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Sustainable Tourism – A Model Approach

Leszek Butowski
Vistula University in Warsaw
Poland

1. Introduction

Sustainable tourism, sustainable development through tourism, principles of sustainable development in tourism and tourism development in terms of sustainable tourism, in the literature often treated as names for the same phenomenon, are becoming increasingly interesting for scholars and practitioners of tourism from various countries. It results from the fact that sustainable tourism (at least declaratively – on the institutional level) is considered as the most desirable form of tourism development on particular reception areas, especially those which preserved the most natural and cultural authenticity values.

Simultaneously, it should be noted that the rich scientific literature concerning sustainable tourism focuses attention primarily on descriptive presentation of its various aspects, with particular emphasis on the idea, the origins and the evolution of the phenomenon as well as terminological issues related to it. The authors pay much attention to reveal the relationships between sustainable tourism (as a form of tourism development) and particular types of tourism (as forms of tourist movement). At the same time, it should be marked that there are skeptical voices, which refer especially to the role that sustainable tourism is ascribed – as a remedy for all the problems of contemporary tourism. It also seems that, taking into consideration the hitherto scientific output related to sustainable tourism, the works devoted the theoretical aspects of sustainable tourism are in minority.

Relatively weak theoretical grounds together with the ambiguity and diversity of views on sustainable tourism as well as the descriptive approach, which dominates in the literature, have prompted the author of this article to make an attempt to render the essence of sustainable tourism in a model approach. When creating the theoretical model of sustainable tourism, the author tried to take into consideration all its main features (and interrelations occurring among them) and to simultaneously follow certain main principles, i.e.: of completeness, versatility, explicitness and simplicity of the model itself. The author is aware of the fact that attempts to render sustainable tourism in a model approach had already been made, but it seems that they concerned, in majority, its particular aspects, such as the origins of the phenomenon, its relationships with certain forms of tourist movement or relationships between sustainable development and tourism. However the literature lacked a holistic approach which would take into consideration all most important features of sustainable tourism.

When constructing the theoretical model of sustainable tourism, the author tried to take into consideration the hitherto output of the Polish and international literature, available thanks to the studies of source materials. It enabled the adoption of main model assumptions, and later on, when implementing the deductive method, also the construction of the model itself basing on them. To that end, the author used the form of the mathematical function and notation.

2. Sustainable tourism – A review of main ideas

The conception of sustainable tourism refers to the wider conception of sustainable development, which stresses the need of rational management of natural environment resources. The first in the global scale sign of the necessity of change in the general conception of economic development was the report of the Secretary-General of the United Nations U Thant entitled 'Man and His Environment', published in 1969. Significant was also the 1st Report of the Club of Rome entitled 'Limits to Growth', published in 1972. The problems of the threat to the natural environment were the main subject of discussion during the UN conference in Stockholm (the so called Stockholm Conference), organised in the same year. At that time, the term 'sustainable development' was introduced. The next milestone in the worldwide discussion on sustainable development was the publication of the report entitled 'Our Common Future', which contained a summary of the activity of the World Commission on Environment and Development (the so called Brundtland Commission). This document adopted the fundamental, still valid, assumption that sustainable development 'seeks to meet the needs and aspirations of the present without compromising the ability to meet those of the future'. In 1992 in Rio de Janeiro the United Nations Conference on Environment and Development (the so called 'Earth Summit') took place. During that conference two documents, significant from the point of view of the sustainable development conception, were adopted. These were the so called Rio Declaration, containing 27 principles defining rights and duties of nations in the field of sustainable development, and AGENDA 21, the global action plan referring to the actions necessary in order to achieve sustainable development and high life quality (Kowalczyk, 2010; Niezgodna, 2006).

Conceptions of tourism development referring to the principles of sustainable development began to appear in the international literature on a larger scale in the mid 1980s. It should however be noted that as early as 1965 W. Hetzer formulated the definition of the so called *responsible tourism*, which in fact was very close to these principles [Blamey, 2001, as cited in Kowalczyk, 2010]. It seems, though, that the moment which began the discussion on new ways of developing tourism was when the conception of the so called *alternative tourism*¹ arose. J. Krippendorfer, who published in the *Annals of Tourism Research* in 1986 the article entitled 'Tourism in the system of industrial society', is considered the author of its definition. As the name itself suggests, it arose in opposition to the so called mass tourism, viewed by the proponents of this conception as the so called 'bad option'. Alternative tourism, often identified with small-scale tourism and treated as the 'good option', was meant to oppose the 'bad option' (Clarke, 1997; Lanfant, Graburn, 1992; Weaver, 2001).

¹ A. Niezgodna [2006] claims that the conception of alternative tourism stems from the so called Hippie contrculture, which arose in the 1960s in the USA and later spread in Europe. In this context, alternative tourism was meant to be the new way of travelling that would not destroy the environment and authentic relations between people.

In the same period various conceptions connected with the so called ecotourism began to appear in the international literature. H. Ceballos-Lescuráin (1987) is considered the author of its first definition. At the same time scholars began to introduce terms similar to *ecotourism* or *alternative tourism* such as *green tourism* (*tourisme vert, nature-based, naturnäher*), *soft tourism* (*saufere Tourismus*), *nature tourism*, *environmental friendly/environmentally sensible tourism*, *responsible tourism* (*angepast*), *discreet tourism*, *appropriate tourism*, *ecoethnotourism* (Boo, 1990, Cater, Lowman, 1994, Krippendorf et al., 1998; Niezgodá, 2006). It should be noted that the authors of these definitions stressed first of all the (desired) way of cultivating tourism, types of values (mainly natural) and the (small) scale of the phenomenon. They often used the evaluating approach which juxtaposed the 'new' forms of tourism with these 'old', often identified with mass tourism.

A broad overview of diverse definitions of sustainable tourism was included in R.W. Butler's paper entitled 'Sustainable tourism: a state-of-the-art review' (1999). This author, who is skeptic towards views that sustainable tourism constitutes a panaceum for contemporary tourism's problems, presents his own view on its essence. He claims that sustainable tourism can be seen in two ways (Butler, 2005). Firstly, from the semantic-dictionary side, taking into consideration its feature of sustainability as a warranty of long-term survival on the market. According to M. Mika (2008) such an approach seems to be closer to the representatives of the economic party, who stress the problem of self-maintenance of tourism development. The second way of understanding sustainable tourism by Butler is much closer to the conception of sustainable development. It suggests treating sustainable tourism as a tool for the development of reception areas without breaking the principles of sustainable development. As one may guess, this attitude is closer to the representatives of the natural sciences and the humanities. Butler's views on ambiguity in understanding the term sustainable tourism are supported by A. Niezgodá (2006), who claims that conception of sustainable tourism occurred as a result of research on interrelations between tourism, environment and development. According to this author sustainable tourism is treated by scholars as a tool for realization of sustainable development or a tool for the development of tourism itself.

Totally different scientific basis of sustainable tourism conception (or sustainable development through tourism) is presented by Bryan H. Farell and Louise Twinning-Ward (2003). In the article entitled 'Reconceptualizing Tourism', published in 2003 in the *Annals of Tourism Research*, they postulate a total change in the methodological approach towards the studies of tourism, sustainable tourism included. These authors criticize strongly the hitherto, according to them most wide-spread, way of conducting research in the field of tourism, which is based on narrow specialization, linear reductionism as well as determinism assuming predictability of phenomena and presence of cause and effect. They claim that such an approach, due to complexity and unpredictability of behaviour of tourist systems and systems influencing tourism, cannot guarantee satisfactory results. Instead, they propose a new paradigm that is based on the interdisciplinary approach encompassing relatively new fields, such as: ecosystem ecology, ecological economics, global change science and complexity theory. These authors assume that natural and social systems do function in a relatively independent and non-linear way and therefore postulate implementation of the complex adaptive systems theory into the studies of tourism. Simultaneously, they introduce the notions of comprehensive tourism system and complex adaptive tourism systems - CATS.

Apart from the broad and varied in views discussion on the essence of sustainable tourism present in numerous scientific publications, also institutional documents devoted to sustainable tourism that are of declarative, explanatory or quasi-normative character are winning wide renown (Table 1). Among numerous publications of this type one should note i.a. the Charter for Sustainable Tourism (adopted in 1995), whose signatories agreed that development under the influence of tourism should refer to the principles of sustainable tourism, which meant that it should take into consideration the long-term needs of the natural environment, affect positively a given economy and be accepted in terms of ethics and culture by local communities. The same document claims that tourism should contribute to sustainable tourism through strict integration with the natural and the antropogenic environment on reception areas. Also in 1995 World Travel and Tourism Council, United Nations World Tourism Organization and Earth Council adopted the document entitled 'Agenda 21 for the Travel and Tourism Industry: Towards Environmentally Sustainable Development'. This document defines i.a. the priorities of sustainable tourism. In 1999 the United Nations World Tourism Organization published the Global Code of Ethics for Tourism, which took into consideration the postulates of sustainable tourism. In 2004 the same organization defined the principles of sustainable tourism as those which refer to all forms of tourism (mass tourism included). At the same time, it was highlighted that in order to ensure a long-term balance the principles of sustainable development in tourism must concern environmental, economic and socio-cultural issues to the same degree (Sustainable development of tourism. Conceptual definitions, 2004). Finally, in 2008, during the World Conservation Congress, which took place in Barcelona, the document containing Sustainable Tourism Criteria was adopted.

Document	Publishing subject	Year	Place of publication
Charter for Sustainable Tourism	World Conference on Sustainable Tourism	1995	Lanzarote, Canary Islands
Agenda 21 for the Travel and Tourism Industry: Towards Environmentally Sustainable Development	WTTC, UNWTO, Earth Council	1995	Madrid (1996)
Berlin Declaration	International Conference of Environment Ministers on Biodiversity and Tourism	1997	Berlin
Global Codes of Ethics for Tourism	UNWTO	1999	Santiago de Chile
The encyclopedia of ecotourism	Weaver D.B. (ed.) CABI Publishing	2001	Oxon (UK) - New York (USA)
Sustainable development of tourism. Conceptual definitions	UNWTO	2004	Madrid
Global Sustainable Tourism Criteria	World Conservation Congress (Rainforest Alliance, UNEP, UNWTO)	2008	Barcelona

Table 1. Selected documents concerning sustainable tourism

To sum up the deliberation concerning the issue of sustainable development of tourism one should repeat, i.a. after the United Nations World Tourism Organization (2004) that sustainable development should be applicable (as much as possible) to all forms of tourism, including mass tourism. And the principles defining sustainable development in tourism should refer to natural, socio-cultural and economic aspects connected with tourism – by striving to achieve the state of balance between them.

3. Selected models of sustainable tourism

As it was mentioned, sustainable tourism is an area of interest of many scholars, activists and practitioners in various countries. It seems, though, that both in the international and in the Polish literature the descriptive method dominates. It puts stress on explaining the conception of sustainable tourism, which is often done from different scientific positions. Apparent is the evolution of views on its essence. In the first period natural aspects were emphasized first of all – in the context of preserving natural environment resources against the threats of tourism. Now, however, we are dealing with the situation in which economic and socio-cultural aspects are seen as well. To a large extent it is thanks to i.a. the publications of the United Nations World Tourism Organization, which emphasized the necessity of striving for balance in fulfilling needs of all tourism stakeholders functioning within natural and socio-economic environment. The change in the approach towards sustainable tourism during past few decades is also expressed in the abandonment of evaluation of various tourism forms according to these criteria. Nowadays, it is stressed that the principles of sustainable tourism should be taken into consideration in all kinds of tourism, including so unpopular among the ‘orthodox activists’ mass tourism. This evolution, with the consideration of relations between alternative tourism, ecotourism and mass tourism and their relation to sustainable tourism, is presented i.a. by A. Niezgodna (2006). In a simpler form it can be presented graphically as in the Figure 1.

Model relationships between sustainable tourism and unsustainable tourism (often identified with mass tourism) are an area of interest of other authors as well. Among them are, i.a., D.A. Fennel (1999) and D.B. Weaver (1999), who claim that there is no way to designate a clear boundary between sustainable and unsustainable forms of tourism. The former introduces, in relation to various aspects of tourism (attractions, transportation, accommodation, product), kind of degrees (stages) of sustainable tourism. The latter, in turn, claims that mass tourism (closer to unsustainable tourism) constitutes a kind of continuum of alternative tourism (closer to sustainable tourism), so they cannot be treated as separate, opposing categories. These authors’ opinions can lead to two kinds of conclusions. On one hand, it is postulated that the principles of sustainable development should be taken into consideration as much as possible in all forms of tourism (Figure 1). In such a case we deal with the desired direction of change from unsustainable tourism to sustainable tourism. On the other hand, assuming D.B. Weaver’s point of view on mass tourism (more unsustainable) as a continuum of alternative tourism (more sustainable), one can see a more undesirable direction of change from sustainable tourism to unsustainable tourism. Both situations are illustrated by bilaterally oriented arrows in Figure 2.

A similar conclusion concerning possibilities of occurrence of undesirable direction of change can be drawn after the analysis of three theoretical models of tourism: 1) of tourist area life cycle (TALC) by R.W. Butler (1980); 2) of tourist space by S. Liszewski (1995), and 3) of changes in the natural environment under the influence of tourism by D. Zaręba (2010).

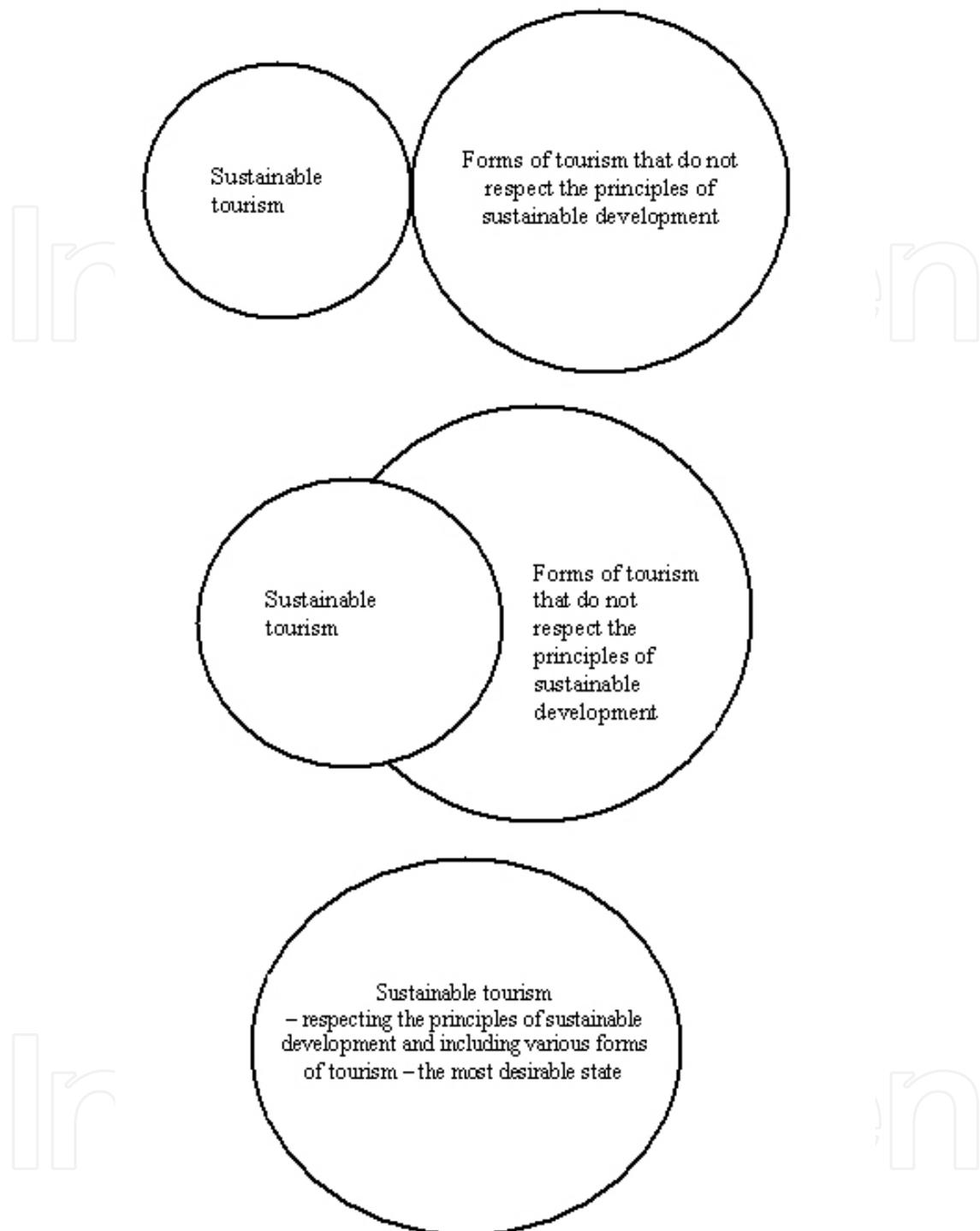


Fig. 1. Sustainable tourism and various forms of tourism – the evolution of approach

The curve of dependences occurring between the number of tourists on a given reception area and the time (Butler), the level of tourist space transformation (Liszewski), and the level of the environment devastation (Zaręba) is very similar. After the analysis of the curve in each model (after simplification) one can distinguish 4 stages of changes in the direction from the state of the original balance to the state of a new balance – in transformed, i.e. naturally devastated, environment (Figure 3).

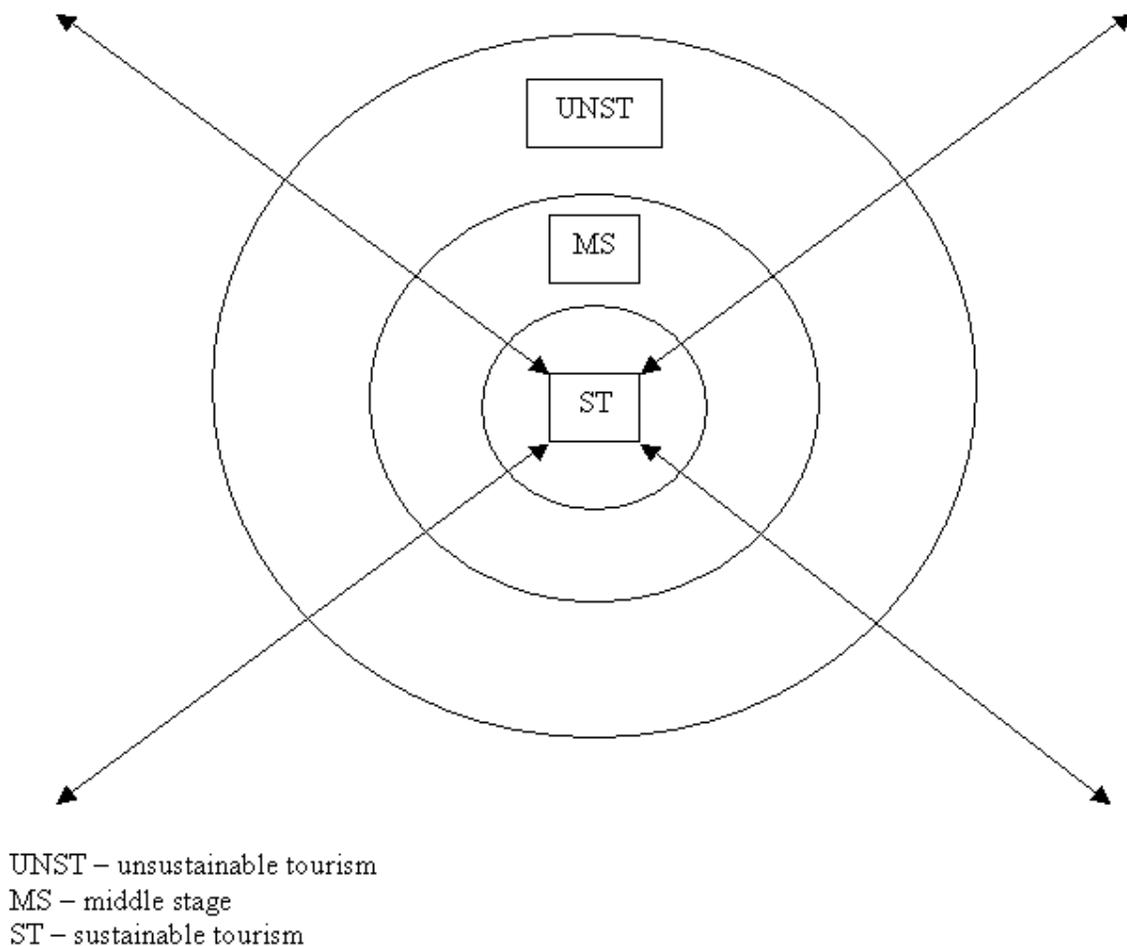


Fig. 2. Sustainable and unsustainable tourism as a continuum of bi-directional changes

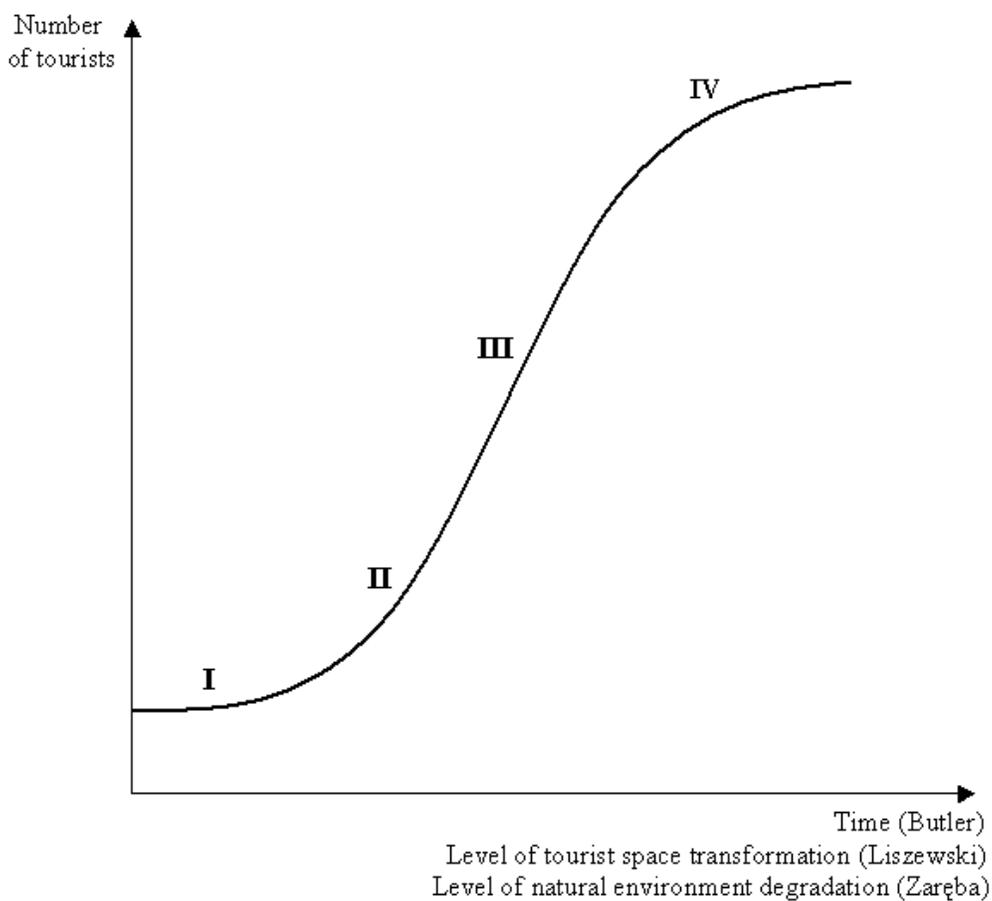
A model conception of diverse degrees (stages) of development (functioning) of sustainable tourism, in relation to different (in terms of environment and socio-economics) reception areas was proposed also by C. Hunter (1997, as cited in Mika, 2008). This author, after a contrastive analysis of the position of tourism and the position of sustainable development within diverse areas, distinguished four variants of functioning of tourism within sustainable development. This conception can be graphically illustrated with a graph of decreasing function that indicates relationships between tourism and sustainable development (Figure 4). Controversy in Hunter's model lies in the fact that it excludes the possibility of a wide-scale tourism development that would take into account the principles of sustainable development. Therefore, this model undermines the idea of sustainable tourism as the one that takes into account the principles of sustainable development.

Polish scholars also made an attempt to present the essence of sustainable tourism in a model form. These were M. Durydiwka, A. Kowalczyk & S. Kulczyk (2010). These authors assumed that the conception of sustainable tourism (ST) concerns mainly three types of tourism, i.e.: 1) related to the natural environment values (ST_{natural}); 2) related to the cultural environment values (ST_{cultural}); 3) requiring from tourists certain skills (ST_{qualifying}). Taking into account these types of tourism they presented the idea of sustainable tourism as the following formula:

$$ST = ST_{\text{natural}} + ST_{\text{cultural}} + ST_{\text{qualifying}} + \left(\frac{ST_{\text{natural}}}{k} \times \frac{ST_{\text{cultural}}}{k} \times \frac{ST_{\text{qualifying}}}{k} \right) \quad (1)$$

k - the correction factor.

According to its authors, this formula refers to the holistic conception of sustainable tourism, which means that it should be understood as a combination of various forms of tourism, complemented by common objectives, such as: care for the natural environment, limiting the negative effects for local population, bringing economic benefits to reception areas and meeting the needs of tourists.



Conception Stage	Tourist area life cycle by R. Butler (1980)	Changes in the natural environment (based on: D. Zaręba, 2010)	Types of tourist space by S. Liszewski (1995)
I	Exploration	Original balance	Exploration
II	Introduction	Threat	Penetration
III	Development	Degradation	Colonization
IV	Consolidation and stagnation	New balance	Urbanization

Fig. 3. Tourism in the function of time, spatial changes, and environmental changes

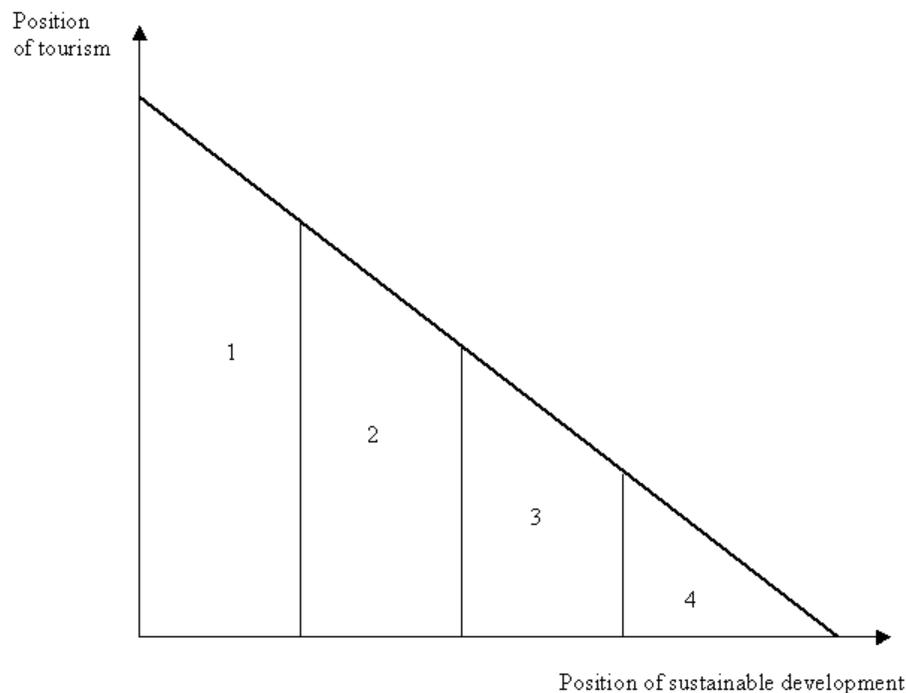


Fig. 4. Variants of functioning of tourism in sustainable development

4. Theoretical, short-term model of sustainable tourism

The model is presented in the graphic (Figure 5) and descriptive form, through a presentation of: purposes and conditions of its construction, main assumptions that the model is based on, adopted variables, model factors of balance and its disturbance (notation), factors affecting variables, and possibilities and restrictions on using the model.

4.1 Purposes and conditions of the model's construction

The purpose of the sustainable tourism model construction is to present in a complete, explicit and as simple as possible form the essence of sustainable tourism in the short-term perspective. The author intended the proposed model, designed as a theoretical construct, to render in the most complete way the ideas of sustainable tourism, and at the same time to be appropriate for teaching and guiding purposes as well as to constitute a theoretical basis for detailed application models. The model is intended to be versatile, i.e. to be applicable in all conditions, on every reception area, for every type of tourism. Another condition, which was required in order to meet all the other criteria, was the necessity to use mathematical function dependencies and notation (explicitness of the model). The simplicity of the form, facilitating understanding of the model, is ensured through minimization of the number of variables and by the graphic illustration of the model. An additional intention of the author was to take into

consideration the possibility of occurrence of change of independent variables and their influence on dependent variables (the dynamic factor). It allows to observe, and especially to project the effects of these changes, in the context of their consequence for sustainable tourism.

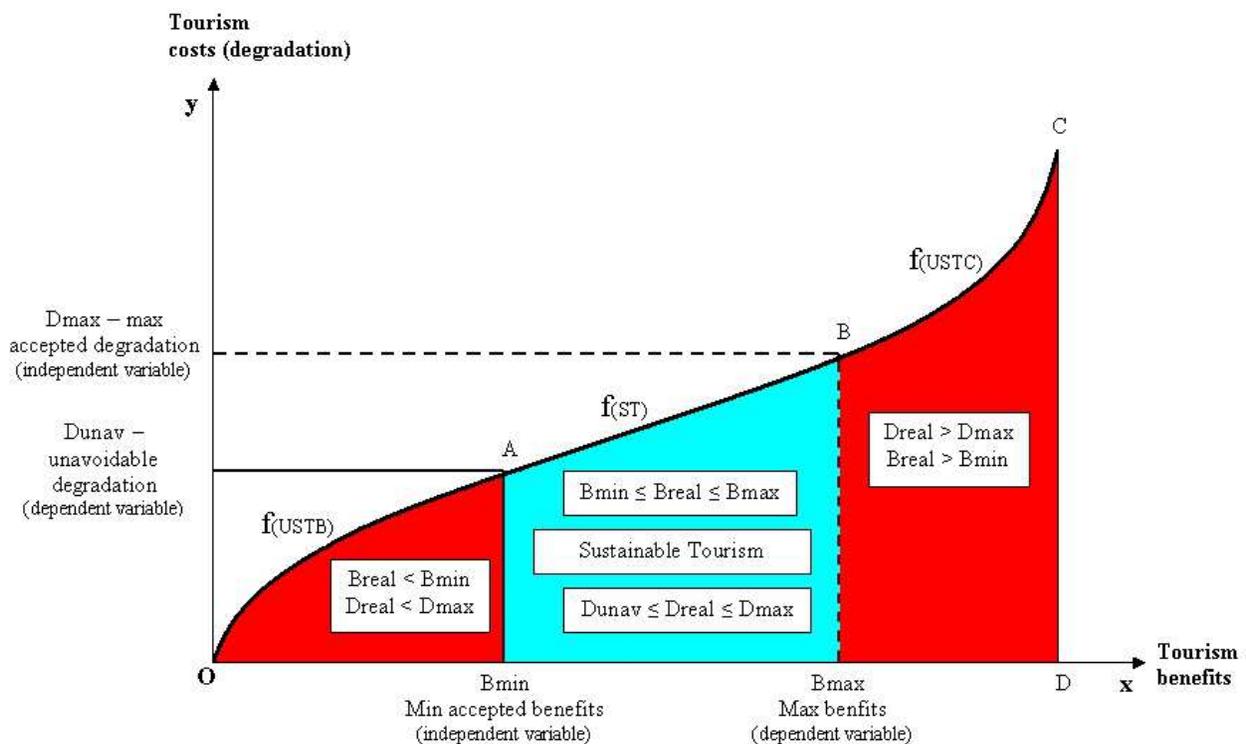


Fig. 5. Theoretical (short-term) model of sustainable tourism

4.2 Assumptions for the sustainable tourism model construction

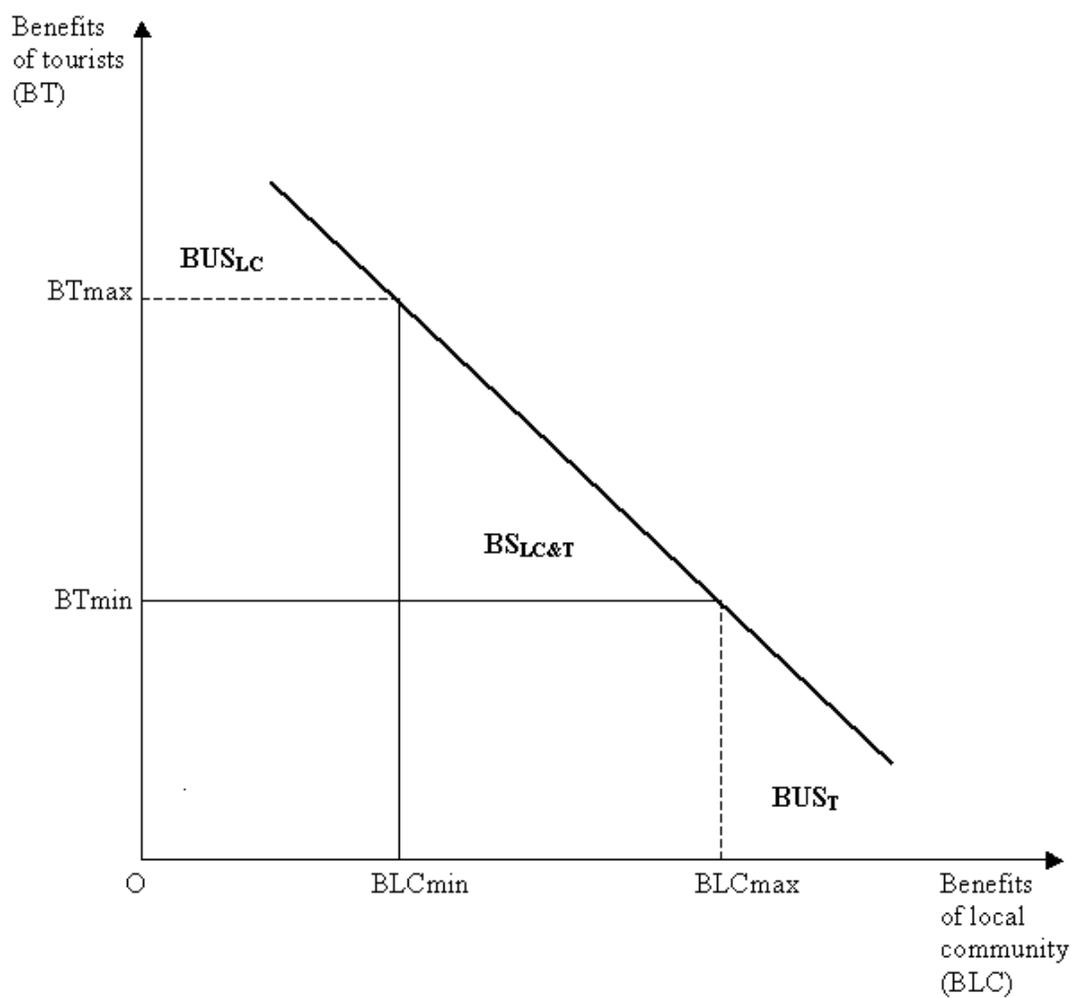
1. The assumed objective of sustainable tourism on a given tourist reception area has been the striving for the state of balance in fulfilling needs (reaping benefits) of two main groups of stakeholders, i.e.:
 - tourists – who visit the tourist reception area in order to fulfil their tourist needs (to reap benefits);
 - community inhabiting or working in favour of tourism on the reception area (local population, transactors operating tourists, public authorities) – which agrees on or acts in favour of tourism development, because it acknowledges a chance to fulfil its needs (to reap benefits).

At the same time, the accepted level of the degradation of the natural and socio-cultural environments, which includes tourist resources of a given reception area (in the wide sense of tourist potential), cannot be exceeded.

2. It has also been assumed that the increase in (short-term) benefits reaped by tourists and the inhabitants of the areas that they visit – related to developing tourism – results in (in principle) the increase in the level of the degradation of the natural and socio-cultural environments. In this context, the degradation can be treated as a kind of an unavoidable environmental cost that must be borne in connection with developing tourism. This assumption indicates the short-term perspective of functioning of the

model. For, it is obvious that in a long-term perspective, after exceeding the accepted level of degradation it will not be possible to reap further benefits, at the expense of already devastated environment.

3. The author has also assumed an auxiliary assumption concerning the possibility of occurrence of reverse dependency between the benefits reapt by tourists and the benefits reapt by the local community (presented in the graph as a decreasing function), which in sustainable tourism results in the necessity to seek an 'area' of balance in fulfilling the needs of both groups of stakeholders (auxiliary model – Figure 6).



$$f(x): y = ax + b; a < 0, x > 0, y > 0$$

where:

BLC_{min} – minimal benefits of the local community (independent variable)

BT_{min} – minimal benefits of tourists (independent variable)

BLC_{max} – maximal benefits of the local community (dependent variable)

BT_{max} – maximal benefits of tourists (dependent variable)

BS_{LC&T} – sustainability between the benefits of the local community and the benefits of tourists

BUS_{LC} – unsustainability of the benefits of the local community

BUS_T – unsustainability of the benefits of tourists

Fig. 6. Auxiliary model – the benefits of tourists and the benefits of the local community in sustainable tourism

4.3 Explanations for the main model

1. Benefits from tourism – benefits reapt by tourists visiting a given reception area and benefits of the local population (including transactors, public authorities and other organizations), resulting from development of tourism:
 - min accepted benefits (B_{min}): denotes the minimal accepted level of fulfilling needs of tourists and local population, beneath which the reapt benefits will be evaluated as insufficient; its size is measured with the numerical value of the B_{min} point on the Ox axis of the model graph;
 - max benefits (B_{max}): denotes the maximal accepted (in sustainable tourism conditions) level of fulfilling needs of both tourists and local population; its size is measured with the numerical value of the B_{max} point in the Ox axis of the model graph;
 - real benefits (B_{real}): the real level of benefits reapt by tourists and local community in relation to tourism developing on a given area.
- 1a. In the component of benefits there are two basic groups of participants (tourists, local community), which can have opposing interests. In order to take into account the level of balance (sustainability) between the benefits of tourists and the benefits of the local community, as an element of general balance (sustainability), the author has produced an auxiliary model of partitive balance (sustainability) in the benefit component (Figure 6). The assumptions of this model have been transferred to the Ox axis of the main model.
2. Costs of tourism development – degradation of the natural and antropogenic (social, cultural, economic) environments on a tourist reception area, resulting from developing tourism:
 - max accepted degradation (D_{max}): denotes the highest accepted in sustainable tourism (i.e. not resulting in irreversible changes) level of degradation of both environments; its size is measured with the numerical value of the D_{max} point on the Oy axis of the model graph;
 - unavoidable degradation (D_{unav}): denotes the level of unavoidable degradation of both environments resulting from developing tourism; its size is measured with the numerical value of the D_{unav} point on the Oy axis of the model graph;
 - real degradation (D_{real}): the real level of degradation of the natural and antropogenic environments occurring on a reception area in relation to tourism developing there.

4.4 Independent and dependent variables used in the model

In the model there are two pairs of interrelated independent and dependent variables.

Independent variables	Dependent variables
Min accepted benefits (B_{min})	Unavoidable degradation (D_{unav})
Max accepted degradation (D_{max})	Max benefits (B_{max})

Table 2. Independent and dependent variables in the model of the sustainable tourism

1. Min accepted benefits (B_{min} – independent variable) reapt by tourists and the community that hosts them; they result in certain unavoidable level of degradation (D_{unav} – dependent variable) of the natural and antropogenic environments on an analysed tourist reception area.

2. Max accepted degradation (D_{max} – independent variable) of both environments denotes the max level of benefits (B_{max} – dependent variable) which can be reapt by tourists and the local population in sustainable tourism, i.e. without causing irreversible environmental changes.

4.5 Conditions for sustainable tourism

Sustainable tourism	General conditions	
	Component of environment	Component of benefits
Sustainable tourism by components	$ D_{max} - D_{unav} \geq 0$	$ B_{max} - B_{min} \geq 0$
	$ D_{unav} \leq D_{real} \leq D_{max} $	$ B_{min_n} \leq B_{real} \leq B_{max} $
	Minimal conditions	
	Component of environment	Component of benefits
	$ D_{max} - D_{unav} = 0;$ but: $ D_{max} > 0 \wedge D_{unav} > 0$	$ B_{max} - B_{min} = 0;$ but: $ B_{max} > 0 \wedge B_{min} > 0$
	$ D_{unav} = D_{real} = D_{max} $	$ B_{min} = B_{real} = B_{max} $
Function $f_{(ST)}$ – describing the existence of sustainable tourism for both components	General condition	
	$f_{(ST)} = \{x: x \in [B_{min} , B_{max}]; B_{max} - B_{min} \geq 0\}$	
	Minimal condition	
	$f_{(ST)} = \{x: x = B_{min} ; B_{max} - B_{min} = 0\}$	

Table 3. Model conditions for sustainable tourism

4.6 Model disruption of sustainability

Type of disruption	Condition	Description
Lack of balance (unsustainability) in the component of benefits, balance (sustainability) in the component of environment.	$ B_{real} < B_{min} ;$ $ D_{real} < D_{max} $	It occurs when the real benefits (B_{real}) are smaller than the minimal benefits (B_{min}). At the same time the level of real degradation (D_{real}) is lower than the level of accepted degradation (D_{max}).
Function $f_{(USTB)}$ – describing the lack of balance (unsustainability) in the component of benefits while maintaining balance (sustainability) in the component of environment.	$f_{(USTB)} = \{x: x \in [0, B_{min}]\}$	

Type of disruption	Condition	Description
Lack of balance (unsustainability) in the component of environment while maintaining of balance (sustainability) in the component of benefits.	$ D_{real} > D_{max} ,$ $ B_{real} > B_{min} $	It occurs when the real degradation (D_{real}) is bigger than the accepted degradation (D_{max}). At the same time the real benefits (B_{real}) are bigger than the minimal benefits (B_{min}).
Function $f_{(USTC)}$ - describing the lack of balance (unsustainability) in the component of environment while maintaining balance (sustainability) in the component of benefits.	$f_{(USTC)} = \{x: x \in [B_{max} , D]\}$	

Table 4. Model disruption of sustainability

4.7 Factors affecting independent variables, as determinants of sustainable tourism

1. The accepted level of degradation (understood as the highest accepted in sustainable tourism, i.e. not causing irreversible changes, level of degradation of the natural and antropogenic environments) depends on the type of ecosystem and features of the social environment occurring on a tourist reception area. In the natural component low level of accepted degradation is characteristic for natural and close to natural ecosystems that are very vulnerable to external stimuli. In turn, higher level of accepted degradation is characteristic for significantly transformed ecosystems which are not carriers of special natural values. In the antropogenic component, the most vulnerable to degradation will be close, traditional communities that do not maintain lively contacts with the outer world. In such a case, in order to fulfil the sustainable tourism condition, the accepted degradation level should be as low as possible.
2. The expected minimal level of benefits (taking into account the assumptions of the auxiliary model – Figure 6) that both groups of tourism stakeholders (tourists and local population) expect to reap on a given reception area depends on their expectations of tourism. Although, the lowest accepted level of benefits reaped by permanent residents will depend on the features of that community, such as: age structure, education level, environmental and cultural awareness, system of values, self-esteem, hitherto quality of life, professional activity, expectations of development of local tourist economy, local authorities and elite activity. As far as tourists are considered, the case is similar. The level of minimal benefits that they expect will depend on socio-cultural features of that collectivity. They will constitute the basis for the tourists' subjective assessment of the local tourist product (including, i.a. values, tourist management, prices). This product will have to meet the needs of tourists enough for the tourists to think that for the price they are ready to pay they will get the minimal accepted level of benefits related to tourist trip to that location.
3. Taking into account the above-mentioned model assumptions, the sustainable tourism area – presented on the graph as:

$$\int_{B_{\max}}^{B_{\min}} f dx$$

will depend on: 1) the resistance of the natural and antropogenic environments to the negative influence of tourism, denoted with the location of the Dmax point on the Oy axis of the model graph (independent variable); and 2) the minimal accepted level of benefits that local population and tourists expect to reap, denoted with the location of the Bmin point on the Ox axis of the graph (independent variable). The model tourism sustainable area will depend on one hand on the willingness of both groups of stakeholders to resign from the short-term benefits that they want to reap from tourism (possibly small numerical value of the Bmin point on the Ox axis), on the other hand on the features of the environment that determine its vulnerability to degradation by tourism (possibly high numerical value of the Dmax point on the Oy axis).

4.8 Implementation of the model – Possibilities and limitations

1. The implementation of the model for the scientific-educational (explanatory) purposes – the model can be used in order to explain the essence and the principles of sustainable tourism, and especially to determine the interrelations occurring between all the stakeholders of tourism and the natural and antropogenic environments in which tourism is being developed. The construction of the model enables analyses of these interrelations in dynamic hold, which reveals consequences for all the tourism stakeholders induced by a change of independent variables used in the model. Another advantage of the model is its versatility, i.e. the fact that it is applicable in relation to all types of tourism (tourist movement) and reception areas. For, in every situation the same factors (determinants), occurring in the model as independent variables determining framework for the development of sustainable tourism, are taken into account. Also, in all analysed cases the assumed model conditions must be fulfilled. Versatility and explicitness of the model manifest themselves also in the utilization of the graphic way of presenting function dependencies and notation that together define the main assumptions, interrelations and conditions included in the model.
2. The implementation of the model for the purposes of application – the model can be used in order to find out to what extent will the development of various types of tourism on a given reception area fulfil the principles of sustainable tourism. Particular types of tourism should be analysed both in terms of demand, as a form of tourist movement, and in terms of supply, as corresponding types of tourist products (in the widest sense of this term). Practically, one should make an attempt to construct individual models for each type of tourism. This will be possible after choosing appropriate measures (indices) determining the values of particular variables. After building individual model graphs one will be able to compare the obtained ranges (size) of sustainable tourism, characteristic for particular types of tourism. Results of such an analysis may be especially useful in order to determine the types of tourism preferable for a given area – taking into account the conditions of sustainable tourism.

It seems that the main barrier affecting negatively the application type of implementation of the proposed model of sustainable tourism can be difficulties related to the quantification of the adopted variables in detailed models. It would be easiest to express time in financial

values, but this may not always be possible and appropriate. It is also possible to use other indices published i.a. in the publications of the United Nations World Tourism Organization and other organizations (programmes), such as 'Making Tourism More Sustainable' (2005 as cited in Kowalczyk, 2010; *The VISIT initiative*, 2004). When selecting indices one should make sure that they fulfil the criteria for the ideal index of sustainable development as much as possible. These criteria are: 1) simplicity of identification and measurement, 2) natural and/or social, cultural, economic, political significance, 3) stability, 4) simplicity and low cost of measurement, 5) sensitivity and quickness of reaction to changes, 6) intelligibility and explicitness (based on Hughes, 2002, as cited in Kowalczyk, 2010).

At the same time, one should not forget that the variables used in the main model are internally diverse. One group includes netto benefits reapt by both tourists and local population (including transactors), while the other concerns total environmental costs manifesting themselves in the degradation of the natural and antropological environments. In order to determine values of these variables one should consider each of their elements individually and assume an appropriate breakpoint (e.g. according to the assumptions made in the auxiliary model concerning the component of benefits – Figure 6.) One can also consider the solution of application simplification of the entire model. In such a case only one (breakpoint) component of a given variable would be taken to quantification. E.g. for the independent variable 'required benefits' such an operation would include defining the minimal accepted level of benefits reapt by local population and then treating it as the assumed breakpoint level (with the underlying assumption that sole appearance of tourists on a given area testifies of the fact that tourists reap their accepted level of benefits.) The same operation can be used while dealing with the other variable, making the choice of its component dependent of the type of reception area (for sure, for the areas naturally valuable it should be the maximal, accepted for given ecosystems, level of natural environment degradation.)

Another significant problem in the practical implementation of the model is to find the appropriate functional interrelation between assumed variables (costs vs. benefits) in the detailed models, both for breakpoint and for intermediate values, which will decide what the function of sustainable tourism for a given type of tourism on a given reception area will look like. In the main model only the general rule of interrelation between costs and tourist benefits (presented in the graph as an increasing function) was taken into account. It is the ability to determine the shape of the curve through defining the values of variables (breakpoint and intermediate) for various types of tourist movement on a given reception area that will allow the use of the assumptions of the main model on a wider scale for the purpose of application.

Both above-mentioned problems (quantification of variables and finding functional interrelations between them) are important in terms of the application use of the presented model, since they directly affect the ability to define the model size of sustainable tourism.

5. Summary

Because of the fact that the sustainable tourism literature is dominated by the descriptive style and because it is multidirectional, which leads to ambiguities in defining the phenomenon, the author has made an attempt to construct a theoretical model of sustainable tourism which would render both its essence and main features.

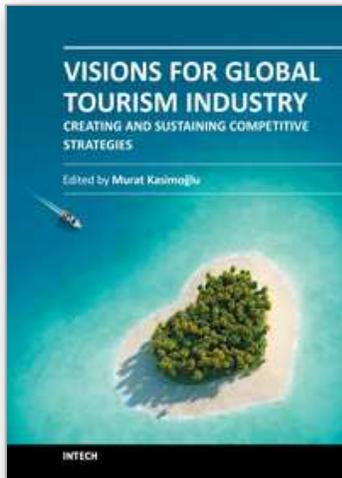
The article presents the theoretical, short-term model of sustainable tourism. It has been designed basing on the adopted assumptions that define the essence of sustainable tourism. They concern striving for the state of balance between the needs of tourists and the needs of local community, while maintaining the values of the natural and socio-cultural environments that occur on reception areas. In other words, the article means that kind of tourism which is satisfactory for tourists and the local population (including transactors working in favour of tourism) and which does not cause irreversible degradation of the natural and antropogenic environments.

The model is intended to fulfil the criteria of completeness, versatility, explicitness and simplicity. To that and, the author has used the graphic form of mathematical function and notation. The model constructed in this way can be implemented for explanatory-educational purposes as well as application purposes (after selecting appropriate indices). The author hopes that the theoretical model of sustainable tourism presented in this article will constitute a complement to the output of the studies of sustainable development in tourism, especially in their theoretical aspects.

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We have been witnessing huge competition among the organisations in the business world. Companies, NGO's and governments are looking for innovative ways to compete in the global tourism market. In the classical literature of business the main purpose is to make a profit. However, if purpose only focus on the profit it will not to be easy for them to achieve. Nowadays, it is more important for organisations to discover how to create a strong strategy in order to be more competitive in the marketplace. Increasingly, organisations have been using innovative approaches to strengthen their position. Innovative working enables organisations to make their position much more competitive and being much more value-orientated in the global tourism industry. In this book, we are pleased to present many papers from all over the world that discuss the impact of tourism business strategies from innovative perspectives. This book also will help practitioners and academicians to extend their vision in the light of scientific approaches.

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University Campus STeP Ri
Slavka Krautzeka 83/A
51000 Rijeka, Croatia
Phone: +385 (51) 770 447
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中国上海市延安西路65号上海国际贵都大饭店办公楼405单元
Phone: +86-21-62489820
Fax: +86-21-62489821

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