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**International Master's Programme in Environmental Science**

**Master Thesis**

**How can Transfrontier Conservation Areas (TFCAs)  
Promote Sustainable Development?**

**Isabel Maria Matos Dias Ramos**

**isabelramos@yahoo.com**

**Rua António Patrício 107 – 1º**

**4150 – 100 Porto / Portugal**

**Phone : (++) 351 96 670 18 07**

**Thesis Advisor**

**Åsa Mattsson**

**asa.mattsson@svet.lu.se**

**Political Science Department**

**Box 52, 221 00 Lund**

**Phone: (++) 46 46 222 01 64**

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To my Grandfather, who will forever be with me...

*The challenge of trying to find answers is in reality finding even more questions  
and realising how little one knows. Only by doing so can one become  
as humble and open as to listen, observe, learn and truly grow.*

## **Abstract**

Transfrontier Conservation Areas (TFCAs) have been acquiring great importance and notoriety. They have caught the attention of both scholars, governments and society, and many eyes are set on them. Their establishment has been receiving substantial back up (such as the creation of the Peace Parks Foundation and the patronage given by personalities such as Nelson Mandela), there are many interests at stake and many stakeholders want this model to succeed. TFCAs promise to be a successful sustainable development strategy, as they incorporate the potential to affect each one of the three dimensions of sustainable development – environmental, economic and social – both independently and in general, considering the cause and effect relationships between the impacts of their establishment and operations. Throughout this paper one variable per dimension of sustainable development will be explored: biodiversity conservation in the environmental dimension; economic opportunities in the economic dimension; transboundary cooperation in the social dimension; and the interconnections between their impacts will be reflected upon. This will be done with the aim of providing a framework through which the contribution of TFCAs towards sustainability can be analysed. It will be concluded that TFCAs can indeed promote sustainable development, at least in theory, considering that this work is based on a literature review and does neither include any in depth analysis of real life cases nor interviews and field observations.

## INDEX

<b>Acknowledgements</b>	<b>1</b>
<b>Abstract</b>	<b>2</b>
<b>List of Acronyms</b>	<b>4</b>
<b>1. Introduction</b>	<b>5</b>
<i>1.1 Methodology</i>	<i>7</i>
<i>1.2 Scope and Limitations</i>	<i>8</i>
<i>1.3 Structure of the Thesis</i>	<i>9</i>
<b>2. Background Information</b>	<b>11</b>
<i>2.1 Transfrontier Conservation Areas – TFCAs</i>	<i>11</i>
<i>2.2 Sustainable Development</i>	<i>12</i>
<b>3. Environmental Dimension</b>	<b>14</b>
3.1.1 What is Biodiversity?	14
3.1.2 The Value and Importance of Biodiversity	15
3.1.3 Biodiversity Loss Nowadays	17
3.1.4 Causes of Biodiversity Loss	18
3.1.5 Biodiversity Conservation Strategies	19
3.1.6 Protected Areas and Biodiversity Conservation	20
3.1.7 Protected Areas & Biodiversity – Transfrontier Conservation Areas & Biodiversity	21
<b>4. Economic Dimension</b>	<b>22</b>
4.1.1 The Importance of Tourism in the Context of Developing Countries	22
4.1.2 What is Ecotourism?	23
4.1.3 Economic Opportunities Generated by Ecotourism	24
4.1.4 Adverse Effects of Tourism on Protected Areas and/or TFCAs	24
4.1.5 Financing Protected Areas through Ecotourism	25
4.1.6 Protected Areas & Ecotourism – Transfrontier Conservation Areas & Ecotourism	26
<b>5. Social Dimension</b>	<b>28</b>
<i>5.1 Transboundary Cooperation</i>	<i>28</i>
<b>6. Linkages and Interconnections</b>	<b>30</b>
<i>6.1 Environmental and Social Impacts of Ecotourism within TFCAs</i>	<i>30</i>
<i>6.2 Ecotourism within TFCAs and Poverty Alleviation</i>	<i>31</i>
<i>6.3 Poverty, Natural Population Growth, Inequality and Biodiversity Loss</i>	<i>32</i>
<i>6.4 Poverty and Environmental Degradation</i>	<i>33</i>
<i>6.5 Environmental Degradation and Conflict</i>	<i>33</i>
<i>6.6 Environmental Cooperation, Cooperation in Other Sectors and Peace</i>	<i>34</i>
<i>6.7 TFCAs, Inclusion of the Local Communities and Ecotourism</i>	<i>35</i>
<i>6.8 Summary</i>	<i>36</i>
<b>7. Conclusions</b>	<b>39</b>
<b>Bibliography</b>	<b>40</b>
<b>Appendix 1</b>	<b>45</b>
<b>Appendix 2</b>	<b>48</b>

## LIST OF FIGURES

<a href="#">Figure 1. The 3 Dimensions of Sustainable Development</a>	<a href="#">6</a>
<a href="#">Figure 2. TFCAs and the 3 Dimensions of Sustainable Development</a>	<a href="#">8</a>
<a href="#">Figure 3. The Value of Biodiversity</a>	<a href="#">16</a>
<a href="#">Figure 4. TFCAs – the Main Variables</a>	<a href="#">3938</a>

## List of Acronyms

BDP	Biodiversity Support Programme
BPSP	Biodiversity Planning Support Programme
CBD	Convention on Biological Diversity
GEF	Global Environment Facility
IISD	International Institute for Sustainable Development
ITTO	International Tropical Timber Organization
IUCN	International Union for Conservation of Nature and Natural Resources/ The World Conservation Union
OECD	Organisation for Economic Cooperation and Development
PAs	Protected Areas
PPF	Peace Parks Foundation
SANParks	South African National Parks
TBCAs	Transboundary Conservation Areas
TBPAs	Transboundary Protected Areas
TFCAs	Transfrontier Conservation Areas
TIES	The International Ecotourism Society
UN-CSD	United Nations Commission for Sustainable Development
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNIDO	United Nations Industrial Development Organisation
WCED	World Commission on Environment and Development
WCMC	World Conservation Monitoring Centre
WCPA	World Commission on Protected Areas
WH-UNESCO	World Heritage - United Nations Educational, Scientific and Cultural Organization
WTO	World Tourism Organization
WWI	The World Watch Institute
WWF	World Wide Fund for Nature (Formerly World Wildlife Fund)

# 1. Introduction

*“It is time to think beyond boundaries, beyond ethnic and religious grounds, and beyond nations in our global quest for a just world which values and conserves nature.”*

*(IUCN, 2002a, p. 3)*

Between the 8<sup>th</sup> and the 17<sup>th</sup> of September of 2003 the 5<sup>th</sup> IUCN World Parks Congress (or IUCN World Congress on Protected Areas) took place in Durban, South Africa. This event takes place every 10 years and “provides the major global forum for setting the agenda for protected areas” (IUCN, 2003a). Transboundary issues relating to the environment have been assuming mounting interest and this fact was clearly reflected upon the choice of the theme of the congress this year: *Benefits Beyond Boundaries*. This choice of subject was meant to promote the discussion and increase awareness about the wide range of values, opportunities and benefits protected areas assume and provide to their stakeholders (IUCN, 2002a, p. 9). This broader perspective involves inevitably the analysis and study of a specific type of protected areas, the kind of “protected areas that meet across international borders” (UNEP-WCMC, 2001a), or Transfrontier Conservation Areas (TFCAs)<sup>1</sup>.

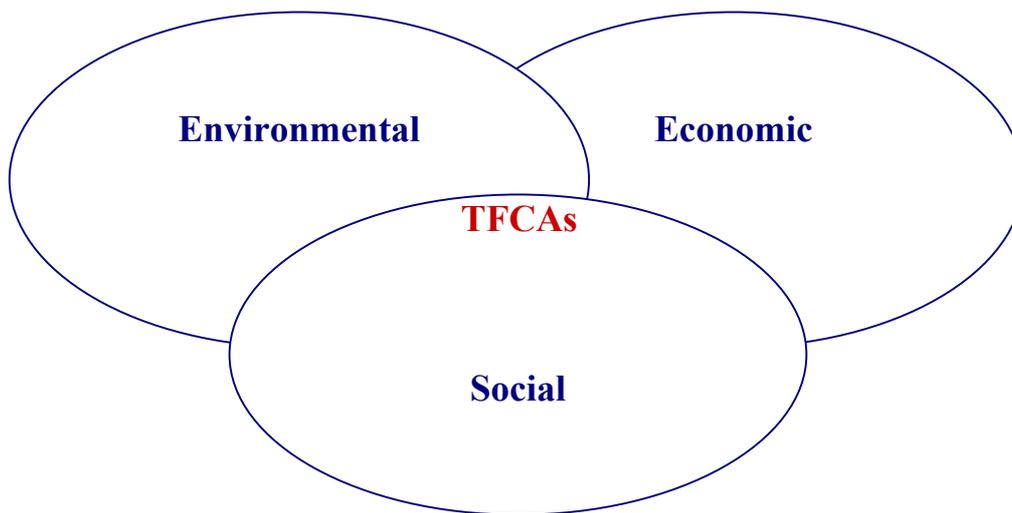
TFCAs are intended to protect ecosystems and wildlife in spite of geo-political borders (ITTO, 2003), in view of the fact that “nature knows no boundaries” (South African Government Department of Environmental Affairs and Tourism, 2003a). Such areas act not only as a means of conserving and sustainably using biological and cultural resources, but also of fostering social and economic development and “facilitating and promoting regional peace (and) cooperation” (South African Government Department of Environmental Affairs and Tourism, 2003a).

In the context of TFCAs, wildlife conservation brings about various social and economic benefits, in the sense that their establishment has the potential to contribute significantly towards the betterment of the livelihoods of the local communities. They can “provide jobs and revenue generating opportunities for many local people living within and around them” (South African Government Department of Environmental Affairs and Tourism, 2003b) and “they help promote reconciliation in border conflicts, re-unite families and ethnic groups divided by political boundaries, and provide social benefits - such as secure land tenure - to people living in the area” (ITTO, 2003). In the words of the South African Government Department of Environmental Affairs and Tourism (2003b), TFCAs are “part of broader aims of transboundary ecosystem management, integration of conservation with development, promoting regional cooperation and socio-economic development in the Southern African sub-continent”.

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<sup>1</sup> TFCAs will be further discussed in Chapter 2.1.

Yet, regardless of the growing importance TFCAs have been assuming, information about the issue does not appear to be systematised. Although the information available about protected areas and TFCAs is plentiful, it is scattered, particularly when it comes to TFCAs. Even though many events about TFCAs and several of its aspects have taken place since the early 90's, "locating good TFCA resources can be extremely difficult" and the demand for all kinds of information on the matter is well substantiated (IUCN, 2003b). Furthermore, the resources available focus mainly on protected areas and each of its various aspects independently. The links and interconnections between TFCAs and the three dimensions of sustainable development<sup>2</sup> (environmental, economic and social), although easily perceived, are not explicitly described. By realising that the establishment of TFCAs has spin-off effects which affect both environmental, economic and social concerns, it appears compelling to analyse them through the three dimensions of sustainable development – environmental, economic and social dimension (see Figure 1).



**Figure 1. The 3 Dimensions of Sustainable Development**

Since TFCAs have the potential to affect each one of the three dimensions of sustainable development, they have the possibility of contributing more significantly towards sustainability than national protected areas, providing exciting new possibilities for the advancement of sustainable development under each one of its three dimensions. In an era when the interrelatedness and interdependency of all things is becoming increasingly evident and in an age when the necessity to protect natural resources if human life is to thrive becomes imperative, studying a subject as interdisciplinary and contemporary as TFCAs is of the utmost appeal.

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<sup>2</sup> Sustainable development will be further discussed in Chapter 2.2.

Throughout this work, the connections between the environmental, economic and social dimensions of TFCAs will be explored, clarified and linked to sustainable development, with the intent of providing the necessary background information to study TFCAs and how they can relate to and promote sustainability. Very importantly, this work was written from a perspective of TFCAs in developing countries. As will be explained in more detail in Chapter 3, TFCAs assume critical importance in biodiversity conservation and it is in developing countries that the most critical repositories of biodiversity are located. Furthermore, it is in developing countries that the benefits deriving from the establishment of TFCAs are more evident and assume greater significance.

The aim of this work is to provide a basic conceptual structure for understanding the rationale behind TFCAs, by providing a framework through which the contribution of TFCAs towards each dimension of sustainable development (and consequently towards sustainability) can be analysed.

## **1.1 Methodology**

This thesis is based on a literature review of the issues analysed: protected areas, TFCAs, biodiversity, economic opportunities and ecotourism, and transboundary environmental cooperation, amongst the most important. Interviews and field work were not conducted at this point because they would go beyond the scope of this work. This paper aims to be a starting point from which to understand TFCAs and their contribution towards sustainability in general terms, in the context of developing countries. It would have made little sense to conduct interviews without having first a clear idea of what role TFCAs can play in which areas – it would have been impossible to know exactly what to look for in direct observations. Nevertheless, interviews and field studies become extremely relevant after the completion of this work, which intends to provide no more than a foundation on which to base further analysis. Only after completing this study, can the potential of the results obtained from interviews and field work be maximised.

Scientific literature was used and most of the resources are internet based. This for the reason that they are published by organizations such as the IUCN, the UN, the CBD, the PPF, the WTO and the WWF among others, which have programmes and task forces focusing on the areas studied and who have their publications also available online. Much of the information used was written about protected areas and it has been extrapolated to reflect into Transfrontier Conservation Areas where appropriate. At some points, practical examples are given, but they intend to be merely illustrative. The literature review conducted for the purposes of this work involves several different fields. These include explanatory literature on biodiversity (covering

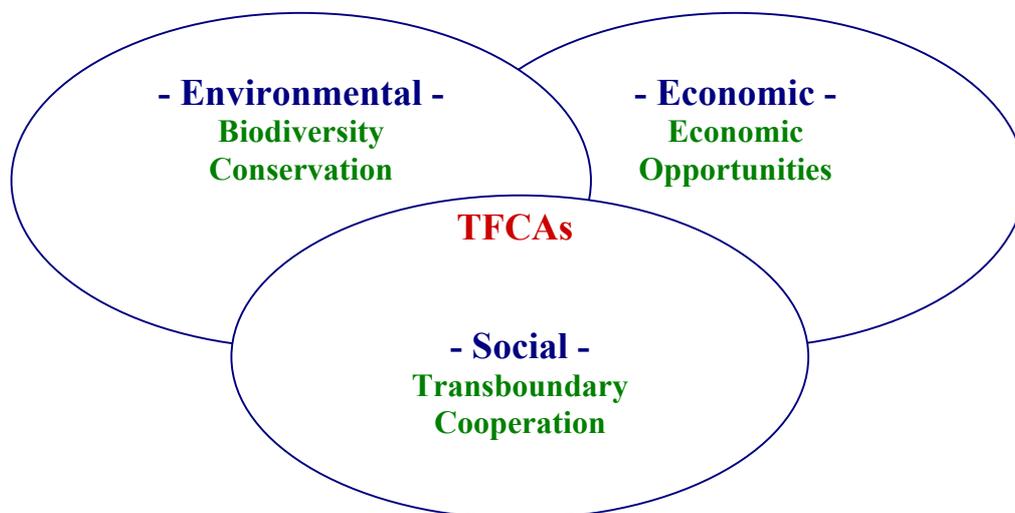
its importance, value, the current state of affairs and biodiversity conservation strategies) (e.g.: CBD 2002; CBD 2003; Miller 2002; McNeely & Guruswamy 1998; WRI 2002; WRI 2003), works on protected areas and their management (e.g.: IUCN 2002; IUCN 2003), sources on protected areas and tourism (e.g.: Eagles et al., 2002), resources on transfrontier conservation areas and their relevance (e.g.: Sandwith et al., 2001; Zbicz 1999; Zbicz & Green 1997; UNEP-WCMC 2001) or on transboundary natural resource management (e.g.: WWF 2003) and literature on environmental degradation, environmental cooperation and conflict (e.g.: Conca & Dabelko, 2003; McNeely, 1998; Gleditsch & Urdal, 2002) to name the most relevant.

It is also important to mention that although causal loop diagrams have not been used, systems thinking underlies this work. Systems thinking is characterised by a “systemic approach (which) emphasizes a global approach to the problems or to the systems that one studies, and it concentrates on the play of interactions among their elements” (Rosnay, 1979). Consequently it provides a valuable tool in explaining the matter considering the interdisciplinary nature and the cause and effect relationships of the issues and variables involved. Inasmuch as that this work aims at looking at *the big picture* by studying its various components, systems thinking epitomises the most appropriate mindset.

## 1.2 Scope and Limitations

In this work, one variable per dimension of sustainable development (see Figure 2) will be analysed:

- In the environmental dimension it will be **biodiversity conservation**.
- In the economic dimension it will be **economic opportunities**.
- In the social dimension it will be **transboundary cooperation**.



**Figure 2. TFCAs and the 3 Dimensions of Sustainable Development**

Biodiversity conservation is indisputably an integral part of sustainable development. As the WRI explains, “plants, animals, and micro-organisms – interacting with one another and with the physical environment in ecosystems – form the foundation of sustainable development” (WRI, 2003a). The same occurs with economic opportunities, that can lead to poverty alleviation, which “has been a key component in development strategies over the past 50 years” (IISD, 2001). Transboundary cooperation in the field of conservation (implied by the establishment and management of TFCAs) has great potential to promote peace (thus social stability) (Matthew et al., 2002, p. 47), which is clearly a prerequisite for sustainability. In order for sustainability to be achieved, “economic well-being, social development, and environmental stability” must all be taken into consideration as equally important factors (IUCN-WWF, 2002, p. 1). Not integrating these three dimensions in sustainability strategies will undoubtedly result in the failure of those very same strategies.

It must be emphasised that there are many other components and variables in each one of the three dimensions of sustainable development. However, for the purpose of this work, biodiversity conservation, economic opportunities and transboundary cooperation were the variables chosen. The reason for this choice being the fact that they appear to be the more relevant and evident about the role played by TFCAs in sustainability: TFCAs are established with the purpose of conserving biodiversity and along the way they generate new economic opportunities via the creation of jobs and alternative revenue generating opportunities while fostering transboundary cooperation between the states whose territories they encompass. In addition, the three dimensions of sustainable development are theoretical constructions. Consequently, most of the factors described within each dimension overlap, being connected with more than one of the dimensions. These interconnections will be described and explained in Chapter 7. As aforementioned, throughout the work, the added value provided by TFCAs (when compared to national protected areas) towards sustainable development will be demonstrated. TFCAs incorporate the three dimensions of sustainability in a more evident way and provide the opportunity to maximise the benefits offered by national protected areas: TFCAs go one step further.

### **1.3 Structure of the Thesis**

To start with, the concepts of TFCAs and sustainable development will be analysed and defined in Chapter 2, in order to provide the reader with the necessary background information on these subjects. Subsequently, the paper is divided into five additional chapters: in the first three, TFCAs will be studied focusing on the sustainability aspects of TFCAs connected to each one of the three dimensions of sustainable development. In Chapter 3 Biodiversity Conservation as part of the Environmental Dimension will be discussed, in Chapter 4, Economic Opportunities

as part of the Economic Dimension and in Chapter 5, Transboundary Cooperation as part of the Social Dimension. In Chapter 6, the linkages and interconnections between the outcomes resulting from establishing and running TFCAs will be explored. Chapter 7 will consist of the conclusions. Throughout the work, it will be demonstrated that TFCAs have the potential to contribute more towards sustainable development than national protected areas. As previously mentioned, the concepts of TFCAs and Sustainable Development will now be briefly explored.

## 2. Background Information

### 2.1 Transfrontier Conservation Areas – TFCAs

Although it has been during the last decade that TFCAs have gained greater visibility and importance (Zbicz and Green, 1997, p. 201), the concept is not a new one. It first took shape in 1932, with the creation of the Waterton Glacier International Peace Park, by combining the Waterton Lakes National Park in Alberta, Canada with the Glacier National Park in Montana, United States of America (Zbicz and Green, 1997, p. 201; WH-UNESCO, 2002).

The number of transfrontier conservation areas established is ever increasing. Since 1990, the number of such areas has increased two fold and “many others are set to launch within the next few years” (IUCN, 2003a). In 1988 there were 59 transfrontier conservation areas mostly in Europe and North America. In 2001, 169 such areas were counted, distributed among the four corners of the world (ITTO, 2003).

Throughout the literature analysed, several terms are used to refer to this particular type of protected area which straddles across borders:

- Transfrontier Conservation Areas (TFCAs)
- Transboundary Protected Areas (TFCAs)
- Transboundary Conservation Areas (TBCAs)
- International Peace Parks
- Transfrontier Parks
- Peace Parks

Some authors use some of these terms interchangeably while other make distinctions between them. (For a more detailed explanation of these terms’ definitions given by several authors and organizations, please see Table 1 and Table 2 in Appendix 1).

For the purpose of this paper, the term Transfrontier Conservation Area (TFCA) will be the one used, following the World Bank’s definition given in Metcalfe (1999) in the Biodiversity Support Program’s publication *Study on the Development of Transboundary Natural Resource Management Areas in Southern Africa – Community Perspectives*. In it, Transfrontier Conservation Areas (TFCAs) are defined as:

*“relatively large areas, which straddle frontiers (boundaries) between two or more countries and cover large-scale natural systems encompassing one or more*

*protected areas and are based upon the idea of some aspect of shared environmental management between nations” Metcalfe (1999).*

Regardless of the distinctions made between different terms, the fact that they represent a particular type of protected area is indisputable – according to the UNEP and the WCMC, these various terms apply in general to “protected areas that meet across international borders” (UNEP-WCMC, 2001a).

## **2.2 Sustainable Development**

The concept of Sustainable Development became widespread ever since the report *Our Common Future* (or the Brundtland Report, after the Chair of the Commission and former Prime Minister of Norway, Gro Harlem Brundtland) made by the World Commission on Environment and Development in 1987 (UNESCO, 2002).

The definition given was that sustainable development is development that meets “the needs of the present without compromising the ability of future generations to meet their own needs” (WCED, 1987). Sustainable development is consequently “a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are made consistent with future as well as present needs” (WCED, 1987).

However, this definition of sustainable development has suffered criticism. A common critique is the fact that it is “too normative, too imprecise and impossible to operationalise” (Martinussen, 1997, p. 151). It can also imply that natural resources must be preserved at any cost, and this is by no means possible: sustainable development will require some degree of depletion and transformation of resources. However, for development to be considered sustainable what has to be maintained is the overall balance: losses in one area must be compensated for in other areas (Martinussen, 1997, p. 151).

The concept of sustainable development is potentially elusive, vague and unclear. To a large extent the discussion about the concept is due to “terminological and conceptual ambiguities, as well as in disagreements about facts and practical implications” (Holdren et al., 1995). Much of it because it is a broad concept affecting and involving several other fields, with each fields’ experts seeing “different parts of the picture, typically think(ing) in terms of different time scales, and often use(ing) the same words to mean different things” (Holdren et al., 1995).

However, regardless of the abundance of definitions and their various nuances it is agreed that sustainable development comprises three dimensions: environmental, economic and social (UNIDO, 2003). Additionally, as stated in Principle 1 of the Rio Declaration, “Human Beings are at the centre of concerns for sustainable development”, consequently “they are entitled to a healthy and productive life in harmony with nature” (UN-CSD, 2003).

The great challenge of sustainable development is subsequently its operationalisation, that is “evaluating and managing the complex interrelationships” among environmental, economic and social goals (UN-CSD, 2003), which must be integrated “through mutually supportive policies and practices” (OECD, 2001, p. 13). At times, such might not be doable, and at that point trade-offs need to be made. However, the impacts of such trade-offs must always be evaluated and weighted from a future perspective by taking into account the effect they will have on the choices of future generations (OECD, 2001, p. 13). Consequently, sustainable development strategies “are about making and implementing choices, in a realistic, effective and lasting way” (Dalal-Clayton et al., 2002, p. 8).

For the purpose of this paper, sustainable development will be analysed using its three dimensions and three main variables which are an integral part of each one of those dimensions and which apply more adequately to TFCAs:

- Environmental Dimension & Biodiversity Conservation
- Economic Dimension & Economic Opportunities
- Social Dimension & Transboundary Cooperation

### 3. Environmental Dimension

The primary aim of this chapter is to demonstrate that TFCAs are the most effective means of preserving biodiversity. However, beforehand it is necessary to explain what biodiversity is, why it is important in the first place and how it is valued. Afterwards, a brief explanation on the current situation relating to biodiversity loss and the root causes of biodiversity loss will be given. It will be shown that the creation of protected areas is the most effective means of fighting biodiversity loss, considering that one of its main root causes is loss of habitat, a problem to which protected areas provide the most appropriate and effective solution. From establishing the vital role of protected areas in biodiversity conservation, the analysis will be extrapolated to TFCAs and it will be demonstrated that due to the fact that nature and ecosystems spread across national and regional boundaries, TFCAs add enormous value to *in-situ* conservation strategies, representing the most successful means of conserving biodiversity.

#### 3.1.1 What is Biodiversity?

Biological diversity or biodiversity is defined as:

*“the variety of different species (species diversity), genetic variability among individuals within each species (genetic diversity), variety of ecosystems (ecological diversity), and functions such as energy and matter cycling needed for the survival of species and biological communities (functional diversity)” (Miller 2002, p. G2).*

It “is the term given to the variety of life on Earth and the natural patterns it forms” (CBD, 2002a), representing “the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part”, including “diversity within species, between species and of ecosystems” (IUCN, 2002c).

The biodiversity that exists nowadays is the result “of billions of years of evolution, shaped by natural processes and, increasingly, by the influence of humans. Biodiversity forms the web of life of which we are an integral part and upon which we so fully depend” (CBD, 2002a). It represents “the natural biological wealth that undergirds human life and well-being. The breadth of the concept reflects the interrelatedness of genes, species, and ecosystems” (WRI, 2003b).

### 3.1.2 The Value and Importance of Biodiversity

Biodiversity can be valued in different ways and there are several ways of describing the worth it incorporates. It is beyond the scope of this paper to discuss in detail the different valuing systems used by different authors. Nevertheless, establishing the value and importance of biodiversity in this work is fundamental<sup>3</sup>. Therefore it seems pertinent to explore the matter albeit succinctly. In order to do so, two examples of how to value biodiversity will be discussed: Miller's system and McNeely's & Guruswamy's system.

Miller (2002, p. 561-562), classifies biodiversity's value into two distinct categories:

- Biodiversity's *instrumental value* is based on its usefulness to mankind. Miller further sub-divides *instrumental value* into *utilitarian or use value* and *non-utilitarian or non-use value* based on whether or not the value can be translated into a physical one. Examples of components of *utilitarian value* are goods and ecological services provided by biodiversity while a component of biodiversity's *non-utilitarian value* is for instance biodiversity's aesthetic worth (Miller, 2002, p. 561-562).
- Biodiversity's *intrinsic value* is inherent to it (simply because it exists) (Miller, 2002, p. 561-562).

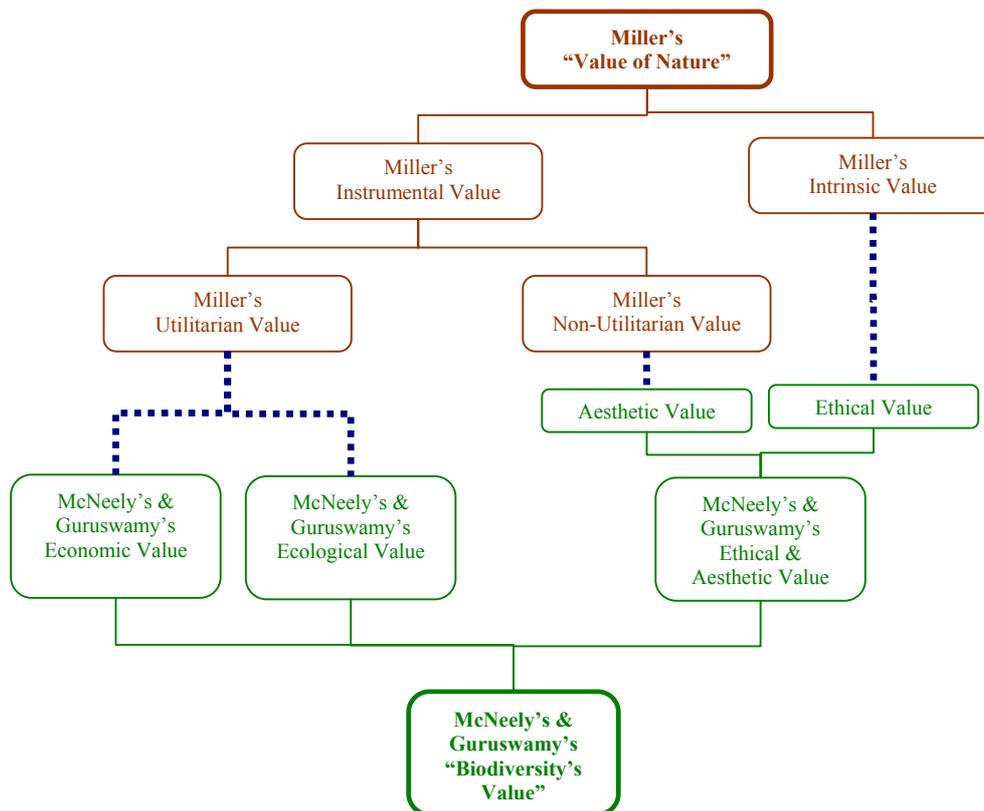
McNeely & Guruswamy (1998, p. 21-26), alternatively, classify the value of biodiversity into 3 categories:

- *Ethical and aesthetic value* – Considering that Man is the dominant species on this planet, mankind has “an absolute moral responsibility to protect” and respect the other species inhabiting earth. Furthermore, mankind takes pleasure in activities based on biodiversity, such as ecotourism, bird-watching, gardening, even pet-keeping” (McNeely & Guruswamy, 1998, p. 21).
- *Economic value* – The organisms which compose biodiversity are “sources of food, medicines, chemicals, fiber, clothing, structural materials, energy (biomass)” and of many other things. For example, “more than 60% of the world's people depend directly on plants for their medicines” (McNeely & Guruswamy, 1998, p. 22) and “the active ingredients in more than 25% of medical prescriptions derive from natural plants” (Waldman & Shevah, 2000, p. 300).
- *Ecological value* – Ecosystems provide a multitude of vital services, such as “protecting watersheds, regulating local climates, maintaining atmospheric quality, absorbing pollutants, and generating and maintaining soils” (McNeely & Guruswamy, 1998, p. 26).

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<sup>3</sup> One of the main objectives of establishing protected areas and TFCAs is biodiversity conservation. Consequently it becomes crucial to explore what value biodiversity assumes and what importance it incorporates in order to understand the legitimacy of the establishment of such areas to start with.

By studying the two, one can conclude that these two systems integrate and represent the same variables. McNeely's & Guruswamy's *economic* and *ecological value* of biodiversity can be incorporated into Miller's *utilitarian value*. By dividing McNeely's & Guruswamy's *ethical & aesthetic value* in two, the *aesthetic value* is incorporated into Miller's *non-utilitarian value* while the *ethical value* is incorporated into Miller's *intrinsic value*:



**Figure 3. The Value of Biodiversity**

Regardless of how one chooses to qualify the value of biodiversity, the fact that it has great value is indisputable. Although the legitimacy of the *intrinsic* or *ethical & aesthetic value* of nature can be debated due to the wide variety of value systems people might have and the differences between them, there is consensus about the *instrumental* or *economic and ecological value* of biodiversity.

It is also important to note that the value of an ecosystem is higher than the sum of the value of each of the species it incorporates because of the “highly intricate web of relationships” amongst its components: a case of the whole being greater than the sum of its parts (Sarukhan, 2000). Biodiversity represents exactly that: “the wealth of species ecosystems and ecological processes that help make possible the economic and environmental systems” (Waldman &

Shevah, 2000, p. 300). Peter Bridgewater, director of UNESCO's ecological sciences division, grants that the value of biodiversity “is priceless because it guarantees the security of the human race” concluding that “it would be idiotic... to destroy ecosystems which make air breathable, the climate tolerable, water drinkable and soil fertile” (Boukhari, 2000).

The fact that biodiversity is precious is widely recognised. Every species existent on planet earth “today (1) contains genetic information that represents thousands to millions of years of adaptation to the earth’s changing environmental conditions and (2) is the raw material for future adaptations” (Miller, 2002, p. 82). Biodiversity is important because its loss “reduces the availability of ecosystem services and decreases the ability of species, communities, and ecosystems to adapt to changing environmental conditions” (Miller, 2002, p. 82).

Ultimately, it comes down to one only fundamental matter: “biodiversity is the essence of life” (Boukhari, 2000). Robert Barbault, director of the French Institute of Basic and Applied Ecology asserts that life is simply “what lasts. And it lasts because it adapts to changes in the environment by diversifying”, and so has been occurring “for over four billion years” (Boukhari, 2000). Barbault continues, emphasising that “diversity is the very reason for the success of living phenomena, and therefore for our own existence” (Boukhari, 2000). However, it is legitimate to question if until now living things have always adapted, why is there any reason to be concerned? The answer is straightforward: “most specialists are categorical: to regenerate, life needs time and space, two things it no longer has because of the pace and scope of the damage caused by people” (Boukhari, 2000).

The loss of biodiversity matters because it will affect human kind greatly (McNeely & Guruswamy, 1998, p. 21). “Among ecologists, there is a general consensus that biodiversity is of critical importance to the health of ecosystems and even for the long-term survival of the human species (Gowdy, 1997, p. 299). Without biodiversity, life on earth would wither and ultimately come to a halt, since biodiversity represents the base of all existence.

### **3.1.3 Biodiversity Loss Nowadays**

A certain degree of biodiversity loss is unavoidable; however nowadays the rate of extinction is greater than what has been during the last centuries “largely as a result of human action enhancing degradation of biologically rich ecosystems” (Waldman & Shevah, 2000, p. 300). More alarmingly, however, is the fact that it is taking place “over an extremely short period of the evolutionary scale, exceeding enormously the current rate of speciation” (Waldman & Shevah, 2000, p. 300). If wild habitats keep being shattered at the current rate by mankind,

humans will be responsible for “a major new crisis in the history of life”, from which “it will take nature at least 10 million years to recover” (Boukhari, 2000).

In the mid 90’s, the IUCN presented the following as “the share of various wildlife groups threatened with extinction” (WWI, 2002, p. 8):

“Vascular plants	12,5%
Birds	11%
Reptiles	20%
Mammals	25%
Amphibians	25%
Fish	24%”

Over the last 400 years, 115 species of birds and 58 species of mammals have become extinct (McNeely & Guruswamy, 1998, p. 16) and the fact that the current rate of biodiversity loss is alarming and a reason for worry is widely agreed upon (Gowdy, 1997, p. 299). Some predictions go as far as stating that two-thirds of living species will be lost during the 21<sup>st</sup> century (McNeely & Guruswamy, 1998, p. 20). “The extraordinary rate of loss of biological diversity that is experienced worldwide carries real risk for the future generations who will be deprived of the economic, health, nutritional, aesthetic and other benefits derived from our planet’s rich biological inheritance” (Waldman & Shevah, 2000, p. 300).

### 3.1.4 Causes of Biodiversity Loss

There are direct and indirect (or underlying) causes for the loss of biodiversity. The most significant direct causes of biodiversity loss include habitat conversion, unsustainable use and management and trade in species (West & BDP, 2002, p. 3).

**Habitat conversion** – Over the last few decades, the size of ecosystems has diminished greatly due to the increase in human population and unsustainable natural resource consumption (WRI, 2002), causing habitat loss and fragmentation, which are “by-products of human activities such as farming and livestock raising; mining, fishing, logging, and other extractive activities; and urban and industrial expansion” (WWI, 2002, p. 8).

**Unsustainable use and management and trade in species** – Several natural resources such as forests and wildlife “have been over-exploited, sometimes to the point of extinction” (WRI, 2002). This over exploitation happens in order not only to satisfy the local communities’ need for food and sustenance, but also to satisfy the demand for “precious commodities” such as ivory, and “for pets, curiosities, and collector’s items” (WRI, 2002).

Additionally, the more common underlying causes of biodiversity loss include “demographic change, poverty, inequality, and isolation” (WWF, 2001). They cause losses in biodiversity by “exerting more and more direct pressure on resources”, moreover, these factors are mutually reinforcing (WWF, 2001). These factors cause “over-exploitation or over-use of existing biological resources; expansion of resource and land use practices into new areas, including marginal lands or protected areas; and introduction of new techniques that prove inappropriate or environmentally destructive in the new settings” (WWF, 2001).

By acknowledging that habitat loss and fragmentation are the greatest immediate cause and a key anthropogenic root cause of biodiversity loss, any strategies used to fight it must incorporate policies that protect habitats.

### 3.1.5 Biodiversity Conservation Strategies

Considering that habitat loss and fragmentation are the main cause of biodiversity loss, the most successful biodiversity conservation strategies must therefore address the issue of habitat protection. Habitat protection strategies include the creation of protected areas, which are part of *in-situ* conservation strategies. There are two types of conservation policies: *in-situ* and *ex-situ*. *In-situ* conservation refers to the “designation of protected reserve areas in the form of natural parks in which native plants are protected together with the associated animals, birds and other biological resources, in a manner that the whole ecosystem is strictly preserved” (Waldman & Shevah, 2000, p. 303). It is about protecting habitats and reducing unsustainable use and management. *Ex-situ* conservation refers to the maintenance of “gene banks which are easily observed, studied and used, although (they) reflect a preservation process rather than the dynamic and adaptive principles of conservation” (Waldman & Shevah, 2000, p. 303).

Furthermore, biodiversity conservation strategies can be divided into two approaches: the *species approach* and the *ecosystems approach* (Miller, 2002, p. 554). The first focuses on conservation species by species, impeding premature extinction. The second focuses on “preserving and restoring” ecosystems as such, hence protecting the species’ “habitats and resources” (Miller, 2002, p. 554). The *ecosystems approach* is considered to be “more practical and more likely to succeed”, taking into account our lack of in depth knowledge about species in general (Miller, 2002, p. 554). “The *ecosystems approach* is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way... It recognizes that humans, with their cultural diversity, are an integral component of ecosystems” (CBD, 2002b).

The *ecosystems approach* makes even more sense as biologists concur that the most important root cause of biodiversity loss is habitat loss and fragmentation (Miller, 2002, p. 564). One way of implementing the ecosystems approach is by creating protected areas, as they are of extreme usefulness in conserving biodiversity.

### 3.1.6 Protected Areas and Biodiversity Conservation

A protected area is defined by IUCN as: "an area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means" (IUCN, 2002b).

Such areas are of extreme importance, since they serve a multitude of purposes. They are critical when it comes to preserving biodiversity "and for delivering vital ecosystem services, such as protecting watersheds and soils and shielding human communities from natural disasters" (IUCN, 2002b). The IUCN stresses their importance, saying that these areas also embody other values, as they provide people "a sense of peace in a busy world", they "embody important cultural values" and they "are important also for research and education, and contribute significantly to local and regional economies, most obviously from tourism" (IUCN, 2002b). Moreover, the survival of many communities of indigenous people is dependent on these areas as they must rely "on a sustainable supply of resources from them" (IUCN, 2002b).

The Convention on Biological Diversity defends that "protected areas are a vital contribution to the conservation of the world's natural and cultural resources" (CBD, 2003). "Their values range from the protection of natural habitats and associated flora and fauna, to the maintenance of environmental stability of surrounding regions. Protected areas can provide opportunities for rural development and rational use of marginal lands, generating income and creating jobs, for research and monitoring, for conservation education, and for recreation and tourism" (CBD, 2003).

Articles 8 of the Convention on Biological Diversity asserts "that a system of protected areas forms a central element of any national strategy to conserve biological diversity and it "calls for the regulation and management of protected areas", while aiming to "promote the protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings" (CBD, 2003). The Convention emphasizes that "experience shows that a well designed and managed system of protected areas can form the pinnacle of nations' efforts to protect biological diversity" (CBD, 2003).

As biodiversity conservation is one of the top priorities on the environmental agenda today, “natural protected areas” have assumed unprecedented significance “as critical repositories of biodiversity” (Zbicz, 1999, p. 15).

### **3.1.7 Protected Areas & Biodiversity – Transfrontier Conservation Areas & Biodiversity**

From the aforementioned arguments it is concluded that protected areas are key in combating biodiversity loss, being a practical application of the *ecosystems approach* to biodiversity conservation in so far as they guarantee that sufficient land to provide habitat for the species is protected (Miller, 2002, p. 554). Nevertheless, due to the fragmentation and dimension of many such areas, they do not “protect habitats and ecosystems” in the most efficient way (Zbicz, 1999, p. 15). It is now considered that maximum benefits will be harvested if the approach of “emphasizing ecological corridors or transition zones that connect clusters of protected areas to increase the size and maximize the possible range for species” is adopted, in view of the fact that “nature does not recognise political boundaries” (Zbicz, 1999, p. 15).

For that very same reason, in order to effectively preserve biodiversity, eco-regions need to be considered and conserved – they too do not conform to nation-states’ environs and are often severed. This because protected areas “as isolated pockets” do not efficiently address the issue – they cannot “maintain viable populations of species in blocks of natural habitat large enough to be resilient to large-scale disturbances such as climate change, or provide essential ecosystem services” (WWF, 2003a, p. 3).

Some of these protected areas cover more than one country’s territory, as they encompass protected areas that adjoin across international boundaries” (Zbicz and Green, 1997, p. 201). These TFCAs provide great opportunities for “promoting biodiversity conservation across politically-severed ecosystems and species’ home ranges” (Zbicz and Green, 1997, p. 201; UNEP-WCMC, 2001b). Not only are they crucial for conservation purposes, precisely as protected areas are, but TFCAs “are essential where natural resources requiring protection - such as endangered ecosystems and species - are shared between countries” (Phillips, 1998, p. vi). Furthermore TFCAs “provide important opportunities for collaboration between managers and scientists in neighbouring countries” encouraging simultaneously “international collaboration in management, the sharing of experience and the sharing of information” (UNEP-WCMC, 2001a). TFCAs are key in biodiversity conservation (ITTO, 2003).

## 4. Economic Dimension

The aim of this chapter is to demonstrate that the establishment of TFCAs can offer enhanced economic opportunities through fostering sustainable tourism. It will be shown that the development of ecotourism within TFCAs can promote sustainable development through the enhancement of economic opportunities, via the creation of jobs and development of revenue generating activities both within the tourism sector and around it. First it will be shown that tourism is an extremely important and growing sector, and that it provides relevant income generating opportunities in developing countries, which usually have the adequate natural conditions and settings for the advancement of a particular type of tourism – ecotourism. The concept of ecotourism will be explored and it will be shown that, unlike tourism, it intrinsically incorporates sustainability values. Nevertheless, the adverse impacts of tourism will be briefly reflected upon. It will also be demonstrated that incorporating ecotourism within protected areas (and/or TFCAs) represents an important means of collecting essential funds for the operation of the areas themselves, which face the very real threat of lack of funding. The additional benefits of TFCAs when compared to protected areas will also be elaborated upon.

### 4.1.1 The Importance of Tourism in the Context of Developing Countries

Presently, tourism employs more people than any other activity and it is often referred to as the “world’s fastest growing economic sector... and soon to be the world’s largest industry” ([Overseas Development Institute, 1997](#)). Moreover, tourism represents a significant revenue generating means in many developing countries. The World Tourism Organization illustrates that “tourism is an important export for 83 per cent of developing countries and it is the main export for one third of them” ([WTO, 2003](#)). In between 1990 and 2000, there was an increase of almost 95 per cent in the number of international arrivals in developing countries. In the least developed countries (LDCs) this increase was of 75 per cent during the same time period, being “the main source of foreign exchange earnings in... 49 LDCs” ([WTO, 2003](#)). Furthermore, 80 per cent of the world’s poor are concentrated in 12 countries and in 11 of those countries tourism is an important/or growing contributor to the economy, “contributing over 2% of gross domestic product or 5% of exports” or with “aggregate growth of over 50% between 1990 and 1997” ([Ashley et al., 2001, p. 1](#)). Therefore, the lives of a vast number of poor people are (or have the potential to be) in one way or the other affected by tourism.

Regarding types of tourism which "value a wide range of unspoiled natural environments... many developing countries have a comparative advantage” and therefore “tourism is promoted

for its potential revenue benefits and as a means of attracting foreign direct investment” (Overseas Development Institute, 1997). These types of tourism include ecotourism, which under the calculations of The International Ecotourism Society is increasing by an amazing 20% every year, while overall tourism is growing at a rate of 7% annually (WWI, 2002, p. 112-113). This increase in ecotourism has immense benefits and is already being incorporated in the policies adopted by governments around the world, who realising the inherent opportunities of ecotourism “are setting aside valuable natural areas as national parks or protected areas, sparing them from more environmentally destructive activities such as agriculture, logging, or mining” (WWI, 2002, p. 112-113).

#### 4.1.2 What is Ecotourism?

The concept of ecotourism is an elusive and vague one (Björk, 2000, p. 189; Vaughan, 2000, p. 285). Despite the vast amount of written material about ecotourism, there is still no consensus on a definition, considering “the many forms in which ecotourism activities are offered by a large and wide variety of operators, and practised by an even larger array of tourists” (UNESCO, 2003). Björk (2000) lists and describes several definitions of ecotourism made by various authors, nevertheless defines it as:

*“an activity where the authorities, the tourism industry, tourists and local people co-operate to make it possible for tourists to travel to genuine areas in order to admire, study and enjoy nature and culture in a way that does not exploit the resource, but contributes to sustainable development” (Björk, 2000, p. 199).*

Regardless of its many definitions, ecotourism’s main characteristics can be summarized as follows (UNESCO, 2003):

- Its underlying purpose “is the observation and appreciation of nature as well as the traditional cultures prevailing in natural areas” (consequently it incorporates an educational aspect).
- “It minimizes negative impacts upon the natural and socio-cultural environment”.
- It promotes the “protection of natural areas” seeing that (1) it creates economic revenues for the “host communities, organisations and authorities managing natural areas with conservation purposes”, (2) it generates “alternative employment and income opportunities” for the local people, (3) it raises “awareness towards the conservation of natural and cultural assets, both among locals and tourists”.

All the aforementioned features of ecotourism are well incorporated in The International Ecotourism Society’s definition of the concept as "responsible travel to natural areas that

conserves the environment and sustains the well-being of local people” (TIES, 2003). By assuming these traits, ecotourism becomes intrinsically a sustainability tool, as it encapsulates the three dimensions of sustainable development, affecting not only its economic, but also its environmental and social dimensions.<sup>4</sup> Within this Chapter, only the economic benefits will be explored.

### 4.1.3 Economic Opportunities Generated by Ecotourism

TFCAs can provide enhanced economic opportunities through the development of ecotourism within them. The Peace Parks Foundation<sup>5</sup> affirms that one objective behind the establishment of TFCAs “is to bring about sustainable economic development” through the development of ecotourism, the vision behind TFCAs being thus “to address poverty, caused by massive unemployment (and) using conservation as a land-use option” (Peace Parks Foundation, 2003b). Tourism can be used as a very important tool for local economic development and consequently it has the potential for being an important aid in poverty alleviation (WTO, 2002, p. 21; Ashley & Elliot, 2003, p. 5).

Ecotourism within protected areas offers economic opportunities through (Eagles et al., 2002, p. 24):

- Creation of jobs (and consequently increased income) for local residents;
- Encouraging new tourism ventures;
- Stimulating and diversifying the local economy;
- Encouraging “local manufacture of goods”;
- Generating (and/ or increasing) funding for protected areas.

### 4.1.4 Adverse Effects of Tourism on Protected Areas and/or TFCAs

Even though tourism has positive effects on economic opportunities, the fact that it also has environmental and social impacts on protected areas cannot be disregarded. “Poorly planned, unregulated ecotourism can bring marginal financial benefits and major social and environmental costs” (Vanasselt, 2000). Negative impacts of tourism include (Vanasselt, 2000) (but are not limited to<sup>6</sup>) the following:

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<sup>4</sup> The connections between ecotourism and the other dimensions of sustainable development will be further elaborated in Chapter 7.

<sup>5</sup> The Peace Parks Foundation was created in 1997 with the goal of facilitating the creation of TFCAs in southern Africa (Peace Parks Foundation, 2003a).

<sup>6</sup> For a more elaborated list of the environmental risks which can derive from tourism in protected areas please refer to Appendix 2, a table taken from of Eagles et al. (2002, p. 33).

- it can be considered to be an unstable activity, and if the local communities become over-reliant on it, their economic security can be undermined;
- considering the vast amount of stakeholders involved, conflicts might arise amongst them due to different opinions about resource usage and clashes of interests;
- it can diminish or even terminate the local communities' accessibility to assets and can be responsible for overusing local resources such as water, etc., which might already be scarce.

Furthermore, tourism development within protected areas might also bear additional costs more closely associated with the fact that it is developed within the boundaries of protected areas, Such costs comprise costs directly related to the construction of the infrastructures, maintenance and management of the area; environmental costs related to the ongoing usage of the area, such as pollution and “disturbance of wildlife” and costs borne by the local communities due to the “restricted access to protected area resources” (Eagles et al., 2002, p. 34).

Yet another important issue is the fact that governments and donors have more often than not promoted “private sector investment, macro-economic growth and foreign exchange earnings” in the tourism sector, which has resulted in the investors being “international companies and local elites, whose profits are generally repatriated abroad or to” urban areas (Ashley et al., 2000, p. 1). In doing so, the needs of the poor have not been addressed. This is reflected in one problem facing the establishment and running of protected areas that will be discussed in Chapter 6, which is the lack of inclusion of the local communities.

Nevertheless, tourism “remains arguably the commercial enterprise most likely to work in harmony with conservation objectives,” providing its impacts are minimized (Vaughan, 2000). Some impacts are positive and others negative and it is the role of the protected areas' management to comprehend and manage them in the best possible manner (Eagles et al., 2002, p. 151). Although it might be a case of *easier said than done*, such can be achieved through the implementation of an “appropriate planning process” and through defining and evaluating appropriate indicators to monitor the impacts and tackle any problems which might arise (Eagles et al., 2002, p. 151). It must be emphasised that “ecotourism and sustainable tourism strategies are designed to manage park visitation to maximize positive benefits and minimise negative environmental impacts prior to their occurrence” (Eagles et al., 2002, p. 34).

#### 4.1.5 Financing Protected Areas through Ecotourism

Protected areas need to be financed and tourism provides an excellent source of funding. According to GEF and BPSP (2000, p. 3), there are no protected areas that are fully funded.

Most of them rely on governmental funding (GEF & BPSP, 2000, p. 7), yet those funds are more often than not insufficient to insure their proper management and operations (Eagles et al., 2002, p. 119). Hence many protected areas are expected to achieve a high degree of self financing and they can do so “via revenues deriving from ecotourism” (WWI, 2002, p. 113).

In many countries, the percentage of public funding being allocated to protected areas is decreasing. Traditionally, the environment is one of the first sectors to suffer budget cuts. As funds become scarce, protected areas “have to compete with pressing demands from other sectors, such as education, defence and health” which have a higher standing on the governments’ priorities’ list (GEF & BPSP, 2000, p. 7). If getting government funding for protected areas is difficult in developed countries which have well established networks of protected areas, in developing countries the situation becomes even more pressing (Eagles et al., 2002, p. 119).

In order to overcome this lack of funds, the managers of protected areas must come up with alternative sources of revenue. Developing countries can raise funds through “international assistance programmes, NGO activities and other donations”, however operating funds often rely heavily on income generated by tourism, which remains the most promising source of generating such revenues (Eagles et al., 2002, p. 120). Therefore ecotourism “helps develop self-financing mechanisms for protected area operations” (Eagles et al., 2002, p. 24).

#### **4.1.6 Protected Areas & Ecotourism – Transfrontier Conservation Areas & Ecotourism**

As aforementioned, the establishment of TFCAs “will provide jobs and revenue generating opportunities for” the local communities (South African Government Department of Environmental Affairs and Tourism, 2003b). In doing so they will contribute to the betterment of the lives of rural communities, who will feel first hand the benefits of wildlife conservation in the form of economic and social advantages (South African Government Department of Environmental Affairs and Tourism, 2003b).

Succinctly, the main positive impacts and ecological rewards from establishing TFCAs are represented by the economic benefits they bring to local and national economies and by “ensuring better cross-border control of problems such as fire, pests, poaching, marine pollution and smuggling” (Sandwith et al., 2001, p. 7). Additionally, within TFCAs the possibilities and benefits offered by ecotourism “are enhanced in several ways” (UNEP-WCMC, 2001b):

- “It is more cost-effective and satisfying for the tourist to be able to visit more than one park from his or her base, and even to pay one admission fee”.

- “Joint approach in marketing is more likely to attract tour operators as an economy of scale and provides more of a level playing field when dealing with the tourism industry”.
- “Collaboration on such matters as entry fees (not too disparate), tour operator training and numbers limitations can make for more sustainable and orderly nature tourism”.

A practical example is the case of The Great Limpopo Transfrontier Park<sup>7</sup>. Its visitors “will no longer be required to hold various visas to travel among the three parks that make up the new transfrontier park” ([African Wildlife Foundation, 2002](#)). Tourism ministers from the three countries “plan to create a joint management board to oversee the park’s daily activities, a strategy for tourism marketing and how surrounding communities will benefit from the project” ([African Wildlife Foundation, 2002](#)).

In the African continent, owing to its rich variety of fauna and flora, TFCAs are key in maximising the benefits which can be derived from such ideal natural circumstances and along the way benefit the local communities ([Peace Parks Foundation, 2003d](#)). Furthermore, through park tourism the knowledge base about the protected area increases and public recognition is achieved. Due to this raised awareness the people will ensure the survival of such areas ([Eagles et al., 2002, p. 159](#)).

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<sup>7</sup> The Great Limpopo links “the Limpopo National Park in Mozambique, Kruger National Park in South Africa, Gonarezhou National Park, Manjinji Pan Sanctuary and Malipati Safari Area in Zimbabwe, as well as two areas between Kruger and Gonarezhou, namely the Sengwe communal land in Zimbabwe and the Makuleke region in South Africa” ([Peace Parks Foundation, 2003c](#)).

## 5. Social Dimension

### 5.1 Transboundary Cooperation

In the social dimension of sustainable development the variable chosen was transboundary cooperation, because transboundary cooperation can act as a catalyst for peace. Although peace (or conflict) affects every realm of life from the economy to the environment, it can be considered more of a social concept. This is patent in the definition of the term as:

*“a state of tranquillity or quiet; freedom from civil disturbance; a state of security or order within a community provided for by law or custom; freedom from disquieting or oppressive thoughts or emotions; harmony in personal relations; a state or period of mutual concord between governments; a pact or agreement to end hostilities between those who have been at war or in a state of enmity”*  
([Encyclopaedia Britannica, 2003](#))

Some countries realize the potential of protected areas established alongside their borders as ways of promoting peace ([Matthew et al., 2002, p. 47](#)). The very core of the existence of TFCAs is not only about biodiversity conservation, but also about fostering regional peace and stability ([Peace Parks Foundation, 2003e](#)). They can for example, defuse “the potential for conflict between states, sometimes in confidence building measures after periods of tension and rivalry” ([Phillips, 1998, p. v](#)). Their creation presupposes a willingness to cooperate and engage in negotiations, openness and even some degree of trust between the countries whose territories the TFCAs encompass, and their existence requires “transfrontier collaborative management which may ultimately contribute to international peace” ([Zbicz, 1999](#)). TFCAs have the potential to play a pivotal role “in building a better relationship between countries” ([Phillips, 1998, p. v](#)), because from the idea of establishing them to their daily functioning, they require the parties involved to cooperate and co-manage it. In doing so, they foster better diplomatic relations and technical, non-political interaction between the countries. Consequently this leads to greater understanding and cooperation in other areas apart from conservation, therefore promoting peaceful resolution of conflicts or issues which might arise between the parties involved ([UNEP-WCMC 2001a](#)). Furthermore, in Africa for example, TFCAs provide a means of reuniting tribes and clans (therefore contributing to social stability) who have been separated in 1884 due to the Berlin Treaty, which divided “African territories like a pack of cards”, arbitrarily severing ecosystems and communities ([Peace Parks Foundation, 2003b](#)).

A key outcome of the 1997 Parks for Peace International Conference on Transboundary Protected Areas as a Vehicle for International Co-operation in South Africa was the recognition that despite their importance towards preserving ecosystems and habitats, TFCAs can contribute immensely towards “building peace and understanding between nations” and that “this is a dimension to conservation which deserves more international attention” (Phillips, 1998, p. vi). Also on the social arena, TFCAs not only promote cooperation and communication between the states, but also “support regional peace as the free movement of tourists and wildlife across international boundaries within the confines of the parks presupposes that peace reigns between” the countries whose territories the TFCAs encompass (Peace Parks Foundation, 2003f).

## 6. Linkages and Interconnections

In the previous sections of this work, three variables – biodiversity conservation, economic opportunities and transboundary cooperation – relating to TFCAs have been discussed rather independently. Nevertheless, there are several links not only between them directly, but also between the impacts they have. Actions concerning each one of the variables individually will undoubtedly have repercussions on the other spheres. Throughout this chapter, the linkages and interconnections between the various effects that stem from TFCAs will be explored. In Chapter 6.1 some of the environmental and social impacts of ecotourism within TFCAs will be listed and considering that ecotourism also entails economic opportunities, it will be concluded that ecotourism can be a valuable tool in alleviating poverty. In Chapter 6.2, the connections between ecotourism and poverty alleviation will be discussed. In Chapter 6.3 it will be explored how poverty alleviation can have impacts in decreasing natural population growth and inequality and consequently how it can affect biodiversity loss/ conservation. In Chapter 6.4, poverty will be linked to environmental degradation. In Chapter 6.5 the relation between environmental degradation and conflict will be looked into, followed by an analysis of how cooperation in the environmental field can trigger broader forms of cooperation in Chapter 6.6. In Chapter 6.7, it will be demonstrated that the inclusion of local communities within the TFCAs is a key factor of the success or failure of a TFCA. Yet again one will be taken back to ecotourism, as it provides an opportunity of integrating and generating benefits for the local communities. Chapter 6.8 will consist of a summarised description of all the linkages and interconnections, together with a simplified figure containing the main points to consider.

### **6.1 Environmental and Social Impacts of Ecotourism within TFCAs**

Protected areas assume critical importance in biodiversity conservation (GEF & BPSP, 2000, p. 6) and so do TFCAs. One of the main direct aims of establishing TFCAs is thus to maintain and protect biodiversity. In doing so, several spin-off effects occur. One such by-product is the development of ecotourism. As explored in Chapter 5, the development of ecotourism plays a key role within TFCAs. Also in Chapter 5 the economic opportunities provided by ecotourism development were discussed. Nevertheless, ecotourism has not only economic but also environmental and social impacts, as has been formerly mentioned. At the same time as it generates “material benefits for the poor”, tourism “also brings cultural pride, a sense of ownership and control, reduced vulnerability and the development of skills and entrepreneurial capacity”, playing a considerable role in sustainable development (WTO, 2002, p. 21). The

parallel between sustainable development and ecotourism (which should be sustainable tourism, if true to its concept) is described in the words of The World Tourism Organization (which bring to mind the definition of sustainable development given by the World Commission on Environment and Development<sup>8</sup>) who endorses:

*"sustainable tourism development meets the needs of present tourists and host regions while protecting and enhancing opportunities for the future. It is envisaged as leading to management of all resources in such a way that economic, social and aesthetic needs can be fulfilled while maintaining cultural integrity, essential ecological processes, biological diversity and life support systems" (WTO, 2001).*

The potential benefits of tourism in protected areas in the environmental and social spheres include (Eagles et al., 2002, p. 24):

- protection of ecological processes;
- conservation of biodiversity due to more sustainable land uses;
- due to the joint management of the areas it promotes research and development of environmentally friendly customs;
- it has the potential to raise the awareness and educate both locals and visitors about the value of nature and the environment, and the local culture and traditions, encouraging sharing of experiences among them and fostering the development of the local crafts;
- it "transmits conservation values";
- it develops infrastructures through improving "local facilities, transportation and communications"

It is easily inferred that if ecotourism has impacts on environmental, economic and social aspects, it affects each one of the three dimensions of sustainable development. A way in which the effects of ecotourism in each one of these three dimensions is perceptible is through the manner in which it can foster poverty alleviation, which will be discussed below.

## **6.2 Ecotourism within TFCAs and Poverty Alleviation**

As discussed in Chapter 4, TFCAs also intend to address the problem of poverty, and they do so in the sense that the development of ecotourism within TFCAs can be a valuable tool in poverty alleviation. This is put into practise as ecotourism fosters the creation of alternative revenue generating opportunities and it also promotes environmental conservation (if ecotourism is true to its definition it must be sustainable and it is consequently considered to be a more sustainable land use) and also social development (in the sense that it fosters the development and increases

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<sup>8</sup> The WCED's definition of sustainable development is given in Chapter 2.2.

the access to infrastructures, amongst other things). Considering that ecotourism can affect the three dimensions of sustainable development, it becomes a most appropriate strategy to fight poverty. Poverty is intrinsically a multidimensional concept, incorporating in itself not only economic but social and environmental concerns<sup>9</sup>. Consequently, policies aimed at fighting poverty must take into account that very same multidimensionality, if they are to be effective: only holistic policies that reflect a multidimensional approach to poverty, attacking every one of its spheres, will be successful in alleviating it (Kanbur & Squire, 1999). Ecotourism has the potential to do exactly so, as it has impacts on the environmental, economic and social spheres, which are not only integral part of poverty but also of sustainability.

### **6.3 Poverty, Natural Population Growth, Inequality and Biodiversity Loss**

Poverty is also closely linked with natural population growth and inequality, apart from being closely linked with poor management of resources. These factors can themselves be causes of biodiversity loss: many times the poor people themselves cause biodiversity loss through overexploitation of resources, if they lack other alternative ways of survival (Koziell, 2000, p. 3). “Natural population growth” is many times linked to “limited education, and poor access to reproductive health services”, factors that can be exacerbated by poverty (WWF, 2001). The increasing population places mounting pressure on natural resources, which are consequently depleted at unsustainable rates (WWF, 2001) and the increasing human population numbers also cause increased “use or conversion of natural habitats” (West & BDP, 2002, p. 3). This fact assumes even more worrying proportions considering that “four-fifths of the world’s population live in developing countries” and that it is estimated that 95% of the world’s total population growth by 2015 will occur in these very same states (West & BDP, 2002, p. 3). As population increases, agricultural lands spread out in order to meet the rising in demand. Considering that “many rural poor populations largely depend on subsistence agriculture”, this poses a threat to what can at times be “biodiversity-rich areas, including those that are protected” (WWF, 2001). Poverty is in fact “leading to increased pressure on protected areas to supply land and resources” (Carey et al., 2000, p. 30-31). The parallel between poverty and biodiversity is yet again reinforced: if protected areas are meant to preserve biodiversity, by threatening them in this manner, poverty is also threatening biodiversity. “Poverty and inequality shape resource use at all levels” (West & BDP, 2002, p. 3) and “inequality of access, quality, size, location and ownership of land, and other resources drive biodiversity loss” (WWF, 2001). Often, the elites

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<sup>9</sup> One such definition of poverty is given by the World Bank Poverty Net (2003): “Poverty is hunger. Poverty is lack of shelter. Poverty is being sick and not being able to see a doctor. Poverty is not being able to go to school and not knowing how to read. Poverty is not having a job, is fear for the future, living one day at a time. Poverty is losing a child to illness brought about by unclean water. Poverty is powerlessness, lack of representation and freedom”.

are the ones who have control and ownership over “the best lands and other valuable resources” – a fact that causes inequality and consequently poverty and biodiversity loss (WWF, 2001).

#### **6.4 Poverty and Environmental Degradation**

The interconnections between the environment, social development and poverty reduction are well established and therefore the importance of protecting natural resources and ecosystems as a whole is recognised as vital (World Bank, 2003a). This relationship between poverty and environmental degradation has been widely discussed by scholars. Although it can be argued if the poor inevitably cause more environmental degradation, poverty can be considered “a critical factor in environmental degradation” (Carey et al., 2000, p. 30). This is so because the poor have in fact fewer choices. When in difficult situations, people will do whatever they need to do in order to ensure their survival. Such lack of alternatives does not allow the people to take long term conservation into consideration, as short term survival is pressing. By doing so, the people are likely to engage in short term unsustainable resource use strategies and overexploitation of natural resources, leading to an increased pressure on the land and its natural capital (WWF, 2001; Carey et al., 2000, p. 30-31). Other problems, such as a lack of education, poor infrastructure and social conflict are usually present in the above mentioned situations, compounding the problems and making them even more difficult to solve (Carey et al., 2000, p. 30-31). Indiscriminate resource use and exploitation implies costs on the long run to the vast majority, especially to the poor “who depend heavily on natural resource use and the maintenance of biological diversity” (IUCN –WWF, 2002, p. 2).

#### **6.5 Environmental Degradation and Conflict**

Another point where the interconnections between the issues are evident is when it comes to environmental scarcity and degradation and their connection to conflict. There is a wide array of literature debating the linkages between environmental scarcity and violent conflict (e.g.: Homer-Dixon, Gleditsch & Urdal, McNeely). It is beyond the scope of this paper to discuss if environmental scarcity and environmental problems necessarily and ultimately lead to violent conflict. However, even if environmental scarcity alone is not the cause of violent conflict, it acts together with other “demographic/ environmental, social and political factors in the generation of violent conflict” (Gleditsch & Urdal, 2002, p. 284) Therefore it must be considered an important factor when it comes to possible causes of conflict. Recognising that “environmental scarcity” (or in the words of MacNeely (1998) “environmental stress” or “biological insecurity”) can play a considerable role in provoking “armed conflict”, biodiversity conservation and the sustainable and equitable use of resources assume crucial importance as

contributors to peace (McNeely, 1998). For that reason, investing in and fostering “the establishment and management of protected areas along international borders” has the potential to prevent frictions, thus decreasing “the likelihood of conflicts leading to war (McNeely, 1998). Although it cannot be proven that “environmental degradation has led directly to interstate war”, there is solid support for the assumption that “environmental problems can trigger or exacerbate localized conflicts along existing social cleavages such as ethnicity, class, region, or relative deprivation, and that these conflicts can in turn spill over to more widespread violence” (Conca & Dabelko, 2003, p. 5).

## **6.6 Environmental Cooperation, Cooperation in Other Sectors and Peace**

The pertinent question to be asked is not whether environmental scarcity leads to conflict but whether “environmental cooperation can trigger broader forms of peace” – in other words, if it “can be an effective general catalyst for reducing tensions, broadening cooperation, fostering demilitarization, and promoting peace”, peace being defined as “a continuum ranging from the absence of violent conflict to the inconceivability of violent conflict” (Conca & Dabelko, 2003, p. 9). “Strong theoretical basis supports the proposition that environmental collaboration can have positive spin-offs for peace” (Conca & Dabelko, 2003, p. 9) and although “we cannot conclude that environmental cooperation causes peace... certain forms of environmental cooperation could be extremely useful tools in the hands of peacemakers” (Conca & Dabelko, 2003, p. 230).

It is thus important to understand if by cooperating in the environmental sector, the diplomatic relations between states are deepened and habits of cooperation are created thereby altering “interstate bargaining dynamics, and deepen(ing) peaceful trans-societal linkages conducive to peaceful cooperation” (Conca & Dabelko, 2003, p. 230). The answer to this question seems to be affirmative, seeing that we have reached “the end of an era when governments could either ignore the connections among ecology, peace, and violence or filter them through an unreconstructed understanding of conflict and security” (Conca & Dabelko, 2003, p. 232). The realisation of this fundamental “ecological interdependence has already led to some cooperation” and additionally “environmental problems may contribute to the establishment or expansion of routine international communication and cooperation” (Brock, 1991, p. 421)<sup>10</sup>. “Prospects for peace are most likely to be strengthened if natural resources are sustainably used and the interests of local populations are taken fully into account” (Shine, 1998, p. 37).

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<sup>10</sup> Nonetheless it must be stressed that this cooperation in the environmental sector will only have a positive impact on sustainable development if does not facilitate and promote unsustainable resource uses – if it does its effects will be detrimental (Conca & Dabelko, 2003, p. 231).

## **6.7 TFCAs, Inclusion of the Local Communities and Ecotourism**

From all the formerly discussed impacts, linkages and interconnections it can be inferred that TFCAs have indeed the potential to promote sustainable development. Nevertheless, there is one crucial factor that can undermine all that positive effects of TFCAs and their spin-offs: that factor is the inclusion or lack of inclusion of the local communities within the TFCAs, from their establishment to their daily operations. The relevance of this matter was made clear during the 1997 Parks for Peace International Conference on Transboundary Protected Areas as a Vehicle for International Co-operation in South Africa: the participants from Southern Africa did not approve of the use of the term “protected areas”, favouring instead “transfrontier conservation areas”. This was due to the poor standing that protected areas have in the region “as places from which local people are excluded and unable to gain any benefit from natural resources to which they have had traditional access” (Phillips, 1998, p. v). At this conference the vital importance of involving “local and indigenous communities in the management of protected areas” was firmly emphasised (Phillips, 1998, p. vi). The inclusion of local communities is of crucial importance, as it is one of the main threats to the success of protected areas and TFCAs.

When protected areas are created, the people who live in and around them sometimes greet their creation with little eagerness and even opposition. This situation occurs because often local communities “have been physically expelled from new protected areas, or forcibly relocated to areas far away from their traditional lands” (Carey et al., 2000, p. 25), and frequently “ownership and settlement patterns of local populations” were not taken seriously into account and they were relocated without being offered “adequate compensation or concern for their livelihoods” (IUCN, 2003c, p. 20). Those living in and around the area and whose livelihoods are directly dependant on them, regard protected areas as inequitable, since they represent a situation where “land and resources are tied-up” (IUCN, 2003c, p. 21). The creation of the protected areas might signify the loss or decrease of “access to things that have previously been available for little or no monetary cost – such as game, fish, non-timber forest products and agricultural land” (Carey et al, 2000, p. 25). These communities who “have often lost access to the natural resources that sustained them economically, socially, and culturally” have been offered little or nothing in return (IUCN, 2003c, p. 20). When the local communities loose their traditional rights, they no longer feel “stewardship of the land and therefore the creation of a protected area can in some cases increase the rate of damage to the very values that the protected area was originally created to preserve” (Carey et al., 2000, p. 25).

Protected areas and their conservation objectives cannot be looked upon and dealt with as independent processes: people must play a central and active role and be involved, and they

must be allowed to harvest the benefits arising from their creation<sup>11</sup>. The communities living in and around TFCAs are nearly solely dependent on the resources provided by those areas, a fact that leads to the very real and great risk for them “to exhaust the very resource base on which (their) survival depends” (Peace Parks Foundation, 2003b). The local communities cannot be alienated or they might engage in poaching and other unsustainable uses of resources (Carey et al., 2000, p. 26). By using conservation as a land-use option these resources can be preserved, but it cannot be forgotten that the creation of a protected area more often than not involves the displacement and relocation of local communities and a considerable change in their accessibility to the resources.

Therefore, if the protected area is to thrive, it must provide alternative subsistence methods to the local communities. They must see and feel themselves the advantages and benefits that the establishment of the protected area brings and one way in which to do so is to “invest and assign some tourism revenue to local communities” (Eagles et al., 2002, p. 159). Yet again one is taken back to ecotourism, considering it offers the opportunity to use “these natural resources” in a beneficial way by the local communities “without depleting them” at the same time as it provides the aforementioned alternative subsistence methods (Peace Parks Foundation 2003b). For example, organised markets provide the communities with a place on which to sell their goods – within some parks in KwaZulu Natal in South Africa women sell their crafts, and at Gonarezhou National Park in Zimbabwe one of the “demands of local communities is for a market at the Park entrance” (Ashley et al., 2000, p. 3). The Peace Parks Foundation (2003d) defends that “only if sustainable economic growth based on ecotourism is ensured, will the people of Africa and elsewhere have reason to protect their natural assets. Only then will these assets have a meaningful value to them and will conservation be ensured” (Peace Parks Foundation, 2003d).

## **6.8 Summary**

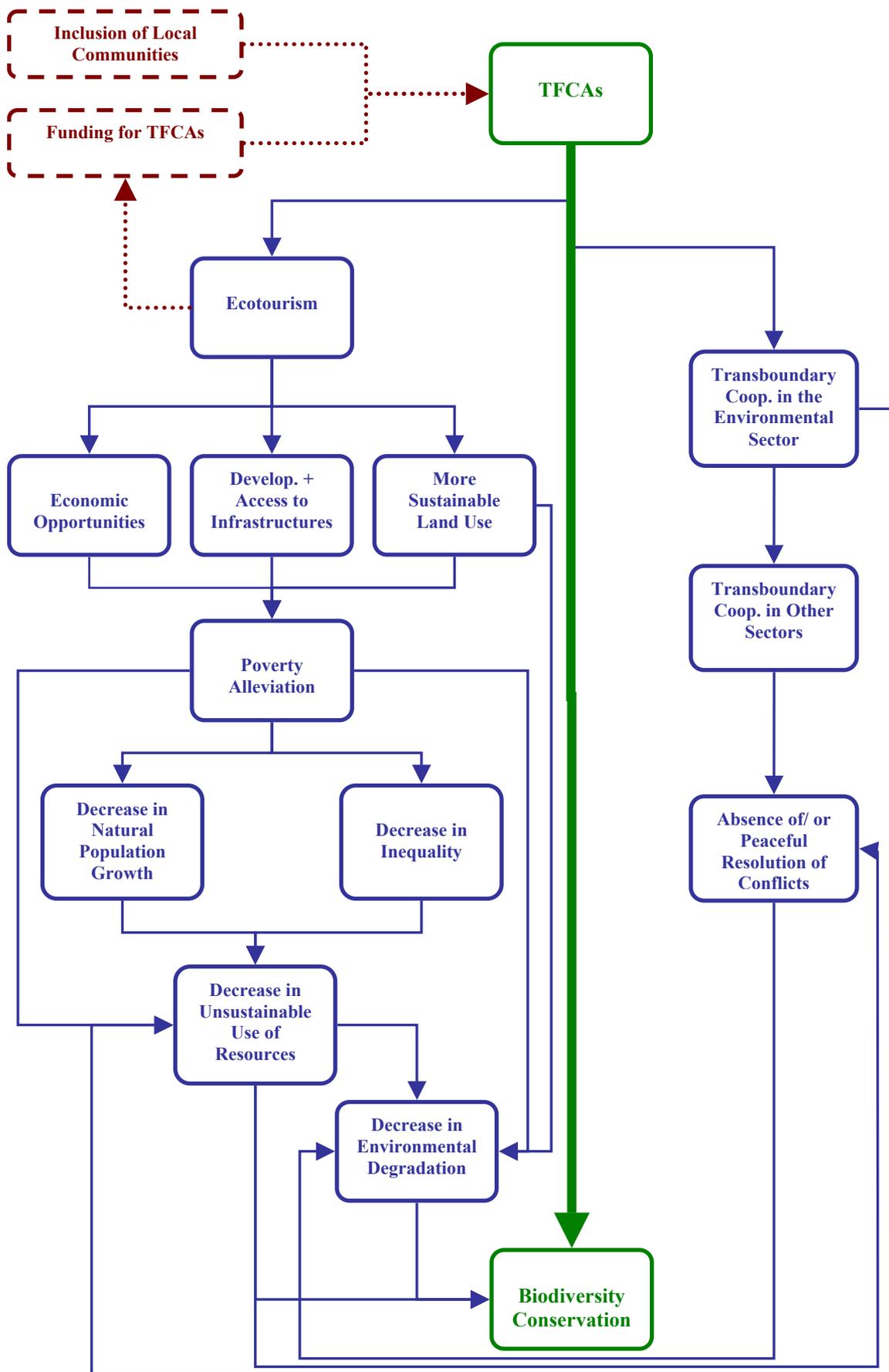
The establishment of TFCAs and subsequent development of ecotourism promotes more sustainable land uses, if the concept is correctly applied, true to itself and therefore practised sustainably. More sustainable land uses prevent environmental degradation and promote biodiversity conservation. At the same time, ecotourism promotes cultural pride and local manufacture of traditional goods which assume importance for the tourist that looks for this particular type of nature based tourism. By doing so and also by developing the local infrastructures and providing alternative income generating opportunities for the local communities, ecotourism advances poverty alleviation, which fosters human development in all

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<sup>11</sup> The issue of the remuneration of the staff working in protected areas in developing countries must be raised: it is many times poorly paid, and consequently “alternative land uses (or destructive activities like poaching) are seen as more lucrative by local people and national politicians” (Eagles et al., 2002, p. 125).

its levels. As the people have access to other revenue generating means from which to draw an income, poverty is reduced and as a result so is the pressure to overexploit and unsustainably use natural resources. Therefore environmental degradation diminishes and biodiversity conservation increases. As the people feel themselves the benefits (and hence see the value) that can derive from using the land for conservation purposes (opposite to purely extractive activities) they will want to preserve the natural resources which provide them with those very same benefits. Furthermore, as poverty is alleviated, natural population growth and inequality decrease. As these diminish, so does the unsustainable use of resources, hence environmental degradation. Moreover, the establishment of TFCAs presupposes good diplomatic relations between the countries involved and requires joint management and collaboration between them not only for the establishment of TFCAs but also for their operations. This cooperation can be extremely beneficial not only from a perspective of increased efficiency in attaining environmental goals but can also promote understanding between all the parties involved: cooperation in the environmental sector can promote cooperation in other areas. Considering that environmental degradation can be a catalyst in generating conflicts, all policies that will prevent it can be considered catalysts for peace: to start with TFCAs foster and require transboundary cooperation in the environmental sector which will lead to more sustainable use of resources and consequently less environmental degradation, acting as a stimulus for peace. It must also be noted that ecotourism represents the best way in which protected areas can access funds and attain a high degree of self-financing. However, throughout the entire process of establishing, managing and operating TFCAs the local communities can by no means be excluded: their inclusion is a key success factor for this initiative.

Due to all these reasons, it can be concluded that TFCAs affect indeed all the three dimensions of sustainable development (environmental, economic and social), whose variables are more often than not extremely intertwined and therefore difficult to disentangle and explore independently (see Figure 4).



**Figure 4. TFCAs – the Main Variables****7. Conclusions**

From conducting this study, it can be concluded that TFCAs can indeed promote sustainable development. Their establishment and operations have the potential to positively impact each of the three dimensions of sustainability – environmental, economic and social, through conserving biodiversity, enhancing economic opportunities and fostering transboundary cooperation. Furthermore, considering the interconnections between these three variables and the impacts they entail, and the cause and effect relationships among several of them, TFCAs are a good example of a potentially thriving sustainable development strategy, true to the essence of the concept, which is all about integrating strategies that successfully incorporate its three dimensions. Still, just like every path has its puddle, TFCAs might bring about damaging results which can hinder their success and consequently deter sustainable development. This can be translated into the harmful effects that unregulated ecotourism might have. Yet another factor to take into careful consideration is the importance of including the local communities within the TFCAs, since their lack of inclusion has the potential to drastically and detrimentally influence some of the core goals TFCAs aim to achieve.

From reading this work, it might seem that not enough emphasis was given to the negative aspects of TFCAs and that no real life case studies were explored in detail. That is entirely correct. Nevertheless one must remember that the aim of this work is to provide a basic conceptual structure for understanding the rationale behind TFCAs, by providing a framework through which the contribution of TFCAs towards each dimension of sustainable development (and consequently towards sustainability) can be analysed. It provides the necessary background information to engage in field work in the area of TFCAs and sustainability. After the completion of this work, one could investigate and verify if the establishment of TFCAs is in practise fulfilling the promises it makes in theory, by exploring if biodiversity conservation really being achieved, if economic opportunities are really being enhanced due to their creation and if transboundary cooperation is indeed a reality between the countries whose territories the TFCAs encompass. At this point it would be enticing to complement this study with interviews and first hand observations of the areas in question in order to combine theory with practise.

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# Appendix 1

Table 1 - Terms and Authors

	Metcalf, 1999	Singh, 1999	Sandwith et al., 2001	South African National Parks, 2002	Peace Parks Foundation, 2003	South African Government Department of Environmental Affairs and Tourism, 2003	Valli Moosa, M., MP, Minister of Environmental Affairs and Tourism South Africa, 2003
Transboundary Protected Areas TBPAs			X				
Transboundary Conservation Areas TBCAs	X	X			X		
Transfrontier Conservation Areas TFCAs	X	X		X		X	X
International Peace Parks		X					
Transfrontier Parks				X			X
Peace Parks			X		X	X	

**Table 2 - Definitions & Authors**

	<b>Metcalf, 1999</b>	<b>Singh, 1999</b>	<b>Sandwith et al., 2001</b>	<b>South African National Parks, 2002</b>	<b>Peace Parks Foundation, 2003</b>	<b>South African Government Department of Environmental Affairs and Tourism, 2003</b>	<b>Valli Moosa, M., MP, Minister of Environmental Affairs and Tourism South Africa, 2003</b>
<b>Transboundary Protected Areas TBPAs</b>			“An area of land and/ or sea that straddles one or more boundaries between states, sub-national units such as provinces or regions, autonomous areas and/ or areas beyond the limits of national sovereignty or jurisdiction, whose constituent parts are especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed co-operatively through legal or other effective means.”				
<b>Transboundary Conservation Areas TBCAs</b>	Uses the World Bank’s 1996 definition of TFCAs as “relatively large areas, which straddle frontiers (boundaries) between two or more countries and cover large-scale natural systems encompassing one or more protected areas.” They “are based upon the idea of some aspect of shared environmental management between nations”	“Areas that span well-defined borders. TBCA boundaries in this context are linked to a precise, linear concept of international borders. TBCAs are created to achieve conservation of biodiversity, cultural heritage, and economic benefits.”			“A cross-border (usually international) park” which presupposes “free movement of tourists and wildlife across international boundaries.”  <b>(the same as Peace Park)</b>		
<b>Transfrontier Conservation Areas</b>	<b>(the same as TBCAs)</b>	“Areas that span regions where the boundaries have not been agreed upon. These are often larger linear regions than borders (Krukoski 1998). In addition to conservation, TFCAs often are created to ameliorate tensions related to disputed borderlands.”		TFCA “usually refers to a cross-border region where the different component areas have different forms of conservation status, such as Private Game Reserves, communal natural resource management areas, and even hunting concession areas. Fences, major highways, railway lines or other barriers may separate the various parts. Nevertheless, they border each other and they are managed for long-term sustainable use of natural resources, although free movement of animals between the different parts is not possible.”		TFCA “usually refers to a cross border region where the conservation statuses of the various component areas differ. These areas may include private game reserves, communal natural resource management areas and even hunting concessions areas. Fences, major highways, railway lines or other barriers many also separate the various parts. However, they are managed for long-term sustainable use of natural resources.”  <b>(the same as Peace Park)</b>	TFCA “usually refers to a cross-border region of which the different component areas have different forms of conservation status, such as national parks, private game reserves, communal natural resource management areas and even hunting concession areas. Although fences, major highways, railway lines or other forms of barriers may separate the various parts, these areas nevertheless border each other and are jointly managed for the long-term sustainable use of natural resources. As opposed to transfrontier parks, free movement of animals between the different parts that constitute a transfrontier conservation area may not always be possible.”

**Table 2 (Cont.) - Definitions & Authors**

	<b>Metcalf, 1999</b>	<b>Singh, 1999</b>	<b>Sandwith et al., 2001</b>	<b>South African National Parks, 2002</b>	<b>Peace Parks Foundation, 2003</b>	<b>South African Government Department of Environmental Affairs and Tourism, 2003</b>	<b>Mohammed Valli Moosa, MP, Minister of Environmental Affairs and Tourism South Africa, 2003</b>
<b>International Peace Parks</b>		<p>“These areas have definite political objectives and are largely symbolic in nature. No legal definition of peace parks exists, but they are created with the following three objectives in mind:</p> <ul style="list-style-type: none"> <li>- The term is generally applied to transboundary cooperation where the primary aim is to confirm, strengthen, or re-establish good relations with a neighbouring state(s);</li> <li>- They may be able to prevent escalation of border disputes, such as Demilitarized Zones;</li> <li>- International peace parks may be able to safeguard important areas of biodiversity that are or were in military zones.”</li> </ul>					
<b>Transfrontier Parks</b>				<p>“Essentially all a Transfrontier Park means is that the authorities responsible for areas in which the primary focus is wildlife conservation, and which border each other across international boundaries, formally agree to manage those areas as one integrated unit according to a streamlined management plan. These authorities also undertake to remove all human barriers within the Transfrontier Park so that animals can roam freely.”</p>			<p>“An area comprising two or more areas that border each other across international boundaries. The primary focus of these areas is wildlife conservation. Authorities responsible for the respective areas formally agree to manage the areas as one integrated unit according to a streamlined management plan. Authorities also undertake to remove all man-made barriers in the transfrontier park so that animals and, to some extent, people can roam freely.”</p>
<b>Peace Parks PP</b>			<p>“Transboundary protected areas that are formally dedicated to the protection and maintenance of biological diversity, and of any natural and associated cultural resources, and the promotion of peace and co-operation.”</p>		<b>(the same as TBCAs)</b>	<b>(the same as TBCAs)</b>	

## Appendix 2

Eagles et al. (2002, p. 33) table enumerating the environmental risks which can derive from tourism in protected areas.

<b>“Element</b>	<b>Examples of risk from tourism activities</b>
<b>Ecosystems</b>	<ul style="list-style-type: none"><li>⌘ The construction of accommodation, visitor centres, infrastructure, and other services has a direct impact on the environment, from vegetation removal, animal disturbance elimination of habitats, impacts on drainage etc.</li><li>⌘ Wildlife habitat may be significantly changed (travel routes, hunting areas, breeding areas, etc.) by all kinds of tourist development and use.</li></ul>
<b>Soils</b>	<ul style="list-style-type: none"><li>⌘ Soil compaction can occur in certain well-used areas.</li><li>⌘ Soil removal and erosion also occurs, and may continue after the disturbance is gone.</li></ul>
<b>Vegetation</b>	<ul style="list-style-type: none"><li>⌘ Concentrated use around facilities has a negative effect on vegetation.</li><li>⌘ Transportation may have direct negative impacts on the environment (e.g. vegetation removal, weed transmission, animal disturbance).</li><li>⌘ Fire frequency may change due to tourists and park tourism management.</li></ul>
<b>Water</b>	<ul style="list-style-type: none"><li>⌘ Increased demands for fresh water.</li><li>⌘ Disposal of sewage or litter in rivers, lakes or oceans.</li><li>⌘ Release of oil and fuel from ships and smaller craft.</li><li>⌘ Propeller-driven watercraft may affect certain aquatic plants and species.</li></ul>
<b>Air</b>	<ul style="list-style-type: none"><li>⌘ Motorised transportation may cause pollution from emissions (from plane, train, ship or automobile).</li></ul>
<b>Wildlife</b>	<ul style="list-style-type: none"><li>⌘ Hunting and fishing may change population dynamics.</li><li>⌘ Hunters and fishers may demand the introduction of foreign species, and increased populations of target animals.</li><li>⌘ Impacts occur on insects and small invertebrates, from effects of transportation, introduced species, etc.</li><li>⌘ Disturbance by visitors can occur for all species, including those that are not attracting visitors.</li><li>⌘ Disturbance can be of several kinds: noise, visual or harassing behaviour.</li><li>⌘ The impact can last beyond the time of initial contact (e.g. before heart-rate returns to normal, or before birds alight, or mammals resume breeding or eating).</li><li>⌘ Marine mammals may be hurt or killed by boat impacts or propeller cuts.</li><li>⌘ Habituation to humans can cause changed wildlife behaviour, such as approaching people for food.” (Eagles et al., 2002, p. 33)</li></ul>