renewable energy and promote them, especially in tourist infrastructure, which often gather much consumer spending and generate emissions kitchens or air conditioners.

- Bonus tourism businesses that use renewable energy and other sustainable initiatives:

This measure is essential, even if they are already implemented similar in hotels like the Q of quality. The idea is to meliorate local using not only renewable energy, but also to those who commit to reduce their emissions, promote public transport or to other companies that offer services that are related to sustainable tourism. The measure could be based both in the delivery of financial amounts (try to funding of the LIFE funds) apart from delivering badges. The objective of this measure is, apart from the environmental improvement, meet new conscious tourists who see with better eyes go to friendly local environmental and serve as an example and incentive to other sectors, since tourism is a transversal activity which includes many other services in its realization.

- Awareness and promotion of sustainable tourism:

Promotion to tourists through advertising campaigns such as brochures, posters and slogans that the environment in which meet is a degradable good and look after the place where live other people the rest of the time is important. So we need to stop polluting behavior that produces the "tourism binge", closely linked to sun and beach and increasingly extended by the European Mediterranean, which usually leave excessive residues on beaches and establishments in which it develops while repels other tourists seeking tranquility and enjoyment of the target area kind of tourist generally more responsible and less expenditure of resources. Prevent irresponsible by tourists and take awareness that should take care of the environment for the sake of the rest, the mentality "another will clean it" is not acceptable.

- Promotion of disadvantaged tourist destinations:

It is not about trying to scare away the customer from the usual destinations, but to get it established in other nearby areas. This may favor the dispersion of tourists to unleash many positive effects: increased distribution of the economy that is left in the destinations, reducing cleaning costs of the same destinations, alleviate the overexploitation of aquifers in the tourist period, produce less pollution in the same space and perhaps slightly reduce the temperature generated due massification in certain areas. This promotion can be carried out as in the previous point, more online promotional campaigns and others in the places of origin of tourists.

- Reduction and avoidance of fuel oil spills and the Mediterranean:

This measure could be coordinated by the agencies responsible for the environment of the countries and continents that are bordering the Mediterranean Sea. It is common, unfortunately the finding of toxic waste in the high seas either discharges of societies, fuels that lose the many cruise ships in the area or sunken ships or, more extraordinary, great spots for sinking or loss of cargo by ships that transport crude oil between countries. Besides harden the security measures and sanctions to prevent or punish such actions, it is necessary also an initiative of detection and clearance of these wastes, especially harmful to marine life. Private companies have detection systems for this discharges, special maritime beacons could be hired and paid from a joint fund among stakeholders, it would be important to establish patrols responsible for detecting and eliminating these discharges and other forms of pollution that will for Sea.

-Increasing the creation of synergies between the companies involved in environmental initiatives and sustainable tourism or coastal hotel sector:

Promote facilitation through cooperation or pacts feedback between hotels located in coastal areas, usually much frequented by tourists than their urban or mountain counterparts, with companies offering services that do not harm the environment or other environmental initiatives belonging the inland tourism. Although this is already being carried out, promote it is important because it involves feedback in which both parties benefit. For example, a hotel offers bikes for rent belonging to another company in exchange for a commission ensures that guests use less the own vehicle to travel within the city and both companies make profits. Also cooperation agreements with discounts for guests with companies offering tourism experiences in the environment are often beneficial because, apart from the already mentioned economic benefit for both, there is an awareness factor on the host using the service.

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