Trends in Global Coastal Tourism Development and its eventuality in the era of Climate Change

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Abstract

This study presents a picture on coastal tourism development around the globe and its future scenario in the context of climate change. Findings of this study revealed that the coastal tourism is largely concentrated in the Euro-Mediterranean Sea region as well as in the Coral Triangle of Western Asia-Pacific. Countries of the East African coast, namely, Kenya, Tanzania and Mozambique are having much potential for tourism development. Well known examples of tourism destinations are also found from the coastal areas of Australia, USA and the Caribbean Islands.

This study also demonstrated that coastal and island tourism destinations are highly vulnerable to multiple impacts of climate change. It might be the most vulnerable in the large developing countries and small islands states, but the developed countries of high latitudes as well as the Mediterranean are amongst the least vulnerable from the multiple effects of climate change.

Keywords: Coastal Tourism, Coral Triangle, Climate Change, Mediterranean, Sea Level Rise, Vulnerable.

Introduction

Tourism is considered as one of the fastest growing sectors in the globalised world. The extraordinary landscape of the coast have made them preferred tourism destinations for many holidaymakers and making coastal and maritime tourism as an important sector in the segment of blue economy. It supports 6.5 million jobs and is projected to be the largest value adding segment of the ocean economy by 2030\(^4\) and its share on the total ocean industry value-added is expected to reach 26\% by 2030.\(^5\) Tourism activities along coastal areas actually started during Roman times\(^6\) and become constant since the end of World War II.\(^7,8\)

From the late 18th and early 19th centuries, beach resorts spread successively across Europe and the Mediterranean and into the United States, later on took root in the European-settled colonies and republics of Oceania, South Africa and Latin America and eventually reached in Asia.\(^9\)

Today, well-known examples of tourism destinations are found along the tropical and sub-tropical coastlines of the world which are mainly incorporated by the sun, sea and sand.

Defining coastal tourism: Coastal tourism is a dynamic system that involves interactions between people and place in destinations that includes small communities and villages, self-contained resorts and cosmopolitan cities.\(^27\) Most coastal tourism takes place along the shore and in the water immediately adjacent to the shoreline.\(^28\) Coastal tourism embraces the full range of tourism, leisure and recreationally oriented activities that take place in the coastal zone and the off-shore coastal waters.\(^16\) It covers beach-based tourism and recreation activities e.g. swimming and sunbathing and other activities for which the proximity of the sea is an advantage such as coastal walks and wildlife watching.\(^13\)

Profile of global coastal areas: Earth is a Blue Planet which comprises 361.13 million sq. km. of water bodies i.e. 71\% of total planet surface and 148.94 million sq. km. of land areas i.e. 29\% of total planet surface. Both water bodies and land area interact intensively and extensively along the world’s total 2,634,701 Km. of coastline.\(^5\) Another estimation has found that the entire globe has total 1, 63, 4701 km. of coastline of which Canada has longest coastline (2, 65,523 km.) followed by United States (133312 km.), Russia (110310 km.) and Indonesia (95181 km.) etc.\(^40\) At the global scale more than 600 million people (around 10\% of world’s population) live in the near coastal zone (less than 10 metres above mean sea level) and within the 100 km. of the coast respectively.\(^42\)

Trends in global coastal tourism development

Coastal tourism in the coral triangle (Asia-Pacific): The Coral Triangle is a global epicentre of marine biodiversity located in the Western Pacific Ocean. This network provides 130 million people with food and income as well as generates US$ 1.6 billion in revenues from fishing and marine tourism. According to WWF-Pacific,\(^58\) countries within the Coral Triangle Network have growing coastal and maritime based eco-tourism market. In Philippines, Malaysia and Indonesia, nature-based adventure tourism is already developed and it is a crucial part of their national income. Coastal and maritime tourism in Timor-Leste is at an early stage of development.

In Papua, New Guinea and the Solomon Islands tourism in general is still relatively less developed, but holds enormous potential. The coastal and maritime tourism in the Coral Triangle region has generated US$ 83.7 billion revenue in 2014 and more than 33.5 million international visitors travelled to the Coral Triangle and 418 million domestic trips were made for marine and coastal tourism purposes (Table 1).
Coastal tourism in the East Africa: Coastal areas have a high potential for tourism development in large parts of Africa. According to Nelson, the Kenyan coast is relatively developed for tourism. Mombasa, Lamu, Malindi are the most heavily developed coastal tourism destinations of north of South Africa. In Tanzania, the main coastal tourism destinations are the island of Unguja (Zanzibar Island) and Dar es Salaam beaches. The islands of Pemba and Mafia and a few coastal locales such as Pangani and Bagamoyo have intermediate levels of development. In Tanzania, southern coast is mostly undeveloped but areas such as Kilwa, Rufiji Delta and Mnazi Bay have much potential for coastal tourism development in near future. Most of Mozambique coastal destinations are relatively undeveloped in terms of tourism, exception are few areas such as Pemba/Quirimbas NP, Vilanculos (Bazaruto Archipelago) (Table 2).

Table 1
Key tourism indicators in the six coral triangle countries.

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Timor-Leste</td>
<td>1.5 % (2015)</td>
<td>Not Ranked</td>
<td>14,000 (2006)</td>
<td>58,000</td>
<td>+314%</td>
<td>N/A*</td>
<td>$982.76</td>
<td>Not forecast data available</td>
</tr>
<tr>
<td>Solomon Islands</td>
<td>5 (2015)</td>
<td>178</td>
<td>9,000</td>
<td>24,400</td>
<td>+171%</td>
<td>32,500 by 2019</td>
<td>$2,803.28</td>
<td>$0.4 billion</td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>3 % (2015)</td>
<td>161</td>
<td>69,000</td>
<td>174,000 (2012)</td>
<td>+152%</td>
<td>415,000 by 2017</td>
<td>$1,208.33</td>
<td>$2.1 billion</td>
</tr>
<tr>
<td>Philippines</td>
<td>11.2 (2014)</td>
<td>36</td>
<td>2.6 million</td>
<td>4.7 million</td>
<td>+78%</td>
<td>5.5 million (Torres 2015)</td>
<td>$1,794.49</td>
<td>$53.9 billion</td>
</tr>
<tr>
<td>Indonesia</td>
<td>9 % (2014)</td>
<td>17</td>
<td>5.0 million</td>
<td>8.8 million</td>
<td>+76%</td>
<td>10.5 million</td>
<td>$1,167.92</td>
<td>$212.1 billion</td>
</tr>
<tr>
<td>Malaysia</td>
<td>14.9 % (2014)</td>
<td>26</td>
<td>16.4 million</td>
<td>25.7 million</td>
<td>+57%</td>
<td>29.4 million</td>
<td>$1,737.36</td>
<td>$185.5 billion</td>
</tr>
<tr>
<td>Total</td>
<td>9 % Global Average</td>
<td>Out of 184 Countries</td>
<td>24.1 million</td>
<td>39.5 million</td>
<td>63%</td>
<td>46 million+</td>
<td>$1,615.67</td>
<td>$454.3 billion</td>
</tr>
</tbody>
</table>

*Timor-Leste’s Strategic Development Plan 2011 – 2030 only states that the 2030 target is “a large number of international visitors”.

Source: Compiled from WWF-Pacific.

Table 2
Varying levels of development in regional coastal tourism destinations along the East African coast.

<table>
<thead>
<tr>
<th>Coastal States of East Africa</th>
<th>Established or Saturated Destinations</th>
<th>Emerging Destinations</th>
<th>Future Destinations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tanzania</td>
<td>Unguja (Zanzibar Island), Dar es Salaam beaches</td>
<td>Premba Island, Pangani, Bagamoyo, Mafia Island</td>
<td>Matwara and Southern Coast, Mnazi Bay, Ruvuma Estuary, Marine Park, Kilwa, Rufiji Delta</td>
</tr>
<tr>
<td>Kenya</td>
<td>Mombasa beaches, Lamu, Malindi</td>
<td>Arabuko-Sokoke forest, Kaya Coastal Forests</td>
<td>Tana Delta</td>
</tr>
<tr>
<td>Mozambique</td>
<td>-</td>
<td>Pemba/ Quirimbas NP, Vilanculos/Bazaruto Archipelago</td>
<td>Other Coastal Areas</td>
</tr>
</tbody>
</table>

Source: Nelson.
Coastal tourism in Europe: European coast and its oceans are well-known for their rich maritime heritage and tradition, incredible landscapes, biological diversity and natural refuges. Coastal and maritime tourism constitutes one of the most important touristic thematic sub-sectors in Europe, highly contributing to the local economy of coastal regions. More than 2.36 million people have been employed in the European coastal and maritime tourism sector which is 1.1% of the total EU employment. Around 51% of bed capacity in hotels across Europe is concentrated in regions with a sea border.13

The Mediterranean Sea region is the first as well as most preferred tourism destination in the world. Tourism, including coastal and cruise tourism, is extensively developed in France, Italy and Spain while it has significant growth potential in countries like Croatia and Greece.37,58 In less than 20 years, the number of tourist arrivals in the Mediterranean countries is expected to increase from 264 million in 2005 to 368 million in 202035 and 500 million in 2030. Coastal tourism in the Mediterranean Sea region reaches 200 billion Euros in 2012 and also accounts in a significant proportion of global tourist revenues which was about 6%.39

The Baltic Sea region constitutes a fast-growing destination for tourists. Every year the coastal areas of this region are further exploited to meet the growing demand for hotels, recreation centres, marinas and camping sites.17 In addition, cruise tourism is a fastest growing industry in the Baltic Sea region which is increasing by about 12% every year.9 In 2011, the Baltic Sea Region’s tourism industry contributed EUR 267 billion to the total GDP and employed around 7.8 million people in the region.2

The Black Sea coastal region has long been known for medication of arthritic, rheumatic, internal and nervous disorders. But mass tourism development in this coastal region has relatively recent origins.9 From 2008 to 2009, the density of tourist capacity has increased on the Romania’s coastal regions, especially in the Tulcea region. On the Bulgarian coast, the tourist density has increased only in the Burgas region.14

Coastal areas of North Sea Region (Danish coastline, Germany’s North Sea coast and United Kingdom coast) have a rich history, dating back to the Vikings and the Hanseatic League. Coastal and maritime tourism along the Danish coastline is mainly concentrated in the outskirts of west and north Jutland, as well as in the south and north of Zealand and Bornholm providing 37% of the total tourism revenue to the Danish economy.34 Coastal tourism in Germany’s North Sea Coast is extensively dependent on beaches and various sporting opportunities (bathing, sailing, surfing and cycling). It is estimated that 41,600 of the 110,900 inhabitants in the North Sea recreational area of Germany earned their livings from tourism, generating total annual revenues of 1.5 billion Euros in 2005. Two thirds of this came from overnight tourism and one third from day trips.37

On the other hand, domestic and day trip coastal tourism is collectively valued at £7 billion in the English economy. Coastal tourism in England and Wales directly supports some 210,000 jobs estimated to be worth around £3.6 billion in line with the telecoms sector.31 In 2012, trips to the seaside destinations made up 31% (14.4 million) of the 46.0 million overnight domestic trips taken for holiday purposes.50

Coastal tourism in Americas and the Caribbean Sea region: In North America, Canadian coast is the longest coast in the world and known for its natural beauty, biodiversity and other valuable resources. In 2011, tourism sector in the coastal province of Canada contributed US$ 11.975 billion to GDP and created 0.27 million jobs directly.44 Oceans and coasts are recognised as a crucial part of the U.S. economy. Coastal tourism and recreation in USA dominated both employment and GDP in the ocean economy sectors with 1.7 million jobs (75%) of employment and nearly US$70 billion (51%) of GDP24. National Oceanic and Atmospheric Administration estimated that the ocean-based tourism and recreation contributes approximately $116 billion/year in gross domestic product to the national economy and 2.3 million people are employed by this sector. Coastal and maritime tourism of USA was mainly concentrated in the coastal states of Florida, California and New York. For example, the total economic contribution of the tourism and recreation sector of the Ocean Economy in California was estimated to be US$22,367,879,303 in 2000.36

Similarly, the magnitude and importance of coastal tourism sector in the countries of South America (Latin America) has increased considerably. Tourist arrivals rose by about 68 percent worldwide during 1995–2007 and by about 50 percent in Latin American countries.15 Ilha Grande and Fernando de Noronha in Brazil, Mancora in Peru, Cayes in Belize and Cartagena in Colombia are world famous coastal tourism destinations in South America. In 2017, the total contribution of Latin American travel and tourism sector to
GDP was US$ 328.2 billion and forecasted to rise by US$ 473.0 billion in 2027.\textsuperscript{56}

The wider Caribbean Sea region is a large marine ecosystem\textsuperscript{41} which have taken their place in the mass tourism era since the end of the 1980s.\textsuperscript{10} The Caribbean receives approx 20 million cruise passengers and another 22 million overnight resort tourists, most from the United States of America.\textsuperscript{18} There are differences among the islands of Caribbean in terms of the magnitude of coastal tourism development (Table 3).

**Coastal tourism in Australia:** For many regions in Australia, income from tourism has a significant contribution to their local economies. Coastal areas are the mainstay of Australia’s tourism industry and are also important places for recreation and sport.\textsuperscript{3} A group of seven coastal regions of Australia viz. South West, Gold Coast, Mid North Coast, Northern Rivers, South Coast, Sunshine Coast and Tropical North Queensland etc. account for 21\% of total tourism expenditure. They have both larger tourism industries as well as a high dependency on tourism.\textsuperscript{4,47} Great Barrier Reef catchment alone accepts about 2.3 million international and 1.8 million domestic visitors per year\textsuperscript{45} and the Gold Coast of Queensland also receives more than 11.6 million overnight and day visitors per year.

**Climate change and global coastal tourism:** Climate change is one of the most challenging environmental issues in the 21\textsuperscript{st} century and it has multiple vulnerable impacts on global coastal ecology and environment. Coastal and marine environments are among the most important areas in the segment of tourism and recreation. Scientific evidence indicates that the climate is changing and research in the field of climate change has identified coastal zones as highly vulnerable to its effects\textsuperscript{29}.

The coastal environment of the globe, on which our tourism and recreation depends, is experiencing an uncertain future due to the adverse consequences of environmental hazards related to climate change and associated phenomenon such as increasing temperature to sea level rise (Figure 2). An initial effort was made at the First International Conference on Climate Change and Tourism in Tunez to understand the interrelation between climate Change and tourism and the Djerba Declaration on Tourism and Climate Change was signed.\textsuperscript{55}

The average global temperature has increased by 0.8\degree Celsius (1.4\degree Fahrenheit) since 1880 and the incident of global warming has occurred since 1975 at a rate of roughly 0.15-0.20\degree C per decade (NASA-Goddard Institute for Space Studies, n.d.). Global warming is likely to reach 1.5\degree C between 2030 and 2052, if it continues to increase at the current rate. It is projected that many marine species will be shifted to higher latitudes and the productivity of coastal ecosystem will reduce especially at low latitudes at the global warming of 1.5\degree C.\textsuperscript{22}

Global mean sea levels are also rising as a result of thermal expansion of ocean water due to increasing temperature as well as melting of glaciers and polar ice caps\textsuperscript{50}. Scientific evidences revealed that the global mean sea level rise will continue during the 21st century, very likely at a faster rate than observed from 1971 to 2010. Sea level rise will not be uniform across regions (Table 4).

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**Figure 2:** Interactions between climate change and coastal system

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Source: IPCC\textsuperscript{20}
By the end of the 21st century, it is very likely that sea level will rise in more than about 95% of the ocean area. About 70% of the worldwide coastlines are projected to experience a sea level change within ±20% of the global mean. Various climate-influenced changes such as alterations of streaming patterns, wave and wind motions and extreme weather events can intensify the impact of sea level rise. WTO and UNEP\textsuperscript{54} show that the tourism destinations of Caribbean coast, Mediterranean coast, Small Island nations of Indian and Pacific oceans, Australian and New Zealand coasts will be severely damaged due to the multiple effects of climate change (Figure 3).

Table 3
Caribbean islands with respect to degree and nature of tourism development.

<table>
<thead>
<tr>
<th>Nature of development</th>
<th>Tourism destinations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large islands and mature tourism destination</td>
<td>Barbados, Jamaica</td>
</tr>
<tr>
<td>Large islands and emerging destinations</td>
<td>Dominican Republic and Trinidad &amp; Tobago</td>
</tr>
<tr>
<td>Small islands and mature destinations</td>
<td>Antigua &amp; Barbuda, Bahamas, St Kitts &amp; Nevis</td>
</tr>
<tr>
<td>Small islands and emerging destinations</td>
<td>Windward Islands, Dominica, Grenada, St Lucia, St. Vincent &amp; the Grenadines</td>
</tr>
<tr>
<td>Mainland countries</td>
<td>Belize, Guyana, Suriname</td>
</tr>
<tr>
<td>The only least developing country in the region and where tourism industry is marginal.</td>
<td>Haiti</td>
</tr>
</tbody>
</table>

Source: EU-ACP Economic Partnership Agreements\textsuperscript{12}

Figure 3: Spatial distribution of climate change impacts affecting tourism destinations around the globe.

Source: WTO and UNEP\textsuperscript{54}
At least 2°C of global temperature increase by 2050–2100 would degrade the coral ecosystem as a result of increases in ocean temperature and associated increases in ocean acidity. This will be very harmful for coastal tourism, especially in Australia, Caribbean and other small island states. Studies on thermal stress on coral reefs (1998–2007) revealed that almost 40 percent of them have experienced the vulnerable impacts of rising ocean temperatures enough to induce severe coral bleaching.

Rising sea levels will also have profound and multiple impacts on coastal tourism. Sea level rise will erode and submerge some coastal attractions such as beaches and other tourism infrastructures. Higher sea levels and greater storm surges will also quicken the erosion of beaches, sand dunes and cliffs. Degraded beaches reduce the desirability of destinations, as studies of Martinique, Barbados and Bonaire have shown. Beach erosion could reduce the prices operators can charge for accommodation. With increased temperature in mid-latitude countries and coupled with increased severe storms in tropical areas, tourist flows could decrease from mid-latitude countries to tropical coastal regions with large developing countries and small islands most affected.

Coastal and island destinations are highly vulnerable to direct and indirect impacts of climate change (i.e. severe storms and extreme climatic events, coastal erosion, physical damage to infrastructure, sea level rise, flooding, water shortages and salt water contamination), because most tourism infrastructures are located within short distance of the shoreline. This high vulnerability often couples with a low adaptive capacity, especially in Small Island Developing States (SIDS) and coastal destinations of developing countries. Beach tourism remains the dominating market segment, constituting a key part of the economy of most SIDS and developing countries.

It is particularly at risk from the effects of climate change on the world’s oceans. Beach tourism might be the most vulnerable in the large developing countries due to high exposure and low adaptive/effective capacity. Small islands states are also vulnerable, especially due to their high sensitivity towards climate change whereas developed countries of the high latitudes as well as the Mediterranean are amongst the least vulnerable countries in the segment of beach tourism. The vulnerability of the beach tourism sector towards climate change by means of an index approach on a country level has been presented in table 5.

It should be noted that the impacts of climate change and global warming will vary greatly in the different coastal regions and might bring opportunities as well. However, these opportunities may well be short-lived and dwarfed. For example, coastal areas of the Scandinavian countries of Northern Europe and Alaska of North America will be very popular for holidaymakers due to temperature rise. Additional benefits will be added in Arctic cruise development due to the reduction of sea ice.

### Conclusion
This study finds that the coastal areas are recognized as popular tourism destinations around the globe. The Euro-Mediterranean sea region and countries within the Coral Triangle are showing increasing trends in the segment of coastal tourism development. Coastal areas of Africa have a high potential for tourism development in near future.

### Table 4

<table>
<thead>
<tr>
<th>Region</th>
<th>Sea level rise in Metre</th>
</tr>
</thead>
<tbody>
<tr>
<td>North South America</td>
<td>0.22-0.24 m.</td>
</tr>
<tr>
<td>East South America</td>
<td>0.18-0.20 m.</td>
</tr>
<tr>
<td>Caribbean and W South America</td>
<td>0.18-0.20 m.</td>
</tr>
<tr>
<td>Central West Africa</td>
<td>0.20-0.24 m.</td>
</tr>
<tr>
<td>Central East Africa</td>
<td>0.20-0.24 m.</td>
</tr>
<tr>
<td>Red Sea/Arabian Peninsula</td>
<td>0.22-0.24 m.</td>
</tr>
<tr>
<td>South Asia</td>
<td>0.18-0.24 m.</td>
</tr>
<tr>
<td>South East Asia</td>
<td>0.18-0.20 m.</td>
</tr>
<tr>
<td>North Australia</td>
<td>0.18-0.20 m.</td>
</tr>
<tr>
<td>East Australia</td>
<td>0.18-0.20 m.</td>
</tr>
<tr>
<td>Oceania</td>
<td>0.18-0.22 m.</td>
</tr>
</tbody>
</table>

Source: Church et al.®
Table 5
List of countries showing the relative vulnerability of beach tourism to climate change.

<table>
<thead>
<tr>
<th>Vulnerability</th>
<th>Exposure</th>
<th>Sensitivity</th>
<th>Adaptive capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unfavourable</td>
<td>India, Thailand, Fiji, China, Cambodia, Indonesia, Myanmar, Colombia, Kiribati, Philippines, Vanuatu</td>
<td>India, Colombia, Brazil, Marshall Islands, Maldives, Nauru, Tuvalu, Thailand, Indonesia, Bahrain, Micronesia, Philippines, Myanmar</td>
<td>India, Thailand, Antigua &amp; Barbuda, St. Kitts &amp; Nevis, Cambodia</td>
</tr>
<tr>
<td>Favourable</td>
<td>United Kingdom, Canada, Italy, Ireland, Sweden, New Zealand, Israel, Portugal, Cyprus, Netherlands</td>
<td>Cyprus, Morocco, Turkey, South Africa, Greece, Israel, Jordan, Italy, Portugal, France, Germany, Malta, Belgium, Croatia, Virgin Islands</td>
<td>United Kingdom, Ireland, Myanmar, Mexico, Malaysia, Saudi Arabia, Samoa</td>
</tr>
</tbody>
</table>

Source: Nielsen25

USA, Caribbean and Australia are also gaining a significant profit from their coastal tourism. This study also finds that the coastal environments of the mother earth are experiencing the vulnerable impacts of global climate change which is very detrimental to coastal tourism development. It might be the most vulnerable in the large developing countries and small islands states due to high exposure and low adaptive capacity, whereas developed nations of the high latitude as well as the Mediterranean are amongst the least vulnerable.

Climate change impact analysis at regional level, standard climate change adaptation practice and policy development, awareness building at the grass root level and platform development for exchange information among various coastal stakeholders etc. are very much needed to protect our coastal environment from the vulnerable effects of climate change as well as to gain the long term benefits of coastal tourism in a sustainable way.

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