ECONOMIC VALUATION OF ENVIRONMENTAL RESOURCES
INTEGRATED IN TOURISM PRODUCT - METHODOLOGICAL
APPROACHES

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ABSTRACT
The main purpose of this research is to identify different methodological approaches that can be used in economics to evaluate environmental resources that are integrated in tourism product. Environmental resources form essential physical plant for tourism development. It would be almost impossible to imagine tourism product that does not integrate, directly or indirectly natural resources. Strong expansion of tourism development, reflected in significant increase in number of international visitors, same as accepting tourism development as developing paradigm for many national economies, has resulted in increasing pressure on environment. At the same time natural resources and natural capital, are seen as a major factor of economic development and threatened categories. Therefore, UNWTO and UNDP encourage acceptance of the paradigm of sustainable development, and integration of its principals in key national strategic documents. Latter requires giving special attention to all those natural resources that are integrated in tourism product. Therefore, their economic valuation has become key research area of contemporary environmental economy and tourism development studies. Detecting their value and influence remains the main challenge, considering that natural and environmental resources are mostly not traded on tourism market. Last decade has witnessed several methodological approaches that can be used in order to estimate value and impacts of natural and environmental resources essential for tourism development. This paper focuses on identification and critical interpretation of those key methodological approaches in context of environmental economics and tourism development; and giving guidelines for future research. Based on conducted research, it is essential to highlight two main approaches: (1) reveal preference approach and (2) stated preference approach. Considering economic value, it can be concluded that not all methods reveal TEV (total economic value). The selected methodological approach, and therefore captured value will mostly depend on type and basic purpose of research.

Keywords: economic valuation, environmental resources, natural capital, methodological approaches, tourism development.
INTRODUCTION
Tourism integrates many different environmental resources [3]. Climate, geographical position, rivers, protected areas, sea, islands, coast are only some of environmental resources that influence destination attractiveness. Therefore, it’s not surprising that many researchers have emphasized the role of environmental resources in process of shaping destination tourism product [1], [4]. From the generic point of view, environmental resources can be seen as essential physical plant for tourism development. Continuous growth of tourism industry has resulted with pressures on overall environmental system, and thus on natural resources. Questioning the role and position of natural capital, and consequently natural resources in overall development process is vital. Last decade, environment and environmental consequences of tourism development have become focal issues. Stabler et.al. [11] indicates emergence of Environmental economics and Ecological economics as two key research directions. While Environmental economics focus mostly on effects of tourism policy and economic activity on environment, Ecological economics advocate more pluralistic approach while analysing ecological effects of tourism development [11]. Interaction between tourism and many different attributes and resources in tourism destination results in a double effects; tourism significantly influence destination environment, while at the same time, he is strongly affected by destination environment. Destination itself provides all resources, including natural, that are essential to develop tourism products, while tourism development, if properly (strategically) aimed can contribute their preservation and affirmation.

From the economic point of view, environmental goods and natural resources involved in overall economical and tourism development are public goods. As defined by UN public goods related to the environment can be classified by their nature (pure or impure) and their geographic scope (global or regional). Impure environmental public goods include club goods, whose benefits can be excludable to a certain degree (international protection of ecosystems in national and transnational parks, for example)—and commons, which involve partial rivalry in their consumption (the preservation of river fishing activities and efforts to preserve the Amazon region are examples) [10]. As all public goods, Environmental goods are non-traded. The fact that they are not “price tagged” does not mean that their value is zero, but rather that need to be found way to value them properly. This issue has been addressed by Markandya et.al. [5] who stated that there would always be a deviations between the market price of environmental resources and its true social cost. Stabler et.al. [11] indicate that except under specific conditions, economics accepts that the market price does not necessarily reflect the value of a good or service. Moreover, for non-traded commodities, for which there is no market price (environmental resources, and commune pool goods), it is not suggested that they have a zero value. Therefore, it is necessary to find way to estimate those “shadow prices”. The first is to establish what is meant by value in use and non-use, and second to employ methods to ascertain that value [11].

CONCEPT OF ECONOMIC VALUE
The basic problem that arises when trying to determine the value of environmental resources integrated in tourism product is fact that they are non-traded on market. Therefore, their value cannot be expressed in exact market price. Markandya et.al. [5],
same as Stabler et.al. [11] consider that value of environmental goods integrated in tourism product remains hidden in form of “shadow price”. Considering the fact that many different natural resources and public goods are integrated in tourism product, while only some of them charge some sort of “user fee” (national park entering ticket), means that their value is probably, from the economical point of view, underestimated [14]. Capturing positive external effects of environmental resources represent an intriguing research area mostly because in real life situations it is much easier to experience external diseconomies. Consequently, there are no many researches that focus on external economies of environmental resources on tourism product [2]. Research conducted in tourism industry considering valorisation of environmental resources are mostly focused on analysis of their impact on hotel prices (effects of sea view, or hotel location) [9].

Economical valuation of different environmental goods that are potentially integrated in tourism product requires (1) determining what kind of value is aimed to capture; and (2) setting up a proper methodological framework to deliver those goals [8]. What kind of value is going to be captured largely depends on methodology, since not every chosen method reveals Total Economic Value (TEV).

3.1. Types of Value

As stated by Mburu [6], defining value is quite complex process; however recent literature has stressed out two broad forms of value (1) Instrumental, Functional or Anthropocentric value, and (2) Intrinsic or Eco-centric value. Instrumental value reflects basic purpose of analysed attribute, while Intrinsic value reflects value derived from pure existence of that attribute [6].

Total economic valuation theory (TEV) suggest that public attributes (environmental resources) value can be estimated by considering its Total economic value, which includes Use value (UV) and Non-use value (NUV) [14]. The concept of TEV reflects work of Pearce et.al. (1994: in [14]. Later Perman et.al. [8], Stabler et.al. [11] and Mburu [6] gave their perspectives of concept of TEV, mostly by restructuring and disaggregating UV and NUV on set of values in order to increase the reliability of their estimate. According to Perman et.al. [8] TEV can be seen in following form:

\[
    (2) \quad \text{TEV} = \text{Use value (UV)} + \text{Existence value (EV)} + \text{Option value (OV)} + \text{Quasi option value (QOV)}
    
    (3) \quad \text{TEV} = \text{Use value (UV)} + \text{Non-use value (NUV)}
    
    (4) \quad \text{TEV} = \text{Use value (UV)} + \text{Passive use value (PUV)}
\]

Perman et.al. [8] considers EV to be value that reflects pure existence of attribute, and that will be no matter any present or future way of use. According to Tisdell [14], EV of natural resources reflects user’s willingness to pay to preserve resources no matter if they plan to use them or not. Therefore, it could be concluded that natural resources have certain EV no matter demand for them [11], and that their value reflects individual willingness to pay to keep those attributes preserved for future generations [14], [6]. OV can be considered as willingness to pay to guarantee availability of resources for future generations. According to Stabler et.al. [11] OV is expressed as users “expected future benefit”. Therefore, it can be considered as willingness to pay for protection of
resources. OV is somewhere between UV and NUV, so it is possible to assume that in certain point of time in future it will become UV [6]. QOV implies willingness to pay to avoid absolute and irreversible present dedication to development, considering potential future implications of development [8]. While this group of authors, consider QOV to be integral part of TEV, Stabler et al. [11] implies that OV can be considered as quasi value resulting from use of resource. Mburu [6] suggest that NUV indicates willingness to pay of different stakeholders in order to preserve attributes for future no matter if they plan to use those resources or not. Perman et.al. [8] suggest that some groups of authors are prone to express EV, OV and QOV cumulatively as NUV. Similar approach can be found in Mburu [6] who considers NUV to be sum of EV and BV (Bequest value) (formula 6). PUV implies passive value that reflects use of resource [8]. Stabler et.al. [11] considers TEV to be sum of Exchange value (ExV), Consumers surplus (CS), Option value (OV) and Existence value (EV).

\[(5) TEV = \text{Exchange value (ExV)} + \text{Consumers surplus (CS)} + \text{Option value (OV)} \]
\[(UV+NUS) + \text{Existence value (EV)}\]

Unlike Perman et.al. [8], Stabler et.al. [11] considers UV and NUS to be integral part of OV, while introducing two new “forms” of value, ExV and CS.

TEV can also be expressed as sum of Willingness to pay WTP and Willingness to accept WTA [13], [6]. However, when considering it in depth, Mburu [6] indicates three main forms of value UV, NUV and OV.

\[(6) TEV = \text{UV (DUV Direct use value + IUV Indirect use value)} + \text{NUV (EV Existence value + BV Bequest value)} + \text{OV Option value}\]

Considering both, challenges of resource protection and their importance in tourism development, it is logical to question value of environment involved in tourism development. From one hand, clearly expressed value will give unambiguous signal to all those stakeholders that are included in process of tourism development (public and private), that those resources have value even though they cannot be traded on market. From the other hand, measuring some sort of resources value, no matter overvalued or undervalued, will allow to track easier external economics that are generated with their existence in tourism destination. Most of the environmental goods that are used in process of creating tourism product have other “non tourism” purposes. Therefore, optimum use, and optimal UV and NUV ratio presents a challenge. Municipality or economy should use its resources in order to contribute overall economic development. Therefore, their involvement in tourism development will largely depend on scale of tourism development and tourism dependency. According to Tisdell [14] Total economic value generated by the environmental resources integrated in tourism product can be seen as sum of TTV (Total on-site value from tourism and outdoor recreation) and NTV (Total non-tourism site value in a natural site). Considering that environmental resources play significant role in tourism development, it is legitimate to question whether or not will increase in number of visitors (increase in TTV) result in decline of non-tourism site value (NTV). Latter raise dilemma concerning potential of simultaneous tourism development and resource protection.

Considering all, it is evident that environmental resource significantly influences tourism development, and that their value (“shadow price”) exists, but remains hidden.
Therefore, below, this research focuses on analysis of different methodological approaches that can be used to capture those values.

**METHODS FOR ECONOMIC VALUATION OF ENVIRONMENTAL RESOURCES**

Stated and revealed preference approach, are two basic concepts that can be applied for economic valuation of environmental resources. Within these two concepts, the most used methods are Contingent valuation method (CVM), Hedonic pricing (HP), Choice modelling (CM) and Travel cost method (TCM) [5], [8], [14], [11]. Analytical framework for all monetary methods constitutes Welfare economics (Mäler, 1985: in [12]). According to Samuelson, assumptions regarding the rational choice question the economic definitions of value. It is expected from different stakeholders to act rationally. That means that their behavior should allow them to maximize their welfare. Considering the choice of natural resources, and consequently tourism destination; it is expected that visitors will choose those resources and destinations that will allow them to maximize their welfare considering their preferences and budget constraint. However, Rational theory experiment demonstrate existence of systematical deviations in individual’s behavior that can reflect on monetary valorization of public attributes [12]. Therefore, if individuals do not behave consistently rationally, their current preferences and expressed values will probably reflect context and not real situation [15]. Individual subjectivity should be consider as major weakness of stated preference approach, therefore many different authors rely on revealed preference approach when determining monetary value of environmental resources integrated in hotel (tourism) product. Generally, monetary valorization of public attributes focus on determining monetary value of specific attribute (environmental good) for stakeholder [5]. In most cases stated Willingness to pay (WTP) and Willingness to accept (WTA) reflects individual’s perception of value of that attribute. Most comprehensive division of methods that can be used to capture value of environmental resources integrated in tourism product can be found in Stabler et.al. [11] and Mburu [6]. Perman et.al. [8], the same as Palmquist [7] and Tisdell [14] focus more on certain group of methods.

Stabler et.al. [11] divides all method into two broad groups; (1) Non-demand, and (2) Demand side methods (Figure 1).

*Figure 1. Methods for monetary valuations of public resources*

<table>
<thead>
<tr>
<th>Non-demand methods</th>
<th>Demand methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Avoided cost</td>
<td>DIRECT methods</td>
</tr>
<tr>
<td>2. Delphi</td>
<td>Stated preference</td>
</tr>
<tr>
<td>3. Opportunity cost</td>
<td>Contingent valuation</td>
</tr>
<tr>
<td>4. Preservation cost</td>
<td>1. CVM Contingent valuation</td>
</tr>
<tr>
<td>5. Replacement cost</td>
<td>2. CM Choice modeling</td>
</tr>
<tr>
<td></td>
<td>3. Combination of these</td>
</tr>
</tbody>
</table>

**INDIRECT methods**

| 1. HPM Hedonic pricing |
| 2. TCM Travel cost |
| 3. Combination of these |

Considering approach, technique and type of value that is aimed to reveal, Mburu [6] groups methods in the following manner (Figure 2).

**Figure 2. Methods for monetary valuations of public resources based on approach, technique and type of value**

<table>
<thead>
<tr>
<th>Approach</th>
<th>Techniques and methods of valorization</th>
<th>Type of value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stated preference methods</strong></td>
<td>Contingent valuation</td>
<td>Use and non-use value</td>
</tr>
<tr>
<td></td>
<td>Choice modeling</td>
<td>Use and non-use value</td>
</tr>
<tr>
<td><strong>Revealed preference methods</strong></td>
<td>Market price analysis</td>
<td>Direct value</td>
</tr>
<tr>
<td></td>
<td>Cost based methods</td>
<td>Indirect use value</td>
</tr>
<tr>
<td></td>
<td>Productivity methods</td>
<td>Indirect use value</td>
</tr>
<tr>
<td></td>
<td>Preventive expenditure</td>
<td>Indirect use value</td>
</tr>
<tr>
<td><strong>Benefit transfer</strong></td>
<td>TCM Travel Cost Method</td>
<td>Use value and travel cost</td>
</tr>
<tr>
<td></td>
<td>HPM Hedonic Pricing Method</td>
<td>Use value and changes in quality of environmental resources</td>
</tr>
<tr>
<td></td>
<td>Use other empirical studies</td>
<td>Use and non-use value</td>
</tr>
</tbody>
</table>

*Source: Adapted from: Mburu, J. ed. 2014. Economic Valuation and Environmental Assessment. IUCN The World Conservation Union.*

Focus of the research influence significantly the selection of the method. Direct (stated preference) methods mostly focus on questioning stakeholders regarding their WTP and WTA. Using this methodological approach it is possible to estimate the value of environmental resources, however it is likely that assessment will not be reliable. Other advantages and critics on stated preference approach can be found in Markandya et.al. [5], Perman et.al. [7], and Stabler et.al. [11]. Unlike stated preference methods that focus on determining WTP and WTA, revealed preference approach focus more on assessment of lower and upper limits of those values. The main “tools” in that process are information regarding prices and costs, which closely defines environmental externalities [5]. The basic premise of revealed preference method is existence of direct or indirect connection between non-traded public attribute (environmental resources) and price of good and/or service that is trade on the market (tourism product). In some manner that can also be considered as issue, since tourism product is heterogeneous and it is complex to define what tourism product includes and what would be its price.

**CONCLUSION**

Environmental resources are indivisible from tourism product. It would be almost impossible to imagine any tourism destination that does not rely on environment. Yet, those goods are in many cases taken for granted, while different policy measures apply only when they are threatened. Strong expansions of tourism development, accompanied with various environmental pressures resulted with emergence of concept of sustainable tourism development. Focus has been set on environmental resources, natural capital and its preservation for future generations. Environmental resources have been addressed in tourism research literature in context of their overall contribution to
tourism development; and in context of impacts that tourism generate on overall environment. In both cases, value plays significant role. In society we live in, value is usually stressed as major precondition for recognizing importance of something. Therefore, if we perceive something as more valuable, probably it will be keep safe and protected. Since they are non-traded, environmental goods are often under severe pressure by many different stakeholders. Therefore, public sector is expected to apply different policy measures, to keep environment preserved. Monetary valorisation of environmental resources can be beneficial for both groups of stakeholders, public and private. Public sector can use information on environmental value to define different fiscal policy measures, and taxes that once collected may be aimed to preserve and protect resources. Private sector may use information on environmental resources value when making important decisions on investment. Therefore, hotels are usually located on unique spots, places near main attraction, secluded areas with amazing views, etc.

Methods for monetary valorisation of environmental goods can be seen throughout stated and revealed preference approach. The methods identified in Figure 1 and 2, can be classified according to whether they seek to place value on the good or attribute, by directly asking respondents their willingness to pay for an improvement of their willingness to accept a degradation (Contingent valuation method), or indirectly, by using prices from a related market which does exist (hedonic pricing method). The four recognized in environmental economics as most suitable and therefore the commonly applied methods, Contingent valuation method (CVM), Choice modelling (CM), Hedonic pricing method (HPM) and Travel cost method (TCM), are appraised first as being most relevant to the valuation of tourism resources [11]. CVM and CM are direct approaches (stated preference). Those methods are usually criticized for potential exaggeration or underestimation of individuals WTP or WTA. Therefore, they are commonly known as methods that politicians and public sector stakeholders prefer to use when valuing resources. Due to those reasons, Palmquist [7] and Mburu [6] argue that revealed preference methods (indirect techniques) are more reliable to value environmental goods. Indirect techniques are based on the concept of consumer’s surplus in that, whether or not a price is paid for a specific resource, a measure of the net benefit can be estimated by proxy for what are goods and services for which there are no markets. The selection of the method that will be used in research to value environmental resources will mostly depend on type of value that is aimed to capture, and type of resources that is valued. In some cases, reliable estimation of value may require combining several techniques, (CVM and CM, or HPM and TCM), however, that mostly depends on researchers decision.

REFERENCES


