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The Impact of Tourism upon Natural Capital

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Abstract: Tourism now represents a major management problem to be faced by those who are responsible for the protection and control the host areas and their facilities. We have identified impacts from tourist-related transportation, tourist-related development, tourist activities including some recreational activities such as boating, and direct impacts of the lodging and cruise industries. Although this discussion focuses on environmental impacts. After we analyze the influence that providers of tourism services can have on their suppliers as well as the tourist. Although environmental awareness has had an important impact on the tourism industry, economic motives are still primary. Therefore, educational programs aimed at tourism service providers should emphasize the potential economic and marketing benefits of environmental stewardship. Educational efforts to promote environmentally responsible tourism should be framed in accordance with the targeted audience. Tourists may be more receptive to educational initiatives that focus on the environmental benefits of altering their behavior, while industry sectors are more likely to be responsive to educational efforts that emphasize cost savings and an improved public image.

Keywords: tourism; environmental impact; service sector; sector environmental profile

1. Introduction

Tourism is a rapidly growing source of pressure on natural resources and the environment.

Europe has long been the world's favorite tourist destination and the World Tourism Organization forecasts a doubling of the number of arrivals to around 720 million per year by 2020. Vacationing patterns are changing with more holidays per year, shorter stays, longer travelling distances and more second homes with low occupancy rates.

Tourism is the temporary movement of people to destinations outside their normal places of work and residence, the activities undertaken during their stay in those destinations, and the facilities created to cater to their needs. It is often difficult to distinguish between tourism and recreation, as they are interrelated. Tourism involves traveling a distance from home, while recreation is defined as the activities undertaken during leisure time

Tourism, which contributes to well-being and recreation, is receiving increasing attention as an economic sector in need of more sustainable management. For example, there are tourism activities in E.U., involving about 2 million businesses (mostly small and medium-sized enterprises) currently generating up to 12 % of GDP (directly or indirectly), 6 % of employment and 30 % of external trade. There are large regional differences in European countries, tourism being the main activity in some places.

2. Environmental Impact on the Construction and Development

The degree of environmental impact varies, depending on the type of tourist and the intensity of site use. There are day tourists, who visit a destination for a day and then leave; summer residents who are in effect tourists for a season; and tourists on bus tours and other trips that may visit a location for a few minutes or a number of days. Day tourists have an impact on the environment through their transportation to their destination as well as their activities once there. This is true for summer residents, but these tourists also have a cumulative impact, as they are in one place for a longer period of time.

The environmental impacts of the construction and development of facilities needed to support the industry are both immediate and gradual.

Development associated with tourism includes accommodations, roads, retail stores and restaurants, tourist attractions, tourists' seasonal waterfront homes, water supplies, and waste disposal facilities.

Hotels appear to be the most ecologically acceptable form of accommodation. However, energy consumption per m² per year in a one star hotel is 157 kWh, in a two star hotel 230 kWh and in a four star hotel 380 kWh. Campsites have the advantage of being a reversible form of land use, but problems (such as waste water collection and treatment or waste) can arise during temporary overcrowding.

Hotels, swimming pools and golf courses can put critical pressure on water resources. Tourists typically consume around 300 liters (luxury tourism 880 liters) and generate 180 liters of wastewater per day.

Cumulative effects over time are particularly problematic because the developer in question is often out of the picture before impacts become obvious. An example of a gradual impact is the leaching of nutrients from septic systems of tourists' waterfront homes into the water body, accelerating eutrophication and depleting dissolved oxygen supplies.

On the other hand, summer residents often are an important force in preserving the natural beauty of an area. Tourists who visit an area for longer than a day and choose to stay in hotels contribute to the impacts that the lodging industry has on the environment. In addition to the length of stay, tourist impacts depend on the type of activity undertaken. Passive activities have different impacts than more active pursuits.

Tourist infrastructure can also adversely impact water quality because more waste water is created in one place and reduced some place else, putting more pressure on sewage treatment plants or septic systems in the tourist destination. When a sewage treatment plant receives more effluent than it can treat, the excess can flow directly into water bodies untreated, creating a potential health hazard. The sewage problem with tourist facilities is further exacerbated by the seasonal nature of many tourist areas. An area which off-season may have the capacity to properly treat sewage may be overburdened during the tourist season.

However, it is difficult to separate the effects of rapid urbanization on the sewage treatment plants with the effects of an increase in tourists to the area.

There are environmental impacts from the travel to a destination, the tourist activities in and of themselves at that destination, such as hiking or boating, and from the creation, operation, and

maintenance of facilities that cater to the tourist, such as hotels. This discussion addresses impacts from tourism-related development, transportation, and tourist activities.

Tourist facilities increase the amount of impervious surfaces, causing more run off to reach water bodies. This run off contains nutrients, suspended particles, and oil and gas. Excess nutrients added to a water body can accelerate the process of eutrophication, causing an overgrowth of algae, which in turn uses up excess dissolved oxygen as the algae decays, causing fish kills. The overgrowth of algae is also a nuisance to swimmers.

Increased development to accommodate tourism and recreation contributed to the degradation of water quality for two primary reasons:

- (1) the increase of impervious surface, which in turn led to increased runoff of nutrients into the lake, and
- (2) the destruction of wetlands needed to filter those pollutants.

Construction of facilities supporting the tourism industry can damage wetlands. Wetlands have been destroyed to make way for roads, airports, marinas, sewage treatment plants, and recreational facilities.

This destruction is problematic because wetlands provide many crucial functions, including acting as a nursery ground for a diverse aquatic community, and helping to buffer the impacts of pollutants to the water body.

Although tourism has been the impetus for much destructive development, it has also been the motivation for preserving sensitive ecosystems. Some of this motivation stems from economic benefits, as natural parks serve as attractions for tourists.

Tourism with an emphasis on cultural and historic sites has been called “heritage” or “cultural” tourism, and is one of the fastest growing trends in the industry. Heritage tourism focuses on sharing the historical and cultural resources of an area with travelers, while still maintaining the integrity of each site. This type of tourism has been the impetus for the rehabilitation of existing historic sites, buildings, and monuments, such as the facelift that historic houses, lighthouses and others

The revenue generated from tourists and their activities allows these areas to maintain sites and buildings that would not otherwise be as well kept. Another benefit of tourism development is its role in fostering an appreciation and understanding of nature. Tourism development can facilitate an increasing awareness and appreciation of the natural world.

Although rural areas can benefit from tourism in many ways, this may come at high cost because of the need for infra-structure such as roads and water supplies, waste disposal problems, and damage to environmentally sensitive areas. In mountain regions, too, tourism can bring economic benefits to otherwise poor communities, but at significant environmental cost. Walking and mountain biking can lead to erosion and wear and tear of paths. The building of cable cars and ski lifts, and in particular the laying out of new ski runs, has resulted in extensive clearing of forests. Most visitors to ski resorts are day trippers arriving by car, leading to traffic congestion, overcrowding and litter problems. The increase in tourism is not being matched by a similar increase in available accommodation, leading to demand for more building, overcrowding, especially at peak holiday times, and more pressure on resources and the environment.

3. Impacts from Tourism related Transportation

Tourism is responsible for a large share of air and road traffic, and consumption of energy by tourist infrastructure adds further to emissions of greenhouse gases and acidifying substances.

Aircraft emit the most carbon monoxide of any of the five listed air pollutants, but it is a small amount relative to other modes of transportation. Aircraft are responsible for approximately one percent of the total ground-level emissions from mobile sources.

Although aircraft contribute only a small amount to total air pollution, emissions from this source is increasing. Aircraft emissions in nonattainment areas with large airport facilities in particular are projected to represent a growing percentage of regional sources of air pollutants.

In addition to air pollution, aircraft contribute to noise pollution.

Much of the tourism-related air pollution comes from automobiles. In France for example, 5–7 % of greenhouse gas emissions are due to tourism, mainly because 80 % of domestic tourist travel is by private car.

Light duty vehicles emitted an average of 1.53 grams of exhaust hydrocarbons per 1,5km, 19.86 grams of carbon monoxide per km, and 1.51 grams of nitrogen oxide per 1,5km. Automobiles emit by far the most carbon monoxide, nitrogen oxide, and volatile organic compounds in comparison to other transportation.

However, it is difficult to separate the amount of tourism-related automobile travel from all automobile travel.

One area where it is possible to distinguish between tourism-related automobile travel and other travel is within national parks. Exhaust from tourists' cars affects air quality and vegetation in some national parks. Adverse impacts on vegetation have been attributed to automobile exhausts. Almost three-quarters of national park superintendents surveyed cited exhaust from tourists' cars as a significant factor affecting air quality within the parks. The impact of automobiles (air and noise pollution, acreage for roads, gasoline stations) may be more significant than the impact of the visitors themselves (Table no.2).

Tour buses have an impact on air quality as well. Often referred to as the motor coach industry, the tour bus industry includes 3,000 companies and 25,000 vehicles. Companies are classified as inter-city or charter-tour. The latter constitutes more than 50% of the market. Charter-tour bus trips have increased, while inter-city trips have declined. Specific emissions data on tour buses are not available, but most tour buses belong in the category of heavy-duty diesel vehicles.

4. Tourist Activities

Many tourist activities occur in fragile ecosystems. While snorkeling and diving in and of themselves do not cause much damage, inadvertent related activities, such as stepping on coral do cause damage. With such activities, it is the cumulative nature of the damage that is most problematic. One or two tourists may not cause much harm, but hundreds of them over time can do considerable damage to an ecosystem. The cumulative effect is relevant here as well, as one tourist may not understand her impact when aggregated with other tourists.

Tourists hiking along mountain ranges can harm the ecosystem by littering and by trampling vegetation. The greatest impact of tourists on vegetation usually occurs during initial contact with an area, with the most sensitive species affected first. The cumulative impact of tourists on vegetation gradually shifts species composition, because only the most resilient plants can survive in an area under constant pressure from tourist activities. Hiking on the soil can also damage wildlife habitat. Constant pressure can damage or destroy the burrows of reptiles, mammals, and underground-nesting birds. Tourists' use of trees for firewood and tent poles has diminished tree populations, altering the age structure of the plant community.

Littering not only contributes to visual pollution, but can also change the nutrient composition of soils and prevent light from reaching plants.

5. Ecotourism

The numerous names and definitions make it difficult to ascertain how environmentally responsible ecotourism is. There are important distinctions among nature tourism, adventure travel, and ecotourism. Nature tourism implies enjoyment and appreciation of nature, yet it often does not include protection of the environment. Adventure travel utilizes local resources often without consideration of impacts. Ecotourism, as the above definition suggests, is concerned with the concurrent enjoyment and preservation of the natural environment.

Aside from the uncertainty and discrepancies surrounding the labels, there are also problems with the term ecotourism itself. It is possible that some travel suppliers that call themselves "eco" are only paying lip service to a marketable concept that is gaining popularity.

Some travel outfitters use the label "eco" for short-term economic gain without truly abiding by environmental principles. One tour operator suggested in a survey that the label "eco-tour" should be given only to those tour operators that directly benefit the culture or environment; otherwise they should be known as "adventure travel" operators.

The development of industry standards or regulations about the definition of ecotourism would be a productive first step in differentiating these groups. The Ecotourism Society (TES) established guidelines in 1993, which are fairly comprehensive and can be used as a starting point for developing an industry standard. These guidelines include educating travelers to minimize impact, ensuring that the tour company minimizes impact and contributing to the economy of the region visited. Therefore, emphasizing the potential for economic gain from abiding by these ecotourism guidelines would increase compliance with them. An accepted industry standard such as the TES guidelines can help identify the tour operators that conduct truly environmentally friendly tours. This identification would in turn aid travel agents in recommending qualified groups to interested tourists.

As the environmental impacts of tourism have become more obvious, efforts to minimize or avoid further impacts have developed. There are existing initiatives within the tourism industry to minimize impacts. Potential improvements include voluntary efforts by industry sectors and government initiatives, developers' initiatives to design and build tourist infrastructure with minimal impact on the environment, and nonprofit tours that espouse environmentally friendly travel ethics.

6. Conclusions

As indicated by the regulatory framework highlighted above, the fragmented nature of the tourism industry is not conducive to integrated, holistic regulation that encompasses all aspects of the industry. The dispersed nature of the tourism industry produces diffuse impacts that fall under the jurisdictions of different places. Moreover, enforcement and compliance problems make it particularly difficult to regulate tourist activities.

For these reasons educational efforts seem more promising than regulation to minimize many of the environmental impacts of tourism that are not now regulated. Education can be used to support existing regulations, and to encourage environmentally responsible behavior where no regulations exist.

7. References

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