

Sustainable Tourism and Economic Instruments: the case of Hvar, Croatia¹

Tim Taylor²
Centre for Public Economics
Department of Economics and International Development
University of Bath

Maja Fredotovic
Faculty of Economics
University of Split

Daria Povh
PAP-RAC, Split

and

Anil Markandya
University of Bath and World Bank

Abstract

Tourism may have significant environmental impacts on tourist destinations, including congestion and pollution. These environmental concerns have led to moves towards the development of sustainable tourism in recent years. The use of environmental taxes to fund or promote mitigation of the negative environmental consequences has expanded over recent years, with varying degrees of success. This paper attempts to assess the willingness-to-pay for environmental quality in the Croatian island of Hvar and presents an overview of proposals for an economic instrument to address environmental problems arising from tourism in Hvar.

Key words: sustainable tourism, economic instruments, environmental taxes, Croatia

¹ This study forms part of the UNEP PAP-RAC project *Sustainability of SAP: Development of Economic Instruments for the Sustainable implementation of the Strategic Action Programme to address marine pollution from land-based activities in the Mediterranean (SAP MED)*. The authors would like thank UNEP for their funding, the PAP-RAC in Split and participants in the wider project for comments.

² Corresponding Author: Department of Economics and International Development, University of Bath, Bath, BA2 7AY, UK. Email ecstjt@bath.ac.uk.

Introduction

Tourism activities often have a significant environmental impact on a tourist destination, including congestion and pollution. These environmental concerns have led to moves towards the development of sustainable tourism in recent years, particularly as the numbers of tourists and the distances they are traveling has increased. Such developments have included the use of ecolabelling, for example the use of *ecotourism*, and the raising of taxes on tourists in order to raise the revenues to correct the environmental damage caused. This paper examines the latter of these two measures, first from an international perspective and then from the local case of Hvar, Croatia.

Defining Sustainable Tourism

There are a number of definitions of sustainable tourism. The distinctions arise due to differences in the definition of sustainability, and this obviously impacts on how certain sectors can be seen to be making progress towards sustainability. Sustainable tourism may be defined as “the optimal use of natural and cultural resources for national development on an equitable and self sustaining basis to provide a unique visitor experience and an improved quality of life through partnership among government, the private sector and communities.” (OECS, undated). Others have considered sustaining tourist numbers to be the objective. Whatever the case, it is clear that tourism has important economic, social and environmental implications that should not be overlooked in evaluating the impacts of the tourist industry on a region. The main aim of this paper is to examine the potential implications for the use of tourist eco-taxes, taking the quality of life of the community through examining the economic impact of such measures, the quality of the environment and tourist enjoyment as being central to the concept of sustainable tourism. This three pronged view examines the current and future implications of tourism on the environment.

Definition of Eco-taxes

Tourists face a number of taxes, including departure taxes, value added taxes and room taxes, amongst others. The question as to what distinguishes an eco-tax from these other techniques is important. Here we will define an “eco-tax” in its broadest sense. An environmental tax is one which is placed on a good or service to internalize some, or all, of the external costs of the activity undertaken or one which is hypothecated to the use of environmental protection. For a recent review of the application of environmental taxes in developing countries see Markandya et al (2002).

Tourist eco-taxes, therefore, are defined as being those which are raised on tourists for environmental purposes. They may or may not have a direct impact on the incentives provided to the tourist to pollute, but must, in any event, be used for environmental purposes. An example is that of the tourist eco-charge in Hvar, Croatia that is discussed later in this paper. In that case, the charge is levied not on the volume of pollution but on the number of days spent on Hvar. This charge is then hypothecated, in that it is earmarked for use in environmental protection.

Analytical framework

We can define the demand for a tourist site as follows:

$$Q_t = f(p_t, e_t, d, c, x)$$

Where

Q_t is the quantity of tourist days spent in a region in time t ;

p_t is the price of staying in the tourist region in time t (including taxes);

e_t is the level of environmental quality in time t in the region;

d is the distance travelled;

c represents the climate of a region; and

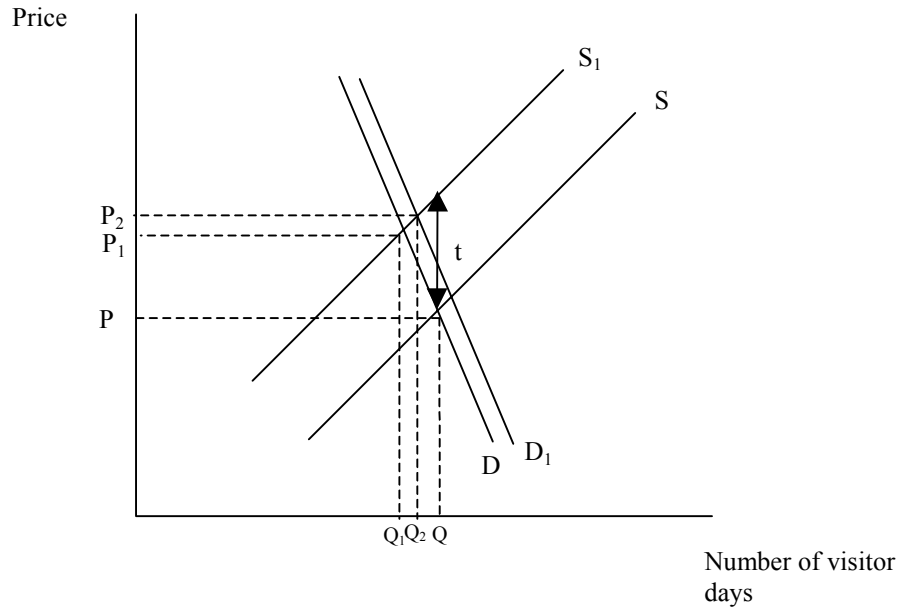
x represents all other factors.

The first derivative of Q_t with respect to p_t provides us with the key information to calculate the *price elasticity of demand* for a tourist area. This will be determined by a number of factors, including the availability of substitute sites and behavioural aspects of the consumer. As the price of visiting a given region increases, so there is a demand response to that price change. This shows us one impact of the imposition of an eco-tax on the tourist economy.

Another impact, however, is shown by the change in environmental quality that may be attributed to the eco-tax, or actions taken using the revenues of such a tax. It has been shown in the literature that there is a positive relationship between demand for a site and the level of environmental quality (see, for example, Milhavic, 2000). This has led to the rise of so-called ecotourism in some regions.

In the case of a tourist eco-charge, these two aspects to a certain extent may work in opposite directions, and the aggregate impact on tourist revenues will depend on the relative strengths of each impact. This is shown in a stylised form in Figure 1 below.

Figure 1: Theoretical impact of tourist eco-tax



In the initial position, the equilibrium is given by PQ , where supply and demand intersect. With the application of a uniform tourist eco-tax of t , the equilibrium moves to P_1Q_1 as the price per day of trip increases. However, the improvement in the level of environmental quality leads to an increase in the level of demand to D_1 . The equilibrium position is P_2Q_2 – which in this case represents a slight reduction in tourist numbers from the initial equilibrium. The relative strength of the *price effect* and the *environmental quality effect* is what this paper will attempt to determine.

In terms of the impact of a change in price on the level of demand for tourism, a number of studies have shown that demand for tourism is *inelastic*. This means that as the price of a trip rises one would expect to see a less than proportionate reduction in the quantity of tourist days. In a meta-analysis of 44 studies, Crouch and Shaw (1992) found that the average price elasticity of demand was $(-)0.39$, suggesting that a 1 percent increase in price would lead to a 0.39 percent reduction in the numbers of tourists. This is similar to the findings of Vanegas and Croes (2000) for US tourists in Aruba, where the price elasticity was found to be $(-)0.56$ in the short run³, indicating that a 1 percent increase in

³ Vanegas and Croes (2000) also report a long-run price elasticity of $(-) 4.38$, indicating a very high long run response to a change in price. It must be noted that this is the most elastic response they reported, with the range going from $(-) 1.07$ to $(-) 4.38$ depending on the equation system. The average elasticity found

price will lead to a 0.56 percent reduction in tourist demand. In other studies by Hiemstra and Ismail (1992, 1993) the elasticity found was -0.44 . This is important, as it suggests that the demand for tourism will not be greatly impacted by tourist eco-taxes, which make up a relatively small part of the total cost of a trip – and hence the economy will not suffer greatly, if at all, from such a measure. Whilst this is the case for marginal taxes, it is important to note that it is important not to levy such a large tax that it has significant competitiveness aspects.

Another important aspect is the price elasticity of supply, which indicates the degree to which the tax will be passed on to consumers. Hiemstra and Ismail (1993) found that the supply elasticity for hotel rooms was 2.86, indicating that approximately \$6 of every \$7 of a hotel tax is passed on to the tourist (Dixon et al, 2001). Thus there is a very small impact on the tourist industry.

In terms of the increase in demand due to an improvement in the environment, the growth of eco-tourism suggests that environmental quality may form an important part of the consumer's consumption decision. The issue of information arises in this context, whereby it is difficult to re-establish a reputation for good environmental quality once this is lost (Dixon et al, 2001). Certification schemes and pro-active environmental management may play a role in improving environmental quality (as the tourism industry changes behaviour to meet certification standards) and access to information on the quality of the environment. Certification schemes include the EU's blue flag scheme, which has been extended to a number of countries.

The time aspect may also be important. In the short term, the stock of pollutants may mean that the reduction of environmental damage or improvement in environmental quality is less than would otherwise be the case, thus reducing the positive environmental quality impact in the near term. However, in the longer term improvements in

was (-) 0.29 not including long-run and short-run effects. Thus overall, the analysis of Aruba suggests an inelastic response to a price change.

environmental quality should lead to increased tourist numbers (unless actions are taken, e.g. through increased eco-taxes to mitigate the impacts of congestion).

We now review some of the main environmental damages associated with tourism, before presenting an overview of some of the policy measures that have been taken to mitigate such impacts.

Environmental damage and tourism

The linkages between tourism and environmental damage have been reviewed in a number of publications (see Davies and Cahill, 2000 for the US case). This section will examine a number of key impacts of tourism on the environment.

Congestion⁴

Congestion costs have not, to date, been assessed in any serious empirical way. The demand functions for tourism have been estimated (e.g. Crouch and Shaw, 1992), but such demand functions do not look at how the willingness to pay (WTP) for a visit is a function of the number of visitors. In terms of Figure 2, the WTP for a group of **identical** visitors OP, assuming that some critical number is not exceeded is given OB. The marginal cost per visit is OC. Each visitor will compare that marginal cost with the WTP as given by the line ZZ*. This results in a number of visitors equal to OV. However, the marginal visitor creates congestion effects on all other visitors, resulting in an **additional or marginal value** as depicted by the line ZZ**, which is below ZZ*. The socially optimal number of visitors is OW, but the free access equilibrium will result in a number equal to OV. The potential pool of visitors is OP.

The literature does show that tourists perceive crowding as being a negative externality. Hillary et al (2001) in a study based in Australia found that in assessing visitor perception

⁴ This section is based on Markandya (2000)

of environmental quality this was the most common factor highlighted as an issue, with tourist tracks and consequent soil quality being the next most important aspect.

The literature on tourism does not contain serious estimates of the value of this congestion effect. To be sure, there are estimates of the price demand elasticity of visits to sites using the travel cost method, but these estimates do not separate out the decline in the WTP due to the fact that people with a lower WTP are visiting the site (a factor we have eliminated in Figure 1), and the fact that the WTP of any one visitor declines with the number of visitors. If we are to develop tools for sustainable tourism it is precisely these kinds of data and analysis that are needed.

The impacts of tourist-generated traffic congestion on local communities were studied by Lindbergh and Johnson (1997) for the case of Oregon. They found that households were willing to pay \$110 to \$186 annually on average to get rid of such congestion. This indicates that there may be significant side-benefits to local communities of reducing congestion by tourists.

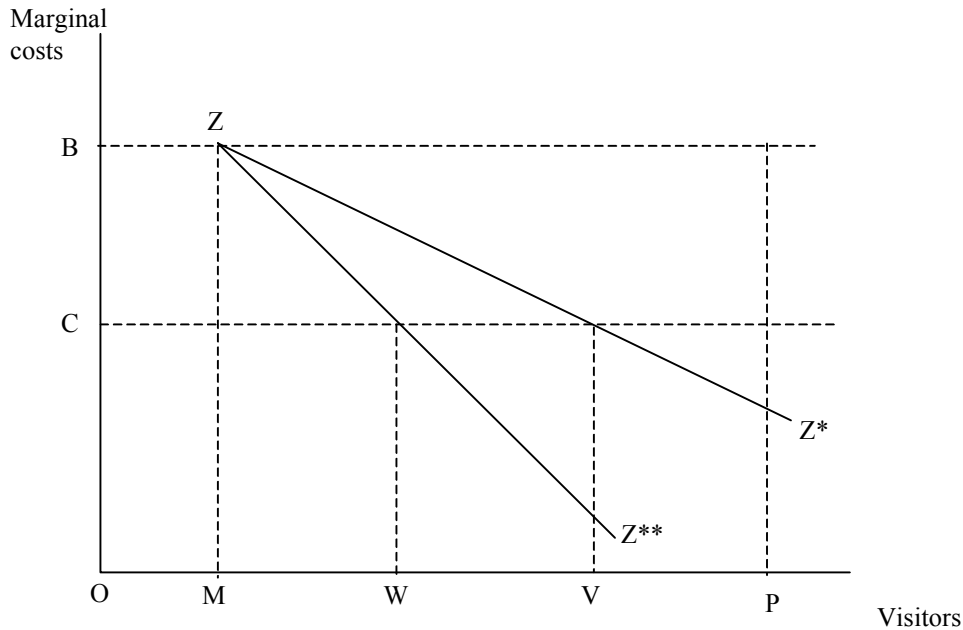
Congestion not only has an impact on tourist benefits, it also may have a significant environmental impact in terms of increased pollution. In the case of Hvar, as discussed in the case study below, high densities of tourists lead to extreme pressures on wastewater treatment, on the deposition of litter and on land based pollution such as emissions from vehicles. Such costs need to be considered when levying a tourist eco-charge.

The potential for the levying of charges for congestion at tourist attractions has been raised in the past in Wanhill (1980). Wanhill identifies difficulties of administration, implementation and equity in levying charges based on congestion, yet draws the following positive advantages for such charges:

- The amenity appropriates the surplus caused by excess demand for the attractions;
- It should encourage efficient use of the attraction and the correct allocation of resources;

- The revenue provided could be used to diversify or rationalise the operation of the amenity; and
- A booking or quota system may include those who are not prepared to pay the price of congestion and exclude those who are.

Figure 2: Congestion costs of tourism



Increased pollution loads in water and air

Pollution loads in water and air are clearly an issue of some concern to local authorities and national governments. There may be impacts on health – through incidence of asthma or water-borne diseases. Water pollutants may raise costs for extraction of drinking water from freshwater sources. In the empirical literature, some work has been carried out to estimate the impacts of such pollution arising from tourism. These impacts include:

- Increased air pollution:
 - 33 to 44 percent increase in traffic in peak season in Sochi, Russia (Lukashina et al, 1996).

- Increased emissions from airplanes: increased emission of pollutants such as NO_x, carbon monoxide and particulate matter, amongst others. However, these have been shown to be very small in relation to total emissions in the US case, with less than 0.2 percent of total CO emissions being due to tourist-related air travel, though they are increasing in importance (Davies and Cahill, 2000).
- Air emissions from energy use.
- Increased water pollution:
 - Impact of cruise ships and recreational vessels on the marine environment may be significant due to dumping of waste at sea. This includes solid waste and the dumping of bilge tanks at sea. (Patullo, 2000; Davies and Cahill, 2000)
 - Tourism may place a significant burden on wastewater management facilities. (Kamp, 1998)

Water use

Water is an important resource in a number of areas in the world. This is true for the Mediterranean region amongst others, and the issue of water resource management is growing increasingly important with increased risk of drought due to changes in climate and the pollution of groundwater and surface water sources. It has been estimated that the average tourist in Spain uses 440 litres of water a day (up to 880 when one includes swimming pools, golf courses) compared to the average Spanish resident consumption of 250 litres (WWF, undated).

Waste

Tourists have been shown to generate a more than proportionate quantity of waste, both solid and liquid. A recent World Bank study by Dixon et al (2001) found that in St Lucia tourists generate approximately twice the amount of solid waste that residents generate. The total level of waste generated by tourists may be less than that of local residents, due to the time scale of the tourist season. However, the waste generated may have important

impacts as waste is generated in areas where waste is likely to affect environmental quality and the concentration of tourist generated waste around the peak season means it is likely to cause more damage to the tourist industry (Dixon et al, 2001).

Degradation of cultural heritage

The impact of tourism on the cultural heritage of a nation or region has been the subject of some debate in the literature. It is possible that, if properly managed, tourism may provide positive effects on local communities, with increased community pride, sense of identity, support for the economy of the community and increased employment opportunities. However, where inadequate care is taken tourism may result in problems of cultural commodification, higher living costs, displacement, increased crime, undermining of traditional ways of life and pollution (Jamieson, 2000). Cultural considerations must be taken into account in the promotion of sustainable tourism. Fears of the negative impact of tourism on culture have been the driving force behind the tourism policy of Bhutan, as highlighted below.

Ecological impacts

Tourism may have diverse impacts on the ecological system within a country. Such impacts are difficult to measure, as presented by Hughes (2002) in evaluating environmental indicators for the case of the impact of tourism on coral reefs. Dixon et al (2001) note that “the simple presence of tourists can have adverse environmental impacts in some particularly sensitive ecological systems”.

Tourist development may, if left unregulated, have significant impacts on wetlands and forest habitat. Davies and Cahill (2000) give examples of the impact of infrastructure development, with Jamaica having lost 700 acres of wetlands due to tourist development since the 1960s (Bacon, 1987).

For the Mediterranean, WWF (undated) suggest that over 500 plants are threatened with extinction and face pressure from tourism development in some overbuilt destinations.

The impact is not limited to flora, with monkseal populations being threatened and sea turtles having their nesting grounds disturbed.

Positive impact of tourism

It is important to note that tourism does not only have negative impacts on an area or region, it may also have significant benefits in terms of development and preservation of heritage sites. The positive economic impact of tourism may provide needed funds for preserving the environment or cultural heritage. This is clearly above and beyond the economic impacts of tourism, which may be important for development.

International Experience with Tourist Eco-taxes

A number of countries have experimented with tourist charges, and the contribution that tourists make to the tax revenues of visited countries is increasing. This section focuses specifically on those taxes instigated for environmental purposes.

The impact of an eco-tax on the competitiveness of a region as a tourist destination may be important to the government in deciding on the implementation of such charges. This section will examine the *elasticities of demand* for tourist destinations and attempt to assess the extent to which tourist eco-charges may impact on competitiveness. It will also examine the environmental effectiveness of such charge schemes that exist to date.

Balearic Islands, Spain

The Balearic Islands are an important tourist destination located off the coast of Spain. In 2001 just over 10 million tourists visited the islands, with 1.5 million from Spain and the rest largely made up of British and German tourists (Government of the Balearics, 2002). This level of tourism has created great pressure on the infrastructure and environment of the Balearics. In terms of the environment, the following have been the major impacts:

- pressure on water resources led to the level of underground water falling by 90 metres from 1975 to 1999;
- production of domestic waste is double the national average of Spain; and
- increased use of energy: in Majorca electricity consumption rose by 37 percent between 1993 and 1998.

The Balearic Islands of Spain have just introduced an ecotax on tourism to raise revenues for a “Tourist Area Restoration Fund”. This ecotax consists of a system of charges based on length of stay in tourist accommodation. The tax excludes those under 12 and those coming under a social programme. Rates of the tax are shown in Table 1 below. The rates of the tourist eco-tax in the Balearics range from 0.5 Euros per day for low rating hotels and apartments up to 2 Euros per day for high rating hotels and apartments. The tax is paid by the visitor to the hotel.

The “Tourist Areas Restoration Fund” was established in 1999. The aims of this fund are described in Box 1, with the general aim being to promote the sustainable development of the tourism industry and to enhance the competitiveness of the Balearics. The ecotax represents only 2 percent of a tourist’s average daily expenditure, hence one would not expect a large impact on the level of demand. On 17th January 2002 the Constitutional Court ended the suspension decreed when the central government lodged an appeal to the effect that the Tax Law on stays in tourist accommodation enterprises was unconstitutional.

Table 1: Tourist Eco-tax in Balearics

Accommodation	Rate (Euros/day)
5 star hotels and apart-hotels	2
4 star hotels and apart-hotels	1
3 star hotels and apart-hotels	1
2 star hotels and apart-hotels	0.5
1 star hotels and apart-hotels	0.5
4 key tourist apartments	2
3 key tourist apartments	1
2 key tourist apartments	1
1 key tourist apartments	0.5
Holiday tourist homes	1
Property rental with complementary services	1
Camping sites or tourist camps	0.75
Rural hotels	1
Interior hotels	1
Agritourism	0.25

Source: Ecotaxa website

Box 1: Aims of Tourist Areas Restoration Fund

- Redesign and restore tourist areas
- Recuperate resources and open and rural spaces
- Revalue heritage features with social, cultural and tourist relevance
- Revitalise agriculture as a financially competitive activity

Source: Ecotaxa website

Bhutan

Bhutan has strict rules on tourism and charges a large minimum tariff for staying in the country of 179 (low season) to 217 Euro (high season) per night for a member of a tour party of more than three persons, through one of 33 official tour operators⁵. There is an additional supplement of 43 Euro per night for a single person and 33 Euro per night per person for couples. This charge was levied and other restrictions placed on tourism in the light of the Government's view that that "tourism must be environmentally and ecologically friendly, socially and culturally acceptable and economically viable" (Government of Bhutan, undated). Since 1974 strict controls have been placed on

tourism, with Bhutan aiming for low volume, high value tourism. The impacts of these controls, combined with other measures to protect the environment (including bans on the export of raw timber), have been to reduce the social and environmental impact of tourism in Bhutan. There have been some potential costs associated with this programme, however, in terms of economic development – with some Bhutanese suggesting the programme has gone too far (US DOE, 2001). The Bhutanese case is not a tax as such, but it has had impacts on visitor numbers – which are also limited by the seasonal nature of tourism in Bhutan – and it has had a positive impact on the profits of tour operators (Dorji, 2001).

Dominica

Tourism is an important part of the Dominican economy, with total visitors numbering 309,086 in 1998, contributing Euros 46.3 million (Government of Dominica, 1999). Over three quarters of tourists to Dominica arrive by cruise ships and significant environmental problems have arisen as a result of the discharge of wastes. As a consequence, Dominica has an environmental levy of Euro 1.62 per head on departure, to pay for a waste management scheme funded by the World Bank. Difficulties were experienced in establishing this charge, with cruise ships threatening to boycott the island. However, it has been instigated (Patullo, 2000) without the proposed boycott materializing (?).

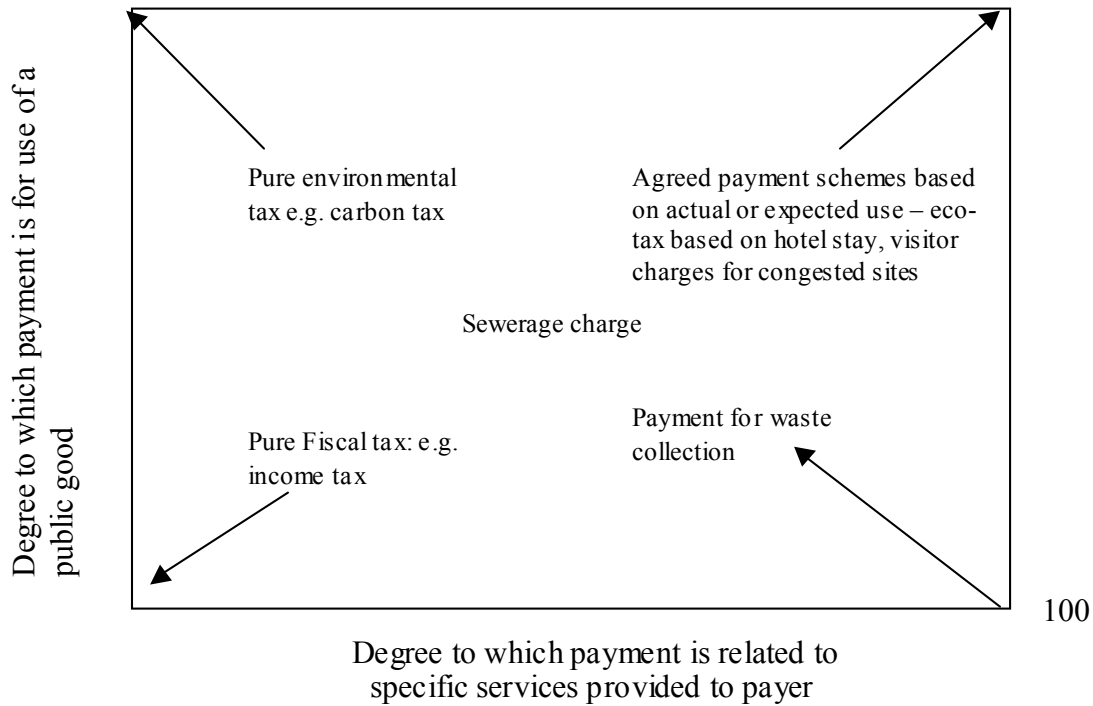
Conclusions

From the above it can be seen that examples of 'environmental taxes' range from those that are taxes in the sense that they are payments not based on the costs of supplying a particular service, to those that are really charges for services provided. For example, in the case of waste collection charges (as in Dominica) then the payment is a charge for a service and provides for environmental protection. Of course tourists should not be subsidised in the provision of such Services, but all too often this is the case. Pure charges, such as those in the Balearics case, provide for environmental protection based

⁵ Additional charges are raised depending on services provided.

on visitor usage. We can thus distinguish between these charges, and Figure 2 provides a mechanism for this.

Figure 2: Tourist eco-tax experience



Case study of Hvar

Background

The town of Hvar is located in the west part of the island of Hvar, one of the islands of Middle Dalmatia. It is situated to the South of Split (the second largest city of Croatia) and is the largest island in Croatia. From an administrative point of view, the town shares borders with the town of Stari Grad and the municipality of Jelsa, and the sea borders with the municipalities of Milna (island of Hvar), town of Vis (island of Vis in the south) and the Dubrovnik-Neretva County.

The town of Hvar covers 7,535 ha, including the town itself and five settlements in the hinterland: Brusje, Milna, Velo Grablje, Dubovica and Sveta Nedilja. The ancient settlements of Malo Grablje and Zračće are not inhabited. It has 4,224 residents (2001).

The town belongs to the Mediterranean climatic zone of the «Adriatic type» (semiarid type of climate) characterized with hot and dry summer and also humid and pleasant

winters with a large number of sun hours. Hvar is the sunniest island on the Adriatic 2,715 hours of sunshine per year.

The temperature is highly dependent on the impact of sun and sea (except for summertime, it is always hotter than the air). The average air temperature in January is 9⁰C and in July 25⁰C. The annual average temperature is 16.1⁰C.

The sea surrounding the town of Hvar has an average winter temperature is 12⁰C, and average summer temperature is 24⁰C. The total length of the coastline is 163 km. It is mostly steep and highly indented, hiding sometimes small beaches with gravel in the bays. There are 27 beaches (ca 2,450 m), 1 port (Hvar, 183 m), 27 small bays (ca 10,750 m) and one marina (Palmižana on the Pakleni otoci, 280 m).

The coastline and the landscape are, along with cultural monuments, the most valuable natural resources and the part of tourist attraction of the area. Under the Law on Nature Protection, the islands of Pakleni otoci and the small island of Galešnik (at very entrance of the port of Hvar) are treated as protected landscape areas. Under the Law on the Protection of Cultural Heritage, the urban areas of the town of Hvar and rural areas of Velo Grablje, Malo Grablje and Zračće have the status of protected areas. Furthermore, there are a number of archaeological sites in the area: the hydroarchaeological site Palmižana, the *villa rustica* in Soline, a site at Vira, a fort at Lompić in the Gračišće Bay. In addition, there are 73 protected cultural monuments within the historical city core of the town of Hvar (including Arsenal and Theatre, City Fortress and Wally, Cathedral and cemetery, numerous palaces etc.) and 23 more of them outside the town core.

Tourism is becoming increasingly important in the Hvar economy. It currently contributes to one-third of the employment in the town directly.

During the 1960s and 1970s large tourist facilities were built. These do not fit into the landscape from the aesthetic point of view, but have proper auxiliary facilities and green

areas. From the 1980s onwards forward this trend was modified, in that the new construction referred mainly to the tourist but also residential objects. The constructed objects were (and still are) large, built on small piece of land; the streets remaining very narrow and without parking places (especially for the tourists accommodated in these buildings). As a consequence of this development, infrastructure problems, especially waste and wastewater management systems, became significant.

Tourism declined in the 1990s as a consequence of the civil war in Croatia and neighbouring Bosnia and Herzegovina. War was not the sole cause of the lack of growth, however, as the supply of tourist accommodation and infrastructure restricted development.

Recently, the construction of accommodation and catering facilities has been recorded in previously non-inhabited bays (e.g. Milna and Velo Zarače) and also on the Pakleni otoci. They are all illegal, without building permits and are harmful to the environment and landscape. The same is recorded in the bays on the northern part of the area under study. Valuable resources of the land and sea have been destroyed in the process.

The current official accommodation capacity in the town of Hvar is 8,795 beds as shown in Table 2 below. In addition to the below data it is estimated that 2,000 additional, unregistered beds are made available in the peak season.

Table 2: Accommodation in the town of Hvar

Type of accommodation	Category	Number of beds
Hotels	***	932
	**	1,363
Private accommodation	***	3,770
	**	2,730
Total number of beds		8,795

Source: Hvar Tourist Office

Tourism and Environment in Hvar

Tourism has a significant impact on the state of the environment in Hvar. It places a large burden on wastewater services, on waste collection and on other services provided by the municipality. In the peak season, the ratio of tourists to locals is three to one, which is indicative of the significant burden of peak loads on wastewater and other facilities.

Tourist-related litter is an issue on the island. In addition, other discharges from boats pollute the water and coastline.

It would be wrong to categorize Hvar as heavily polluted, but in the peak season some negative impacts of tourism can reduce the enjoyment of the town and the surrounding area. The likely growth of tourist volume indicates that resources are needed to create an environment in which tourism can develop sustainably. One mechanism that has been identified that could contribute significantly to mitigating the environmental effect of tourism is a tourist eco-charge. The following sections outline the proposed charge.

Proposed Tourist Eco-charge

Tourists produce serious pressure on the natural resources and the infrastructure in the town of Hvar and the surrounding area. Tourism is also considered to be the main source of economic development of the area in the future. Thus, according to the polluter-pays principle, tourists should pay for the damage attributed to them.

The proposed instrument is ear-marked, its main purpose is being to reduce / prevent pollution of the coast and coastal sea originating from the land-based sources (and pollution in general).

It was proposed to define this economic instrument as "charge" due to few reasons. First, it is ear-marked (its purpose as well as spending of revenues have to be transparent). Second, it could not be a *tax* because it is collected and controlled at the local level

(while, in the Croatian case, “taxes” go to the state budget, and it is quite unlikely that it would be transferred back to the local budget for environmental purposes). It has to be the revenue of the local authorities budget on one hand, and the same authority has to be responsible for the enforcement and the consequent and subsequent expenditures. The rationale was that the problem is of local scope, and therefore should be solved at the local level.

The charge is aimed at tourists. The term "tourist" refers to anyone outside his/her place of residence. However, it was rather difficult to decide how to elaborate the charge as to be able to address all the tourists in the area, due to several problems.

To start with, tourists come to the island of Hvar by sea. They usually take ferry and come through the ports of Sućuraj or Stari Grad (located outside of the area under study). Some of them come directly to Hvar, also by ferry (but not by car). A large number of the tourists come through the tour-operators. Still, many of them come as individual guests, especially during the peak season (Italians for example). On the other hand, there are nautical tourists. Some of them cross the sea border and come directly to Hvar, some of them do not. Furthermore, there are also tourists that are guests and/or relatives of the local people, staying in their houses/apartments.

These were just some of the troublesome facts that had to be taken into account when elaborating tourist eco charge. The point is that "the tourist" had to be defined in the manner that would ensure relatively easy enforcement as well as the possibility to charge the majority of tourists.

Obviously, it is impossible to use the principle of paying such a charge upon the arrival to or before the departure from the area under study, since the people move free all around (and the area under study encompasses just a part of the island of Hvar). It also is not feasible to include the charge into the price of the ferry ticket (or similar). It would be even more difficult if the number and (countries of) origin of transportation companies is taken into account. Moreover, the procedure of transferring the revenues to the local

authorities account would be extremely difficult, almost impossible (due to existing Croatian law).

Another set of issues regarded the possibility to charge the tourists while they are within the territorial limits of the area under study. Future enforcement procedure and measures also limit the way a tourist eco-charge can be collected. One idea was considered to include the charge in the bills for drink and food, or in the price of the transfers from the town to the Pakleni islands (there are several lines operating on that route, many times every day) etc. However, these ideas were abandoned because it was concluded that the competitiveness of some of the economic agents in the area would be worsened, and yet not all of the tourists would be charged (moreover, there are problems of "grey economy", where all the sales are not recorded etc). There were also some other strategies reviewed, but none of them seemed to be overall in scope (number of tourists). Finally, the problem of addressing the nautical tourists always remained open.

Next, it seems right to relate the charge with the length of the stay within the area under study. To this end, it is necessary to be able to "track" the tourist each day of their visit, and to charge them accordingly. Payment of charge in any of the ways described above does not provide this opportunity.

Within such a framework, and following the rationale of the already existing *sojourn fee*, it was decided to divide the tourists into three main categories.

The first refers to the tourists accommodated in the hotels, private accommodation and camps within the area under study. These tourists have to (or better to say, should) be registered in the Hvar Tourist Office, by their hosts (hotel company or the owner of private accommodation).

The second category implies the people staying in the dwellings whose owner's domicile are outside the town of Hvar. At the same time, these dwellings are not reported to be used for tourist accommodation purposes. The category encompasses both owners,

members of their families as well as their guests (provided that their domicile is not in the town of Hvar).

The third category refers to the nautical tourists anchored in the port of Hvar or along the Pakleni islands. Each person on board would have to pay the charge.

The level of the tourist eco-charge

There were several key factors that had to be taken into account during the elaboration of the proposals of the level of the tourist eco-charge for the town of Hvar.

First of all, the main problems occur in the peak season (July 20 - August 20), when the number of tourists is three times the number of local population (16,000 altogether). Interviewing hotel management, the Tourist Office director and local government officials, the project team found out that it was their mutual intent to reduce the number of tourist in the peak season (especially considering the fact that certain proportion of them are not tourists of high quality, according to their expenditures as well as the accommodation requirements). It was also a stated aim to prolong the season. Currently the season lasts from June until the end of September. Therefore, it seemed reasonable to differentiate the tourist eco-charge in various times of the year.

Furthermore, the interviewed people pointed out that the number of the tourists during the period October to May is very low, and the majority of the accommodation facilities is closed. Therefore, there is no, or rather low, pressure on natural resources and infrastructure caused by the tourists during that time of the year. It was therefore concluded that the tourist eco-charge should not be imposed during that time of the year. This can also be considered as another incentive for the prolongation of the season. Of course, this policy can be changed over time if necessary.

The next point to consider was the already existing *sojourn fee*, which is also differential (based on the attractiveness of the area and the time of the year, it goes from 2.00 to 7.00 HRK). Due to the fact that the area under study belongs to the most attractive areas in Croatia, this fee is set at 7.00 HRK⁶ in the peak season, 5.50 HRK during the season (except peak season), down to 4.5 HRK in other times of the year. The fee is calculated on the basis of person nights.

Discussing the level of the tourist eco-charge, the hotel management was especially concerned about the competitiveness of the destination. This was underlined by the fact that the majority of the hotel guests come through tour-operators, and the charge had to be included in the price of the destination. Having in mind the prices of the "tourist packages" at the world market, as well as the costs of the hotel company in Hvar (Croatia in general), the profit rate of the hotel is already rather low. So, any additional burden (such as tourist eco-charge) would have a significant impact on the hotel profit rate. From that point of view, the charge has to be rather low.

Another point, concerning the hotel company, regards its ability to pay as well as the dynamics of the payments. In fact, if the charge is included in the room price, it has to be transferred from the hotel company account to the local authorities account. The hotel company can make the payment only after getting paid by the tour operator. The experience with the sojourn fee shows that the payments are delayed, sometimes a whole year or so. Thus, if the total amount to pay due to the tourist eco-charge is very high, it would be the last on the payment list, and can be delayed for more than a year. Taking into account that approximately 70% of the registered tourists are accommodated in the hotels, it would mean that the great majority of the revenues from the tourist eco-charge would not be paid in time, and the tourists would not be able to experience the results of the charge, which could be a disaster from the implementation effectiveness point of view.

⁶ 7 HRK is equal to approximately €1 at the current rate of exchange

Despite all these problems, the hotel company strongly supports the idea of the tourist eco-charge. The reason for this attitude is rather simple. In fact, low prices that the company achieves at the world tourist market is largely due to the fact that the tourist attraction of the town is rather poor, despite the natural and historic resources available. Thus, having in mind long-term development perspective, the hotel company is willing to give up a part of its already small profit, providing it has strong guarantee that the money would be spent in the improvement of the environmental conditions in the town and surrounding area because it would eventually result in the better standing of the area as a tourist destination. Furthermore, it would also enhance their endeavour to attract guests of higher quality.

Taking into account all the above listed facts, as well as opinions of the hotel management and Tourist Office, it was concluded that the tourist eco-charge should not exceed the level of the sojourn fee.

There was a request for immediate actions that would result in the improved environmental quality in the area under study, particularly in the respect of the land-based sources of pollution. The request is to be understood from the standpoint of tourists, since the tourist eco-charge seems justified only if the tourists can see the results of their payments. Considering the present pollution problems (caused from the land-based activities, including vessels of all kinds), it was agreed to concentrate on the cleaning of the shores and shallow sea both in the town and surrounding beaches as well as along the Pakleni islands. Calculations showed (taking into account overall costs of the process and the enforcement of the charge on one hand, and assuming the same number of tourists) that the charge should not be lower than 1.5 - 2.00 HRK. However, this level of charge would be sufficient only for the cleaning purposes, while the other land-based sources, and pollution in general, would not be addressed at all. Therefore, three alternative levels of the tourist eco-charge were proposed, as shown in Table 3.

Obviously, the proposed levels of the tourist eco-charge are rather low, even in the peak season. However, they can be raised in the future, according to the improved environmental quality of the destination and the changing nature of the tourist market.

Table 3: Proposed levels of the tourist eco-charge
(Kuna)

Scenarios	Time of the year			
	June 10 - July 20	July 20 - August 20	August 20 - September 30	Other
Scenario I	1.5	2.0	1.5	-
Scenario II	2.0	3.0	2.0	-
Scenario III	3.0	4.0	3.0	-

Willingness to Pay for the Environment

To estimate the willingness to pay for environmental improvement, a limited survey was conducted in the town of Hvar. This survey, aimed at tourists, was translated into a number of languages and was conducted over the period May-July 2002. The survey included some basic biographical detail on the respondents, a view as to their environmental preferences and an assessment of their willingness to pay. The respondent profile is shown in Table 4. Both the age and length of stay varied widely across the sample. Residents of the island of Hvar were excluded, along with Croatian nationals reporting a length of stay over 30 days. It should be noted that the respondents from Poland are not typical, in that they were both young and staying for long durations. The total number of respondents was 261, with an average age of 32.6 years and a length of stay of 11.9 days.

Table 4: Descriptive Statistics of Respondents

Country	Average Age	Respondents		Occupation (% respondents)					Length of stay
	Years	Count	as % total	Student	Employee	Freelance	Manager	Other	Days
Austria	42.7	3	1.15	0.00	66.67	33.33	0.00	0.00	6.3
B and H	19.0	1	0.38	100.00	0.00	0.00	0.00	0.00	13.0
Croatia	31.8	118	45.21	28.81	36.44	14.41	12.71	7.63	11.9
Czech Rep	36.0	3	1.15	0.00	33.33	33.33	33.33	0.00	22.0
France	33.9	14	5.36	21.43	21.43	28.57	28.57	0.00	9.1
Germany	43.5	11	4.21	9.09	54.55	9.09	9.09	18.18	8.9
Ireland	24.3	7	2.68	42.86	0.00	14.29	42.86	0.00	5.9
Italy	33.0	66	25.29	33.33	25.76	21.21	7.58	12.12	12.2
Poland	25.5	2	0.77	50.00	50.00	0.00	0.00	0.00	120.0
Slovakia	43.0	1	0.38	0.00	0.00	0.00	100.00	0.00	14.0
Slovenia	30.3	22	8.43	50.00	45.45	0.00	4.55	0.00	8.5
Sweden	44.0	1	0.38	0.00	0.00	100.00	0.00	0.00	6.0
Switzerland	27.0	2	0.77	50.00	0.00	50.00	0.00	0.00	10.0
UK	32.8	6	2.30	0.00	50.00	33.33	0.00	16.67	3.7
USA	35.8	4	1.53	0.00	50.00	25.00	25.00	0.00	8.8
Total	32.6	261	100.00	29.50	33.72	16.86	12.26	7.66	11.9

Visitor perceptions of the environment are described in Table 5. The most important aspects in attracting visitors to the island and town of Hvar were the sea (88%), the historic nature of the town (82%), the islands (62%) and the landscape (54%). In terms of environmental priorities identified, the most significant were litter, waste collection, cleaner beaches, cleaner coastal sea and marine traffic. This shows that the general perception of the tourists of the environmental stresses on Hvar are similar to those identified above. This shows that the tourists are environmentally aware.

Table 5: Perceptions of the Environment

Characteristic	Most appealing %	Priorities with regard to environment (1=most important, 4=least important)	
Historical town	82.38	Cleaner beaches	1.74
The islands of Pakleni otoci	62.45	Cleaner coastal sea	1.84
Sport activities	9.58	Parks in the town	2.24
Beaches	37.93	Clean woods around the town	2.26
Cultural events	24.14	More flowers in the town	2.49
Sea	88.12	Litter in general	1.66
Adventures in the island	29.89	Waste collection	1.66
Food	28.35	Marine traffic	2.12
Parks	17.24	Traffic and parking	2.26
Landscape	53.64	Water supply	2.07
Hospitality	36.78		
Other	0.38		

The willingness to pay for environmental improvement in Hvar was assessed using a combination of an open-ended question and a dichotomous choice around a payment of 7 kuna (1 Euro). The open-ended question used to elicit the willingness to pay for environmental improvement was “What sum of money (in HKR) would you agree to set aside a day for improvement of the environment in the town and coastal area of Hvar, including the Islands of Pakleni otoci?”.

In terms of the dichotomous choice question posed, for the purposes of analysis of these results, if a respondent responded they were willing to pay at least 7 kuna, then the value taken was 7 kuna, correspondingly in the one case where the respondent replied to the dichotomous choice question that they were unwilling to pay 7 kuna, a willingness to pay of zero was set. This is clearly an underestimate of the true willingness to pay, but it provides a useful approximation of the willingness to pay for the purposes of calculating a tourist eco-charge.

The mean willingness to pay estimated was 4.56 kuna, or approximately 65 Euro cents per day. The mean willingness to pay for a non-Croatian visitor was 4.77 kuna, or 68

Euro cents per day, whilst the same figure for a Croatian visitor was 4.31 kuna or 61 Euro cents per day. This may reflect the fact that Croatians may consider this to be paid for out of general taxation, or more likely the differing income levels between the two types of visitor.

A simple regression was carried out to assess the determinants of the willingness to pay expressed. Table 6 reports the results of this analysis. Income was approximated using per capita GNI taken from the World Development Indicators. The other variables which could be used to approximate income, including type of job, were considered but turned out insignificant. The overall explanatory power of the regression is not high, with an R^2 of 0.035, but the results show some interesting linkages.

As can be seen from the table, age was insignificant in determining willingness to pay, but income, length of stay and whether the islands (location of the main beaches) were the main attraction were all significant to varying degrees. The signs are as one would expect, with “Income” and “Islands” showing a positive sign. “Income” can be expected to have a positive sign, given that environmental quality is given a higher value by those with higher incomes, i.e. previous studies have shown a positive income elasticity of demand for environmental quality. “Islands” reflects the nature of the visit, with beach and marine tourism forming the most important part of the stay. The islands are sensitive to pollution, both by litter and by marine pollution. “Length” shows a negative sign, reflecting a lower willingness to pay among those who would have to pay more. A variable to analyse the influence of whether the respondent national or not was constructed, but turned out to be insignificant.

Table 6: Regression Results: WTP in Kuna

<i>Regression Statistics</i>								
Multiple R	0.188							
R Square	0.035							
Adjusted R Square	0.021							
Standard Error	2.514							
Observations	264							
<i>ANOVA</i>								
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>			
Regression	4	60.250	15.062	2.383	0.052			
Residual	259	1637.110	6.321					
Total	263	1697.360						
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	4.399370	0.562753	7.818	0.000	3.291	5.508	3.291	5.508
Age	-0.013694	0.013134	-1.043	0.298	-0.040	0.012	-0.040	0.012
Income	0.000029	0.000018	1.634	0.104	0.000	0.000	0.000	0.000
Length	-0.014995	0.009060	-1.655	0.099	-0.033	0.003	-0.033	0.003
Islands	0.649856	0.326022	1.993	0.047	0.008	1.292	0.008	1.292

From the above analysis, we can conclude that tourists would be willing to contribute towards improving the environment, and that significant revenues could be obtained from tourists for this purpose. The proposed eco-charge for tourists in Hvar would seem to be viable from an economic point of view, though political and legal barriers have risen to restrict the application of tourist eco-charges in Hvar at present.

Conclusions

Tourism has been shown to have significant impacts on the environment, through a number of impact pathways. Economic instruments, such as tourist eco-charges, present one possible means of addressing the negative aspects of tourism, both through changing behaviour and by providing funds for environmental improvement. Such charges have been applied in a number of countries, including the Balearic Islands, Bhutan and Dominica.

This paper presents the case for economic instruments in the Croatian town of Hvar, which faces ever increasing environmental pressures from tourists in the peak season in particular. Stakeholder analysis has shown that there is general support for a tourist eco-charge in Hvar and a preliminary willingness to pay study shows a willingness to pay for

environmental improvement of approximately 0.65 Euros per day, higher than the proposed charge. This charge would be earmarked for use on improving the environment.

Barriers to the implementation of this charge still exist, notably from the political and legal standpoint. However, actions are being taken at present to remove these barriers and it is anticipated that a charge may be in place as early as the summer of 2003.

References

Commonwealth of Dominica (1999) *Country Profile*. Available online at <http://www.ndcdominica.dm/invest/countryprofile.doc>

Davies, T. and S. Cahill (2000) *Environmental Implications of the Tourism Industry*. Discussion paper 00-24. Resources for the Future, Washington DC. Available online from www.rff.org

Dixon, J., Hamilton, K., S. Pagiola and L. Segnestam (2001) *Tourism and the Environment in the Caribbean: An Economic Framework*. Environment Department Paper No 80. The World Bank, Washington D.C..

Dorji, T. (2001) "Sustainability of Tourism in Bhutan". *Journal of Bhutan Studies* Volume 3, Number 1. Available online at <http://www.bhutanstudies.com/>.

Ecotaxa website, available online at <http://www.ecotaxa.org>

Fernandez (undated) Europeanisation and Domestication of Environmental Policy in Spain. <http://www.uea.ac.uk/env/all/resgroup/cserge/cframe/Temp-pages/Fernandez.pdf>

Government of the Balearics (2002) Tourism statistics. Available online at <http://www.visitbalears.com/turisme/estudis/ct/pu/readfile/55>

Government of Bhutan (undated) *Tourism in Bhutan*, Department of Tourism website, Government of Bhutan. Available online at: <http://www.tourism.gov.bt/index.html>.

Hillary, M., Nancarrow, B., Griffin, G., and G. Syme (2001) "Tourist Perception of Environmental Impact" *Annals of Tourism Research*, Volume 28, No. 4, pp 853-867.

Jamieson, W. (2000) "The Challenges of Sustainable Community Cultural Heritage Tourism". Paper presented at UNESCO Conference/Workshop on Culture, Heritage Management and Tourism, Bhaktapur, April 2000.

Kamp, H. (1998) *Position Paper of the German NGO Forum on Environment and Development on the Environmental and Social Responsibility of Tourism in the context of Sustainable Development*. Paper presented to the 7th meeting of the Commission for Sustainable Development, New York, 1999.

Lindbergh, K. and R. Johnson (1997) "The Economic Values of Tourism's Social Impacts" *Annals of Tourism Research*, Volume 24, No. 1, pp 90-116.

Lukashina, N., Amirkhanov, M., Anisimov, V. and A. Trunev (1996) "Tourism and Environmental Degradation in Sochi, Russia" *Annals of Tourism Research*, Volume 23, No. 3, pp 654-665.

Markandya, A. (2000) "Economic Instruments for Sustainable Tourism Development", in. A. Fossati and G. Panella (eds.) *Tourism and Sustainable Economic Development*, Kluwer Academic Publishers.

Markandya, A., Harou, P., Bellu, L. and V. Cistulli (2002) *Environmental Economics for Sustainable Growth: A Handbook for Practitioners*. Edward Elgar, Cheltenham.

Milhalic, T (2000) "Environmental Management of a Tourist Destination: A factor of tourism competitiveness" *Tourism Management*, volume 21, pp 65-78.

Patullo, P. (2000) "The problems of two aspects of intensive tourism (cruise and all inclusives) in the Caribbean" in *Calpe 2000: Linking the fragments of paradise, Proceedings of an international conference on environmental conservation in small territories*. Government of Gibraltar and UK Overseas Territories Conservation Forum. Available online at <http://www.ukotcf.org>

US DOE (2001) *Bhutan Country Brief*. US Department of Energy, January 2001. Available online at <http://www.eia.doe.gov/emeu/cabs/bhutan.html>

Vanegas, M. and R. Croes (2000) "Evaluation of Demand: US tourists to Aruba" *Annals of Tourism Research*, Vol 27, No 4, pp 946-963.

Wanhill, S. (1980) "Charging for congestion at tourist attractions" *International Journal of Tourism Management*, September 1980, pp168-174. Reprinted in Tisdell, C. (2000) *The Economics of Tourism II*, Edward Elgar, Cheltenham.

WWF (undated) *Tourism Threats in the Mediterranean*. WWF background paper, available online at www.panda.org