THEORETICAL JUSTIFICATIONS FOR A TOURISM TAXATION MECHANISM: EXTERNALITIES PRICING AND RENT CATCHING FOR THE SUSTAINABILITY OF TOURISM IN LANZAROTE (SPAIN)

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ABSTRACT

In this work we discuss the theoretical foundation for the introduction of a taxation mechanism at tourism destinations with the aim of setting an appropriate policy for the tourist use of the local tourism assets. Of course, to this aim some specific reasons must be identified to justify this kind of proposal. These can be mainly represented by the needs to internalise tourism external costs and to capture tourism rents to reinvest and ensure the sustainability of the local economy, while facing non-renewable and scarce natural resources exploitation. Having briefly discussed the theoretical foundations which call for tourism taxation the work will proceed as follows. Firstly, Lanzarote Spanish tourism destination will be analysed and tourism impacts will be identified in the island showing the existence of external costs under a geographical description. Secondly, the internalisation of external costs leads us to briefly examine the theory on Pigouvian tax. Thirdly, we will move onto examining the other aspect of the “rent capture” issue and the Hartwick’s prescription will be referred to. Finally, some concluding considerations will be made.

1. Introduction

The degradation of the local environment generated by tourism activities and the general lack of specific and integrated management programmes for the preservation of natural resources within tourist areas has consequently brought about economic decline to many tourism destinations (Travis, 1980; Lozato-Giotart, 1991; Hall, 1998; Sardà 2004). In particular, the progressive depletion of natural resources generated by the impact of mass tourism practices in coastal areas have shown limits which confirm what is stated in the theory life cycle of tourism destinations proposed by Butler (1980). Thus, traditional and mature destinations are now facing progressive difficulties in competing in a growing and increasingly wider tourism offer scenario, generally characterized by new destinations with a better preserved and more appealing natural environment. To avoid further economic decline in new and expanding touristic areas, it is necessary to implement systematically, through municipality authorities and private entrepreneurs, as well as other tourists stakeholders, environmental programmes based on the sustainable management of common territorial resources. Due to the pressure for further development and the difficulty in conciliating it with the preservation of natural resources, sustainable tourism development seems to be the best strategy in achieving long-term tourist economic benefit (Coccossis & Parpairis 1995; Briassoulis, 2002).

The success of a public and integrated management for safeguarding natural resources at a local scale, firstly depends on the efficiency of public authority in obtaining the necessary financial resources to
develop specific environmental programmes for its territory in accordance with sustainability principles and practices. Over the last decades much effort has been made by the various public authorities in Spain to avoid local tourism economic decline. This has been achieved by reverting the gains from specific tourism income taxes to launch friendly environmental mechanisms for a more balanced management of natural resources. Thus different measures, either at local or regional level, have been adopted in order to implement a series of tourism tax collection systems that guarantee tourist economic long-term revenues, when in turn these are partially employed to sustain the local community’s future environmental and economic needs. Among these experiences, some are specifically oriented towards environmental preservation of the Balearic ecotax. In accordance with this emblematic taxation tool many different initiatives are now being designed by the Canarian government.

With the aim of strengthening the validity of such a tool, in this work we discuss the theoretical foundation for the introduction of a taxation mechanism at tourism destinations with the aim of setting an appropriate policy for the touristic use of the local tourism assets. Of course, some specific motives must be identified to justify this kind of proposal. These are mainly represented by the needs to internalize tourism external costs and to capture tourism rents to reinvest and ensure the sustainability of the local economy, while facing non-renewable and scarce natural resources exploitation. The first aspect is related to the idea that tourists, who are generally considered large users of local resources, consistently generate external costs for the local host communities. In fact, the latter often bear financial expenditures aimed at organizing their territories for adequate tourism reception, while normally no or very little contribution comes from the tourism sector. The last aspect, which refers to the issue of capturing rent, is particularly important if we consider the impact tourists have on the local resources and specifically on those of the natural environment. In fact, if we think of the natural environment as a non-renewable resource, then the rules set by the natural resource economics theory should be followed, especially if the sustainable management of the local economy is to be pursued.

To do this, as we will see later in this work when Hartwick’s prescription is analysed, we are advised to periodically save a set amount of money to be reinvested in maintaining or improving the local environmental quality.

To clarify the concerns of the external costs internalization issue, some examples should help. Let us consider a tourism destination where hundreds and hundreds of tourists arrive every day. It is easy to see why the local government needs more financial resources than normal, since it is asked to provide extra public goods and services for the large number of tourists. Hence, we can see that the presence of tourists at destination places generates various external costs, which are very often unjustifiably dispersed into the local communities. In light of this, we may fairly state that where governmental obligations in maintaining and providing public goods and services arise from the presence of tourists, it should naturally call for their contribution. It becomes evident, therefore, in the example we have seen, that there is an uncomplicated justification for tourism taxation. However, when environmental

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1 The Balearic Archipelago is by its accommodation capacity the first Spanish tourist destination with more than 300,000 hotel beds.

2 Basically, taxation is essential to provide governments, both national and local, with the finance to meet their institutional obligations in the provision and maintenance of public goods and services. For this reason, governments always look for new tax bases. As stressed by some authors, since tourism is one of the fastest growing elements of world trade, this already seems to be a good reason for tourism taxation. Cf. Forsyth P., 1997, Taxing Tourism?, Paper presented at the Australian Tourism and Hospitality Research Conference, Monash University, Australia, pp. 2-3. However, as we will argue, more specific reasons can be seen to justify the implementation of tourism taxes.

3 In the literature the rent concept has various meanings. In land use studies rent can be referred to the Ricardian idea, which is associated with variations in land quality. Furthermore, it can also be understood in von Thunen’s terms, which are associated with variations in land accessibility. In this work, we refer to the economic rent concept – the residual or surplus arising from the difference between the price of goods produced using a natural resource and the unit costs (labour, capital, material and energy inputs) of turning that natural resource into a good – which gives the value of the resource itself. Cf. Hartwick J. M. and Olewiler N. D., 1998, The Economics of Natural Resource Use, 2nd Edition, Addison-Wesley Educational Publishers, New York, p. 57-59.
goods are also taken into account, then further considerations must be made. In fact, taxation is not only a tool that aims to recover costs generated by the presence of tourists. It can also represent a sort of pricing mechanism through which it is possible to assign an economic value to normally unpriced environmental goods. In this way, it would be possible to rationalize their accessibility with the consequence of avoiding their wild exploitation. In fact, tourism per definition is generally based on an unlimited use of environmental local assets, whose damage and degradation are mainly the result of them being public goods.4

This condition results in their overuse and abuse, therefore generating social costs or, more generally, a lack of welfare for host communities. In a context like this the application of a tax would be desirable as, in agreement with the thinking of many environmental economists, the identification and placement of a “price” on non-marketed environmental goods can be one of the possible solutions to this problem. A tax policy to assign prices to environmental assets can internalize environmental external effects by confronting users with the full cost of environmental resources.

The second aspect we are considering is “rent capture”. As we know from the theory, open access resource exploitation drives resource rents to zero and leads to the overuse of the resource.5 The lack of resource rents constrains investment opportunities to somehow rejuvenate or substitute the exploited resource. In this way, once the resource has been thoroughly depleted, the community whose existence it was based on, finds itself impoverished and with no other possibilities of productively exploiting that resource or finding other alternatives.

It is generally recognized that tourism unavoidably generates economic rents that are much higher than the marginal social cost of the locally provided services.6 Furthermore, it is also quite normal for private suppliers of tourist services to try to maximise these rents above a normal level. As a result, a policy aimed at drawing out as much of the rent as possible by taxing economic agents involved in tourism activities would be a practical option. In this way, it would be possible to generate a flow of money from the tourism sector to the local government, which in turn can be employed to meet the local community’s needs.7

Having said all this, the work will proceed as follows. Firstly, we present the case of Lanzarote in the Canarian Archipelago as a case of tourism destination where damages deriving from the practice of tourism activities are particularly evident. In its case the implementation of deep reflection for the introduction of a taxation mechanism would be valuable. For this reason, as a further step, the initiatives taken to pursue sustainability of tourism destinations will be discussed. Afterwards, we will examine the aspect related to the internalization of external costs which leads us to briefly examine the theory on Pigouvian tax. Then, we will move on to considering the other aspect of the “rent capture” issue and Hartwick’s prescription will be referred to. Lastly, some concluding considerations will be made.

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4 Most environmental resources are not subject to property rights and even in the case they exist, they are not well defined. This is why they are defined as public, free or common goods. Such goods have no markets where they can be exchanged and it is not possible to give any price to them. This case of market failure can give the impression that they have little or no value with the consequence that usually they are quickly depleted and lost forever. Hence, the open access condition brings an inefficient allocation of resources due to the fact that they are subject to more consistent depletion. In fact, it is unlikely that under such conditions resources can be sensibly managed. For an original treatment of the common goods problem, cf. Coase R. H., 1960, The Problem of Social Cost, Journal of Law and Economics, Vol. 3, pp. 1-44. Furthermore, cf. Bromley D. W. (editor), 1995, The Handbook of Environmental Economics, Blackwell Pbl., Oxford, pp. 45-60.


7 It can be observed how in principle taxing economic rents is an ideal source of revenue. It does not negatively affect price or production decision for profit-maximising firms. Cf. Perman R., Ma Y., McGilvray J., 1996, Natural Resources and Environmental Economics, Longman, London, pp. 159-160.
2. The Canary Archipelago: the paradigmatic case of Lanzarote

The Canary Archipelago are one of the most popular Spanish tourism destinations. During 2004 around 10 million foreign arrivals were registered with the Canarian Government. Likewise the Canary Islands represent, by accommodation capacity, the fourth Spanish tourist destination with more than 150,000 hotel beds. These figures show the importance of tourism in the Canary Archipelago's economy. The Canary Archipelago, also known as the "Fortunate Islands" because of their almost ideal year-round climate due to the warming influence of the Gulf Stream and favourable trade winds, have become an affordable "subtropical" tourist destination relatively close to the principal European tourist flows. Thus, the Canary Islands offer warm temperatures all year round, which makes them a very attractive holiday destination, especially in the winter months. The Canary Islands are volcanic and young on a planetary scale. It is precisely this volcanic origin that explains the spectacular beauty and attractiveness of the landscape. On the other hand, the particular isolation of this insular system, until recent times, explains the preservation in the Canary Archipelago of a series of major and unique ecosystems. The quality and magnificence of these natural assets has been recognized by the Spanish Government since the 1970's with the declaration of an important number of protected areas. Thus, the Canary Archipelago house four of Spain’s 13 National Parks. This noticeable concentration of natural protected areas in the Canarian autonomous region, which enjoys a decentralized system of government and has its own parliament, shows the biological value and diversity that is still preserved in the territory.

Lanzarote is the easterly and northernmost island of the seven major islands that constitute the Canary Archipelago. The island lies in the Atlantic Ocean at only 100 km from the coast of Africa and 1,000 km from the Iberian Peninsula. It runs 60 km north to south and only 20 km at its widest point, covering an area of 846 km2 with an altitude rising from 0 to 670 m above sea level at its highest altitude. Lanzarote's mountains are actually extinct volcanoes (there are over 300 of them to explore) that model the island landscape. Due to its relatively low altitude, the island does not catch the humidity of the trade winds and rainfall is only some 100 mm/year. Meteorological data for 2001 (see table 1) give a good idea of weather conditions and its remarkable suitability for 3s tourism development.

Table 1 – Lanzarote's Meteorological Data (2001).

<table>
<thead>
<tr>
<th>Month</th>
<th>Wind speed (km/h)</th>
<th>Humidity %</th>
<th>Rain (mm)</th>
<th>Rain (days)</th>
<th>Calima (days)</th>
<th>Temp. C°</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>19</td>
<td>73</td>
<td>0.9</td>
<td>4</td>
<td>1</td>
<td>17.9</td>
</tr>
<tr>
<td>February</td>
<td>19</td>
<td>71</td>
<td>0.0</td>
<td>0</td>
<td>5</td>
<td>17.9</td>
</tr>
<tr>
<td>March</td>
<td>22</td>
<td>75</td>
<td>0.1</td>
<td>1</td>
<td>1</td>
<td>19.4</td>
</tr>
<tr>
<td>April</td>
<td>30</td>
<td>73</td>
<td>0.3</td>
<td>3</td>
<td>0</td>
<td>19.7</td>
</tr>
<tr>
<td>May</td>
<td>22</td>
<td>74</td>
<td>0.0</td>
<td>3</td>
<td>0</td>
<td>20.2</td>
</tr>
<tr>
<td>June</td>
<td>30</td>
<td>69</td>
<td>0.5</td>
<td>3</td>
<td>0</td>
<td>22.5</td>
</tr>
<tr>
<td>July</td>
<td>34</td>
<td>65</td>
<td>0.0</td>
<td>1</td>
<td>1</td>
<td>23.2</td>
</tr>
<tr>
<td>August</td>
<td>29</td>
<td>67</td>
<td>0.0</td>
<td>0</td>
<td>3</td>
<td>26.2</td>
</tr>
<tr>
<td>September</td>
<td>19</td>
<td>67</td>
<td>0.5</td>
<td>3</td>
<td>0</td>
<td>25.3</td>
</tr>
<tr>
<td>October</td>
<td>18</td>
<td>68</td>
<td>0.2</td>
<td>1</td>
<td>1</td>
<td>23.7</td>
</tr>
<tr>
<td>November</td>
<td>21</td>
<td>66</td>
<td>32.2</td>
<td>10</td>
<td>3</td>
<td>20.6</td>
</tr>
<tr>
<td>December</td>
<td>15</td>
<td>73</td>
<td>3.8</td>
<td>5</td>
<td>4</td>
<td>19.4</td>
</tr>
<tr>
<td>Average</td>
<td>23.2</td>
<td>70</td>
<td>3.2</td>
<td>2.6</td>
<td>1.7</td>
<td>21.3</td>
</tr>
</tbody>
</table>

*Source: Instituto Nacional de Meteorología (2002).*

With such excellent year-round weather conditions beaches soon became the main tourist attraction in Lanzarote. Tourist development has grown quickly since the mid-1970s. The Timanfaya National
Park Declaration in 1974 implied the recognition and the need to preserve a share of Lanzarote's unique and pristine natural environment, at the same time as being a powerful promotional tool for marketing the island internationally as a nature paradise. During the 1980s and the 1990s tourist growth consolidated and brought economic welfare to the islanders and revolutionary changes to their consumption patterns. Urbanization developed fast through the construction of a series of major tourist resort complexes, as an increasing influx of people, both foreign and national, began to settle permanently on the island, mainly attracted by job opportunities directly or indirectly generated by tourism development.

In October 1993 the whole island of Lanzarote was declared, at the request of the local government (the Cabildo), Reserve of the Biosphere by UNESCO. Its aim was to reject and mitigate the negative environmental impact of a clearly more recognizable presence of a mass tourism model of development on the island. A year later (1994) the Cabildo modified the Nature Protected Areas Law to enable the preservation of over 40% of the insular territory from further urban development (UNESCO, 2002). Despite the planning efforts of the local government, the gradual growth of residents and tourist flows towards Lanzarote augmented the pressure upon its natural resources. Throughout the 1990s, a fast-growing transitory foreign tourist demand partially switched into a demand for a permanent second residence on the island. At present, 3,641 houses in Lanzarote are owned by foreigners, and most of them (57.4%) are located in the municipality of Tias. There is also a high presence in the municipalities of Teguise and Yaiza, with nearly 14.6% foreign-owned houses in each of them. In 2000 a total of 26,534 second homes were accounted for on the island (Cabildo de Lanzarote, 2002).

The population of Lanzarote increased by more than 70% during the period from 1991 to 2001. According to the Cabildo demographic figures (2002), in 1991 the officially registered population figure stood at 64,911 inhabitants, meanwhile the figure in 2001 was (see table 2) 111,830 inhabitants. On the other hand, local government figures for 2001 show that an additional 49,759 people (tourists) were living on the island. This was estimated from the percentage of property occupation, and brought the island population to a total of 161,589 inhabitants in 2001. Thus, more than 30% of Lanzarote's population was actually formed, in 2001, by foreign tourists and non-officially registered residents. As table 2 shows, the island is divided into seven administrative municipalities and the officially registered population concentrates in Lanzarote's capital, Arrecife. Likewise, table 2 shows employment figures by municipality. The main workforce is based in the capital Arrecife, which is not surprising as it holds the largest population and the main harbour of the island. The second largest workforce is in the municipality of Tias, which contains Puerto del Carmen, the largest tourist resort on the island.

<table>
<thead>
<tr>
<th>Municipality</th>
<th>Resident Population</th>
<th>% of total resident population</th>
<th>Employed</th>
<th>% of total employed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arrecife</td>
<td>48,955</td>
<td>43.8</td>
<td>18,386</td>
<td>42.6</td>
</tr>
<tr>
<td>Haria</td>
<td>4,629</td>
<td>4.2</td>
<td>627</td>
<td>1.4</td>
</tr>
<tr>
<td>San Bartolomé</td>
<td>16,345</td>
<td>14.6</td>
<td>4,176</td>
<td>9.7</td>
</tr>
<tr>
<td>Teguise</td>
<td>13,809</td>
<td>12.3</td>
<td>5,813</td>
<td>13.5</td>
</tr>
<tr>
<td>Tias</td>
<td>15,250</td>
<td>13.6</td>
<td>9,243</td>
<td>21.4</td>
</tr>
<tr>
<td>Tinoj</td>
<td>4,986</td>
<td>4.5</td>
<td>1,196</td>
<td>2.8</td>
</tr>
<tr>
<td>Yaiza</td>
<td>7,856</td>
<td>7.0</td>
<td>3,702</td>
<td>8.6</td>
</tr>
<tr>
<td>LANZAROTE</td>
<td>111,830</td>
<td>100.0</td>
<td>43,143</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: Cabildo de Lanzarote (2002).

9 Timanfaya National Park (1974) is located in the north of the island and occupies an area of 51,07km2. This surface represents the 6% of the total surface of Lanzarote.
10 The Island Cabildo's are the centers of government for each of the seven inhabited islands of the Canary Archipelago. Created in 1912, the Cabildo of Lanzarote is a political and administrative body responsible for the island territorial planning and economic development coordinated within the legislative and politic frame of the Canarian Autonomous Government.
The third largest workforce is concentrated in the municipality of Teguise, which contains Costa Teguise, Lanzarote's second largest tourist resort. To visualize these and other principal tourist resorts see chart 1 below.

Chart 1 – Map of Lanzarote.

The number of tourists going to Lanzarote is increasing every year. According to the Cabildo figures, the number of holidaymakers in 1991 was just over one million, whereas last year (2004) over 1.8 million tourists visited the island. Demographic growth in the island since the mid-1980s (see table 3) can therefore be clearly linked to the strong tourism development occurring in Lanzarote in the past decades.

Table 3 – Tourism development and demographic growth in Lanzarote (1986-2001).

<table>
<thead>
<tr>
<th>Year</th>
<th>Tourist flows</th>
<th>Tourist accommodation beds</th>
<th>Resident Population</th>
<th>Tourists and non-official residents</th>
<th>Total population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1986</td>
<td>461.337</td>
<td>29.761</td>
<td>57.000</td>
<td>19.400</td>
<td>76.400</td>
</tr>
<tr>
<td>1997</td>
<td>1,552,172</td>
<td>53.285</td>
<td>78.956</td>
<td>44.226</td>
<td>123.182</td>
</tr>
<tr>
<td>2001</td>
<td>1,844,903</td>
<td>59.132</td>
<td>111.830</td>
<td>49.759</td>
<td>161.589</td>
</tr>
</tbody>
</table>

Source: Lanzarote en la biosfera (1998); Cabildo de Lanzarote (2002).

During the 15 years that cover the period 1986-2001, tourist flows going to Lanzarote grew spectacularly, multiplying by nearly four, as tourist accommodation beds multiplied by nearly two. Likewise resident population almost doubled as tourists and non-official residents multiplied by 2.5. Thus, total population more than doubled by the end of the period. In 1986 tourists and non-official
residents represented 25% of total population. This figure increased to more than 30% in 2001. This trend implies a major threat to the management of Lanzarote's natural resources since tourists and non-official residents are not directly subject to a taxation mechanism, from which funds could be effectively used towards its preservation. In addition, foreign population growth implies an integration challenge for the local community as well as an increasing demand on goods and services (public health, education, etc.).

3. Initiatives for sustainable tourism destinations: the difficult balance between development and conservation.

*Lanzarote Strategy in the Biosphere* report (1998) defined a series of major action programmes to lead island’s future towards a more sustainable scenario. Thus an insular system was conceptualized and seven major action programmes and related indicators were adopted (see table 4) in order to assess the further insular system evolution towards sustainability. In demographic terms the development of the so-called "risk scene", which was pointed out in 1998 by the *Lanzarote Strategy in the Biosphere* report, has become a reality according to the *Evolution of Insular Indicators (1996-2001)* report. Therefore it seems important to strengthen the practice of the major programmes defined in 1998 since the frantic growth, especially in the transport and building sectors, is severely damaging the fragile insular nature system. Despite local government efforts, launched in the 1990s, to regulate land uses through its Insular Plan for Land Planning (PIOT, 1991, 1998, 2003) and its successive adjustments, tourist growth is still difficult to manage. In this sense the so-called *tourist moratorium* (PIOT, 1998) is meant to establish limits to the increase in new tourist accommodation facilities for the following ten years. The *tourist moratorium* was finally passed and it entered into force in 2000, for the period 2000-2010. Furthermore, in 2003, the Cabildo began the declassification of another 25,000 tourist accommodation facilities.

<table>
<thead>
<tr>
<th>Action programmes</th>
<th>Related indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Population</td>
<td>Resistant Population</td>
</tr>
<tr>
<td>Key environmental sectors</td>
<td>Waste management</td>
</tr>
<tr>
<td>Insular Ecology</td>
<td>Biodiversity</td>
</tr>
<tr>
<td>Arrecife and Urban system</td>
<td>Arrecife</td>
</tr>
<tr>
<td>Economy and Tourism</td>
<td>Public finances</td>
</tr>
<tr>
<td>Social cohesion</td>
<td>Living conditions</td>
</tr>
<tr>
<td>Cultural Identity and Heritage</td>
<td>Identity</td>
</tr>
</tbody>
</table>


Nevertheless, and without losing sight of the fact that the moratorium expires in 2010, a major threat persists - this is the recovery of previously granted building rights that require compensative payments\(^{11}\). In this sense, an "ecological reform" of the tax system could generate extraordinary funds with which to recover tourist soil and at the same time meet the expenditure necessities to restrain environmental impoverishment and, in particular, to curb the trend towards increasing urbanization as a result of tourist growth (Cabildo de Lanzarote; E.U. Life Program; Prats, F. coord.; Roca, J. et al.,

\[^{11}\] The exact amount that implies recovering construction rights is unknown but 300 million euros are taken as a reference point, see report by Larrea, Rexach and González within the *Life Lanzarote in the Biosphere 2 (2001-2004)* program. The recovery of those rights is related with the local government reorientation towards more sustainable patterns based on the Insular Plan for Land Planning (PIOT) of 1991 which deprogrammed more than 250,000 tourists beds, see report by Ramos et al. within the *Life Lanzarote in the Biosphere 2 (2001-2004)* program.
This "ecological tax reform", as well as other measures and initiatives hoping to achieve a more sustainable development for the island’s future, are being studied within the framework of the Life Lanzarote in the Biosphere 2 (2001-2004). Likewise, the programme points out that in order to face the different issues that are threatening Lanzarote’s environmental equilibrium, it seems necessary to provide major income to the Island Council through a new legislation of greening taxes that depend on a decision at an autonomous level (Canary Region).

4. The theory of externalities pricing: the Pigouvian tax

From what has been said so far, it is evident that the practice of tourism activities can be seen as an industry that is capable of generating financial benefits as well as a consistent degradation of local, transit and destination environments. In fact, tourism normally generates the overuse of local resources, whose costs are almost always dispersed into local communities. The result is particularly perceptible in the reduction of the welfare of that section of the local population, which takes no part in the tourism production processes, and does not receive any compensation for this loss. Among economists, it is a general view that when markets present these kind of external effects, then some form of intervention should be introduced to the aim of internalizing the external costs and so reaching the socially optimal level of degradation or pollution. With regard to this, many economists have shown an enormous interest in a tax-based principle tool. In fact, they generally state that when the production or consumption of some goods generate negative externalities which are not reflected in their price, then by imposing a tax on the goods it is possible to improve social welfare. In this respect, the economic theory provides a framework of analysis which attempts to use resources more efficiently and thus help to maximise welfare by internalizing external costs. The most famous work, first proposing this idea, is that of the British economist Arthur C. Pigou, who suggested an indicative policy to gain an optimal level of externality achievable by a tax imposition. In formal terms, the optimal Pigovian tax can be illustrated as a problem of maximising the net social benefits (NSB). These are made equal to the gross benefits (P q) achievable from the degrading or polluting activity after having deducted the private costs (C) and the external costs (EC)

\[
NSB = Pq - C(q) - EC(q)
\]

Setting its first-order condition (∂NSB/∂q=0), after a simple manipulation, we obtain

\[
P - \frac{\partial C}{\partial q} = \frac{\partial EC}{\partial q}
\]

where the left-hand side (P – \(\frac{\partial C}{\partial q}\)) represents the marginal net private benefits (\(\partial\text{NPB}/\partial q\)). Equation (2) puts into evidence the optimization rule which wants that marginal net private benefits should equal marginal external costs to the end of finding an optimal level of degrading or polluting activity \(q^*\). This can be achieved if a tax \(t^*\) is imposed. Hence, setting the optimal tax level \(t^*\) equal to the marginal external cost

\[
t^* = \frac{\partial EC}{\partial q^*}
\]

where \(q^*\) is the optimal level of damaging activity. Rearranging equation (2) we have

\[
P = \frac{\partial C}{\partial q^*} + t^*
\]

---

14 In this context \(q\) represents the output generated by the polluting activity and \(P\) is its price per unit. The price \(P\) is here defined as non-dependent by the quantity \(q\) as it would under imperfect competition. Cf. Pearce D. W. and Turner K. R., 1990, op. cit., p. 86.
In graphical terms, having found a desirable optimal level of externality $q^*$, if a tax $t^*$ on each level of damaging activity is imposed, then the curve $MNPB$ will shift downward to the left because the marginal net private benefit is reduced by the tax amount.\footnote{On the taxation and optimal pollution issue, cf. Pearce D. W. and Turner K. R., 1990, op. cit., chapter 6.} With this tax constraint, the “polluter” will maximise its private net benefit in correspondence of $q^*$ and reduce its activity level from $q_\pi$.

\begin{figure}[h]
\centering
\includegraphics[width=0.6\textwidth]{Figure1.png}
\caption{The optimal tax}
\end{figure}

\section*{5. Tourism resorts as “mines”: the theory of non-renewable resources depletion}

When we speak about non-renewable resources, we normally refer to resources that are characterized by a finite stock of their reserves in the ground, since they are formed by lengthy geological processes. As a result, once these resources are removed from the ground they cannot be replaced. Considering this aspect as the main characterizing feature of non-renewable resources, we should not have any difficulty in thinking of a tourism destination in the same way. In fact, to support this fact, it is enough to consider that tourism destinations are often characterized by unique and often fragile local environments. As a consequence, and similar to mines, once they are depleted they cannot be restored.\footnote{The point is that such resources may be renewable, but if put under too much stress they will collapse. As a result, they can turn into non-renewable resources because their regeneration capacity has been compromised. Cf. the considerations made in section three of chapter one.} From the point of view of an economic analysis, the non-renewability condition brings some problems to the management of resources. These are mainly seen in aspects such as how quickly the resource is depleted. Indeed, reasoning in terms of the exploitation of a mine, a unit of resource extracted today implies that a smaller amount of that resource will be available tomorrow. For this reason, an efficient resource exploitation path (the amount extracted or exploited in each period of the resource lifetime) must be identified.

The theory on non-renewable resource use basically refers to the analysis made by Gray in 1914.\footnote{Gray L. C., 1914, cited in Hartwick J. M. and Olowiler N. D., 1998, op. cit., p. 269.} In that work he analysed how the hypothetical manager of a non-renewable resource – a mine is his specific example – decides the quantity of resource to extract and for how long, on the basis of certain assumptions.\footnote{Such assumptions were related to the following considerations: the resource is managed under perfectly competitive market conditions; the resource manager knows perfectly well the exploitable resource amount; the real price of a resource unit remains constant over its resource life; the extractions or exploitation costs increase as the resource stock decreases. For a more detailed account on Gray’s analysis, cf. Hartwick J. M. and Olowiler N. D., 1998, op. cit., pp. 269-274.} The result of his analysis showed that a firm, in deciding how to extract a certain resource stock, must choose an extraction path represented by $(q^*_0, q^*_1, \ldots, q^*_T)$, that is quantity $q$ at
each point of the resource lifetime \((t, t+1, \ldots, T)\) which maximises its profits. Since extraction takes place over more than one period of time, then what has to be maximised is the present value of profits, which can be expressed as follows:

\[
\pi = pq_0 - TC(q_0) + \frac{pq_1 - TC(q_1)}{(1 + r)} + \ldots + \frac{pq_T - TC(q_T)}{(1 + r)^T}
\]  

(5)

where \(p\) is the market price of a resource unit extracted; \(TC\) represents the total costs of extracting a quantity \(q_t\) of resource. The problem finds its solution in correspondence of the condition for which the extraction rate \([(q_{t+1} - q_t)/q_t]\) must satisfy the \(r\) percent extraction rule on \([p - MC(q_t)]\) which is given by:

\[
\frac{[p - MC(q_{t+1})] - [p - MC(q_t)]}{[p - MC(q_t)]} = r
\]  

(6)

where the new notation \(MC\) is the marginal cost of extraction. In addition, as will also be highlighted later in this section when we will refer to the value decline of the resource, \([p - MC(q_t)]\) is the rent at time \(t\) which we know corresponds to any gap between price and marginal cost. In other words, on the basis of marginal profits equality across periods, the \(r\) percent rule tells us that across two periods the rent \([p - MC(q_t)]\) increases at a \(r\) percent rate. Hence, the extraction firm’s problem finds its solution in correspondence with that extraction rate \([(q_{t+1} - q_t)/q_t]\) so that \([p - MC(q_t)]\) increases at \(r\) percent. This can be represented in the following graphs:

The \(r\) percent rule can also be interpreted as rent on the marginal resource quantity extracted in period \(t\) which equals the discounted rent on the marginal resource quantity extracted in the next period.\(^{19}\)

The rent issue is strictly related to the value of the non-renewable resource. From what we have said, the use of a non-renewable resource stock is managed on the basis of a profit-maximising reasoning which is based on an agreed upon extraction programme, which in turn implies an agreed current value of the resource. In green accounting studies, which have focused on computing values associated with natural capital stocks such as mineral deposits and timber stocks, there is a general agreement on how to define the value of such natural assets.

\(^{19}\) As adequately highlighted, in this case *rent* is seen in various ways (user cost, royalty, dynamic rent or Hotelling rent) to mean the same thing. The reason why rent exists is that, while the overall resource supply is fixed, this is exceeded by the overall demand. Cf. Hartwick J. M. and Olewiler N. D., 1998, op. cit., p. 271. So, what happens is that the demand pressure makes the price increase, although this is not accompanied by any production expansion (because the resource stock is fixed). Hence, a gap between the market price and the marginal cost of extraction is generated which, as we have already said, represents the resource rent.
In fact, the current value (or selling price) \( V_t \) is given by the discounted future profit along a maximising extraction path \((q^*_t, q^*_{t+1}, ..., q^*_T)\), which can be formally written in the following way:

\[
V_t = \left[ pq^*_t - TC(q^*_t) \right] + \frac{pq^*_{t+1} - TC(q^*_{t+1})}{(1 + r)} + \ldots + \frac{pq^*_T - TC(q^*_T)}{(1 + r)^{T-t}}
\]  

(7)

where again \( p \) is the market price of a unit of extracted resource, \( q^* \) is the optimal quantity extracted at each point in time, \( TC \) is the total extraction cost and \( r \) is the discount rate. From this expression, and on the basis of the consideration that the resource value in the next period \( V_{t+1} \) is less because a certain quantity \( q_t \) has been removed, it follows that a change in the value of the natural asset is given by:

\[
\Delta V_t = V_{t+1} - V_t = \frac{rV_{t+1}}{1 + r} - \left[ pq^*_t - TC(q^*_t) \right]
\]  

(8)

where \( V_{t+1} - V_t \) is the capital decreasing variation due to the extraction of quantity \( q^*_t \) (which is negative since \( V_t > V_{t+1} \)), \( rV_{t+1}/(1 + r) \) is the discounted interest on the resource value, and \( [pq^*_t - TC(q^*_t)] \) represents the current income achieved by the actual resource use. Following the “net-price method” for valuing non-renewable resources, a consequence of the above expression representing the “correct” extraction is the following:

\[
\Delta V_t = -(p_t - MC_t)q^*_t
\]  

(9)

where \( MC \) is the marginal cost. What is expressed by this last equation is the fundamental relation between the decline in value of a non-renewable resource and the rent associated with the current extraction level.\(^{20}\) Indeed, the decline in the resource value (that is its economic depreciation) is equal to the rent associated with \( q^*_t \). The intuitive explanation between economic depreciation and rent lies in the consideration proposed by Hartwick, which will be better analysed in the next section. Broadly speaking, he stated that if the owner of a non-renewable resource – for example, a mine – each year invests the rents obtained from the resource use in an interest-bearing account, then by the time the resource is completely exhausted he will have accumulated enough money to acquire another equally valuable mine and sustain his mining business. In other words, and this is the important point, by acting in this way he will be able to guarantee his economic sustainability, although at the same time facing resource depletion.

This conclusion plays a central role to the argument we propose in this work, which highlights the importance of implementing a mechanism of tourism taxation in Lanzarote. In fact, our view is to see the Lanzarote area, and particularly its tourism destinations, as non-renewable resources in much the same way as a large mine. Hence, as in the case of a mine, by investing rents – which are obtainable by introducing some form of “rent capture” taxation – generated each year by the tourism use of the local resource it would be possible to gain a certain degree of local economic sustainability. Further explanation of the theoretical justification of such a policy indication will be provided in the following section.

### 6. Towards tourism sustainability by implementing Hartwick’s rule

The relation between natural resource depletion and economic sustainability is a well-developed issue in economic literature. In particular, the literature on the use of non-renewable resources very often refers to theoretical suggestions through which the achievement of certain levels of sustainability

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\(^{20}\) As referred by Vincent, although this conclusion is theoretically correct, it is based on very strong assumptions which are not very often met in non-renewable resource management. These assumptions are mainly represented by: optimal resource management, endogenous price costs. Indeed, to show the weakness of such assumptions, it is argued that the earlier assumption does not hold because many non-renewable natural resources are complete or partial open access ones so that they cannot be optimally managed. The second condition fails to be valid if we consider that most countries are takers of fluctuating international prices. Furthermore, technology advances have affected extraction costs which have been driven downwards. For this reason, more recent empirical studies try to give more contribution while investigating the “net-price method” for valuing mineral reserves under alternative assumptions. Cf. Vincent J. R., 2000, Green Accounting: from Theory to Practice, Journal of Environment and Development Economics, Vol. 5, pp. 20-21.
should be possible.\textsuperscript{21} As we have already pointed out in the previous section, one of these theoretical suggestions is represented by what is generally known as Hartwick’s rule, which plays an enforcing role in the argument for tax implementation, and for this reason, we will focus on it.

In a work of 1977 Hartwick showed that, under certain conditions, an economy which extracts and makes use of a non-renewable resource in its economic processes can pursue a non-declining consumption over time.\textsuperscript{22} In fact, supposing that the non-renewable resource stock is not addressed to direct consumption (in the sense that it can be used as an input factor in a production process together with physical capital) and the output of this process can be either consumed or accumulated as capital, by respecting certain conditions, which will be considered later, a positive amount of consumption over time can be maintained. Indeed, Hartwick’s work starts from the basic consideration that the total production of an economic process can be either consumed or invested. In such a case, a country income accounting equation (at a national or regional level) can be expressed by the following:

\[ C_t = f(K_t, R_t) - \dot{K} \]  \hspace{1cm} (10)

where \( C \) represents the consumption, \( f(.) \) is the production function which is composed by \( K \) representing the man-made capital stock, and \( R \) being either the extraction rate or the use level of the exhaustible resource. Furthermore, \( \dot{K} \) corresponds to the rate of change of the physical capital stock that is given by \( dK/dt \). Hartwick’s rule assumes two satisfied conditions, which are represented by the following identities:

\[ f_R = f_K \]  \hspace{1cm} (11)

and

\[ \dot{K} = R \times f_R \]  \hspace{1cm} (12)

where \( f_R = \delta f/\delta R \) and \( f_K = \delta f/\delta K \) are respectively the marginal products of the exhaustible resource and of man-made capital. The first condition represented by the equation (3.12) corresponds to Hotelling’s efficiency condition for resource extraction, and means that the resource extraction programme is economically efficient.\textsuperscript{23} Equation (3.13) is identified as Hartwick’s rule, and states that the resource rent value, represented by the resource amount \( R \) times the net extraction cost return to the resource \( f_R \), should equal the value of new investment in the man-made capital. Ensuring the satisfaction of these two basic conditions, Hartwick demonstrated that it is possible for an economy to maintain a positive and constant level of consumption through time so that \( \dot{C}_t = 0 \).\textsuperscript{24}

In general terms, to achieve the result provided by Hartwick’s theory, three basic conditions must occur. The first two are strictly linked to each other and are related to what has been reported in formal terms. We have said that at each point in time the extraction of an exhaustible resource should be based on an efficient and non-wasteful programme. This provided, the generation of rents (that is revenue surplus over production costs) in Hotelling sense would be possible. When this first condition is satisfied, then the second one (Hartwick’s rule) can take place: all generated rents should be saved and reinvested in man-made (or physical) capital. Finally, although the third condition has not been expressly reported, it lives implicitly in the model, since it represents the basic theoretical assumption


\textsuperscript{23} Equation (3.12) reflects the relation \( \dot{P}_t = \rho P_t \) which is more usually expressed as \( \dot{P}_t / P_t = \rho \) , where \( P \) is the shadow price of an environmental resource. This identifies Hotelling’s efficiency condition, which states that the shadow price – which is obtained by bringing at solution an optimisation problem – is the value a good or a productive input will take if the resources are allocated optimally over time and it should rise at a rate equal to the social utility discount rate \( \rho \). For a more detailed analysis, cf. Perman R., Ma Y., McGillivray J., 1996, op. cit., pp. 124-127.

\textsuperscript{24} For formal proof of this result cf. Perman R., Ma Y., McGillivray J., 1996, op. cit., p. 78.
for the existence of Hartwick’s idea. This condition is based on a very weak sustainability idea, referring to the high substitutability degree between the exhaustible resource (the natural resource) and the man-made capital, since these are thought to be perfect substitutes for one another (the elasticity of substitution is equal to one). In other terms, this condition requires that while the exhaustible resource is depleted, a compensating increase of the man-made capital must take place, and that the latter substitutes the former in the production processes so that the output does not decrease. As is easy to see, Hartwick’s rule is based on assumptions that are difficult to support. In particular, the third condition cannot be considered true in the real world. For this reason, Hartwick was subject to much criticism. This criticism can be divided into three main areas.

The first area of criticism arose from the observation that individuals do not look at the natural environment (which is mainly composed of potentially exhaustible natural resources) as a factor input for production processes only, but they also derive utility from the environment. Putting the question in these terms, the meaning of non-declining consumption over time is not equivalent to that of non-declining welfare over time. Secondly, it was argued that the rule depends on the choice of the Cobb-Douglas functional form for the aggregate production function, which implies that as the amount of non-renewable resource tends to zero, its average product tends to infinite. As pointed out by Hanley et Al., although in 1978 Hartwick restated his rule in terms of the constant elasticity substitution production function, he achieved the result that the substitution degree between natural and man-made capital was greater than one.

As a consequence, authors such as Common and Perrings rightly reached the conclusion that in these terms, the stability in natural resource supply was considered completely irrelevant. The third line of criticism was concerned with the fact that natural capital and man-made capital are not substitutable as Hartwick’s rule suggests. In fact, as is generally agreed, natural capital (land, animals, plants, non-renewable and renewable resources) can be exploited by man, but cannot be created by him. So in most cases, rather than substitutes, natural and man-made capital are complements. Even though Hartwick’s rule is not feasible as the real world works differently from the conditions in his model, it does make sense to look for and implement a tool to develop a certain balance between natural and man-made capital, whilst the former is exploited and depleted. To this purpose, Hartwick argued that governments could establish a tax on resource rents to the aim of reinvesting its revenues in enlarging the man-made (physical) capital stock. So, in agreement to what is stressed by Toman et Al., Hartwick’s rule can be seen “...as a prescription for sustainability, not just a condition of it”.

Relating the content of Hartwick’s theoretical approach to the Lanzarote case study, we can form some ideas. Indeed, since the use tourists make of local assets heavily contributes to the local natural capital depletion, a tax should be imposed which captures part of the rents arising from their presence in the area, so that a certain sustainability degree of the local economy can be pursued. By reinvesting the

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25 In fact more recent theories discourage the substitution between natural and man-made capital, since the weak sustainability rules for the optimal depletion of natural capital are based on the following basic assumptions: all economic values are reflected in the resource prices, markets are not distorted, resource extraction is efficient, and rents are reinvested in other forms of capital existing in the economy. However, a completely different situation is observable in reality, where diffuse market and policy failures affecting environmental decisions are present. Indeed, such a situation leads to a high level of uncertainty about the wholly natural capital valuation. As a consequence, caution is suggested in developing decisions aimed at keeping exploited natural capital and reinvesting in favour of other assets in the economy. Cf. Barbier E. B. and Markandya A., 1990, *The Conditions for Achieving Environmentally Sustainable Development*, European Economic Review, Vol. 34, pp. 659-669. Furthermore, cf. Common M. and Perrings C., 1992, *Towards an Ecological Economics of Sustainability*, Ecological Economics, Vol. 6, Part 1, pp. 7-34.


tourism rents in man-made capital, by providing further tourism facilities in the area for example, it would be possible to enlarge the local tourism carrying capacity. In such a specific hypothesis the local tourism sector sustainability may be pursued. However, investments in other branches of local economic life can be developed to the aim of ensuring a diversification of the production possibilities in the local area. In fact, when the natural capital is completely depleted as a result of “touristic exploitation” and tourists are reduced or inexistent, the local population can change its economic activities, moving from the tourism sector to others which have been organized during the depletion of their natural capital. In this case, we can say that the sustainability of the local economy has been achieved.

7. Concluding considerations

Lanzarote's recent evolution suggests that the impact of tourism growth on its natural resources is threatening its own economic future. The impact of this growth in tourism in the Lanzarote Biosphere Reserve does not seem to differ much from those registered in other mass model tourist destinations. On the one hand, tourism development has resulted in higher income levels and increasing consumption patterns among the population, as environmental indicators have shown a progressive degradation of the natural resources that threaten Lanzarote's future economic development. It seems that this partially protected, fragile, insular ecosystem cannot escape from the "biological process" described by Butler’s (1980) life cycle of tourism destinations. On the other hand, Lanzarote, with its Biosphere Reserve status, represents an extraordinary opportunity for implementing a series of measures and initiatives to ameliorate the relationship between tourism growth and the environment. Effective improvement, offered by legal and urban bodies and tooled by the Insular Plan for Land Planning (PIOT) with the support of the resolutions contained in the Guidelines of General and Tourist Planning in the Canaries, is therefore fundamental. Good coordination between both local and regional government, as well as the active participation of the islanders, are fundamental requirements to achieving long-term economic benefits.

Thus, the tourism development of Lanzarote exemplifies and demonstrates the necessity to use, to some degree, the economic benefits generated by tourism to preserve its environment. Without this assumption an unavoidable risk remains - that is, natural resources will continue to be depleted by an unlimited and unplanned growth. To avoid short-term unplanned development, new specific taxation tools must be implemented and its funds used to promote environmental programmes that can guarantee more sustainable practices on the island. However, the issue of tourism taxation is not easy to implement. Although an appropriate way of taxing tourism should be based on the daily spending capacity of tourists, it is difficult to identify each stage of tourist spending activity as a tax basis. Hence, a more realistic way of taxing tourists must be found. Broadly speaking, tourism can be taxed in two different ways: either indirectly through the general tax system – particularly profits and sales taxes – or directly through the introduction of special taxes imposed on tourism activities, in particular arrival and departure taxes and hotel taxes. 30 Among the many forms of taxation, relevant attention in literature is paid to the hotel tax – or bednight tax – because it best responds to the taxation principles we have invoked in the previous sections. 31 In fact, the hotel tax is important because it is roughly proportional to the use of tourism resources, since it is related to length of stay. Furthermore, the hotel tax has a discriminatory nature, in that it falls on visitors and not on residents. For this reason, it is

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30 Where tourism taxation has been implemented, it has taken many forms. In a recent study, the WTO Business Council reviews all types of taxation which affect the tourism sector. They can be divided into two broad categories: directly charged to tourists and charged to user business. Taxes of the first type can be referred to: entry taxes (visas); terminal charges at airports, seaports and road borders; accommodation VAT; sales tax, hotel levy and bednight tax; taxes on transport, food and beverages; environmental taxes and visitor attraction taxes. Taxes of the second type are: fuel taxes; duties on the import of equipment used in tourism business; property taxes on hotel and resorts; corporation tax. Cf. World Tourism Organisation Business Council, 1998, Tourism Taxation: Striking a Fair Deal, WTO, Madrid, Spain. However, other types of tax can also be identified such as those related to activity licences.

31 The hotel tax (bednight tax) is an ad valorem tax which is computed as a percentage of the price of an occupied room.
often nominated as the best tool for tourism taxation, although it is not as easy to administrate as tax on arrivals and departures. Nevertheless, as Bird stresses, special taxes on hotel accommodation are generally considered the key to tourism taxation. While referring to a time series analysis on tourism in Hawaii, a study by Fujii et Al. in 1985 showed that the hotel occupancy tax was more readily shifted (or exported) on non-residents than similar taxes levied on entertainment and purchased meals and drinks or a general excise/sales tax. Indeed, one can see how these latter forms of taxation – which can be defined as non-lodging expenditures – also heavily affect residents.

Further evidence from other studies lead us to positively argue for hotel taxation. Two other studies by Bonham et Al. of 1991 show that a hotel tax imposition does generate negligible effects on real hotel revenues. This result can also be confirmed by referring to other works. In 1994 Wicks at Al. analysed the validity of the suggestion that increasing the prices for lodging services in the U.S. national parks may be a good strategy to mitigate over-visitation problems and reconciliate the external costs generated by the users of lodging facilities. With particular regard to the earlier aim, they find that a strategy of this kind would result ineffective in controlling visitors’ demand. In addition, in a study of 1996, by employing a cointegrated time series analysis with regard to the Hawaii case study, Bonham and Byron find that the application of a 5% hotel room tax does not show evidence of statistically significant tax impact. This would discourage us from arguing against the hotel room tax, since it cannot be said that a tax of this kind can harm the competitiveness of the travel industry. What we have reported so far clearly explains why the hotel room tax is widely applied. The table below gives an idea of the various hotel room taxes that are applied at different worldwide destinations.

<table>
<thead>
<tr>
<th>Cities</th>
<th>Hotel tax as a share of total hotel bill (in %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copenhagen</td>
<td>25.0</td>
</tr>
<tr>
<td>Prague</td>
<td>23.1</td>
</tr>
<tr>
<td>Buenos Aires</td>
<td>21.0</td>
</tr>
<tr>
<td>Delhi</td>
<td>20.0</td>
</tr>
<tr>
<td>Cairo</td>
<td>19.1</td>
</tr>
<tr>
<td>Paris</td>
<td>5.9</td>
</tr>
<tr>
<td>Kuala Lumpur</td>
<td>5.0</td>
</tr>
<tr>
<td>Taipei</td>
<td>5.0</td>
</tr>
<tr>
<td>Singapore</td>
<td>4.0</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>3.0</td>
</tr>
</tbody>
</table>


Hence, the application of a hotel room tax in Lanzarote can be supported for the reasons we have discussed in this section. Of course, due to the local tourism on offer which – as we have seen before – is characterised not only by hotel accommodation but also by non-hotel facilities such as camping areas, we would need to consider a bednight tax rather than a hotel room one. In this way, all categories of the locally existing tourism accommodating facilities are conceptually included.

Having identified bed night tax as the best potential fiscal instrument to apply, we now move on to considering another important aspect. This is represented by the assignment of the financial resources

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arising from the tax application. In fact, it is important to remember that the form and level of taxation are sensibly dependent on how the tax revenues are spent. With regard to this, the specific literature firstly refers to strong evidence suggesting that in particular activities – and tourism belongs to this bracket – it may be possible to levy higher tax levels if a consistent portion of the obtained revenues are employed to benefit the taxpayers.\(^{37}\)

The introduction of a tax on tourism would be more generally accepted by both the industry and tourists if there was tangible evidence that a consistent proportion of its revenue was used for the realization/improvement of tourism reception facilities, existing in or near the tourism destination (i.e., roads, camping areas and other accommodation, ports and marinas, airports and so on), or personnel training, both of which represent valid strategies in increasing the quality level of the local tourism area. Furthermore, literature has also stressed how important it is that local communities living in tourism areas receive their portion of tax revenues generated by the tourism activities. In fact, as Britton and Clarke point out, there is an unequivocal conflict between the maintenance of a natural system and the exploitation of that system for tourism purposes. As we have extensively discussed above, such conflict is clearly mirrored in a wider context and also affects the well-being of the local population.\(^{38}\) As a consequence, it is worth compensating the local population for the loss of unrestricted access to the resource, and for the unavoidable discomfort and sense of deprivation arising from the mix of people and lifestyles. In other words, tax revenue should be redistributed on a basis that ensures the local tourism industry does not lose out, while at the same time guarantees the provision of social benefits. This would also mean that the local tourism industry is not economically disadvantaged and the local communities better off.

The use of tax revenues for the enlargement of the physical capacity of those facilities (such as field sites for garbage disposal, sewage purifying systems, parking places, etc.) which provide support to the tourism sector could therefore be supported, as they avoid problems of soil and water pollution, and traffic congestion in urban areas. One might consider them as investments in maintaining the environmental quality of places and thus enabling tourism destinations to continue to attract visitors. Such investments should be guaranteed, since undoubtedly they can be seen as a common policy for tourism operators and local communities. Furthermore, investments in personnel training for the tourism sector and marketing promotion of the tourism area are other important points. The promotion of the area should particularly try to reach specific target markets. In fact, depending on the type of tourists arriving to the area in question, tourism sustainability can either be further promoted or compromised. Finally, but of no less importance, is the funding of research activities aimed at looking to improve and modernize management strategies in the area. As it is therefore easy to perceive, investments of this kind would generate benefits for both the tourism sector and local communities.

References


