Review

Geoconservation Research

A Review of Geotourism and Geoparks: Is Africa Missing out on this New Mechanism for the Development of Sustainable Tourism?

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Abstract

This article applies the sustainable tourism development paradigm to demonstrate the economic, social-cultural, and environmental potential presented by the concepts of "Geotourism" and "Geoparks" in the quest for sustainable tourism development in Africa. Utilising secondary data sources, this study endorses what has been recognized before that geotourism and geoparks are old wines in new bottles and just subdivisions of geology and tourism. Although arguably still in their infancy and emerging as tourism niche markets awaiting further development and commercialisation, geotourism and geoparks have been identified as tools for sustainable tourism development because they can contribute to environmental, social-cultural, and economic development for rural communities. Although some parts of Africa possess some unique geomorphological features and have tourism potential, the continent has lagged behind in exploiting the opportunities presented by the development of geotourism and geoparks. This review attempts to identify sustainable tourism opportunities presented by geotourism and geoparks. The challenges facing Africa in the development of geotourism and geoparks are examined and a way forward is proposed. This review will be valuable to tourism policy makers, planners, development practitioners, and other stakeholders in Africa..

Keywords: Geotourism; Geoparks; Sustainable Tourism Development; Africa.

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1. Introduction

This paper uses the sustainable tourism development paradigm to review the environmental, social-cultural, and economic potential presented by the concepts of "Geotourism" and "Geoparks" in the quest for sustainable tourism development in Africa. The concepts of geotourism and geoparks are relatively new and are subgroups of geology and tourism (Dowling 2011). Thus, by definition "Geotourism" has been defined as tourism which focuses on an area's geomorphological and topography as the bedrock of championing sustainable tourism development (e.g., Dowling 2013). As with other tourism concepts such as ecotourism, "Geotourism" has a wide-ranging definition that requires settling on a consensus that would be widely acceptable. National Geographic, for example, offers a definition that is broader in content and scope a mix of geotourism, ecotourism, sustainable tourism, and geographic tourism.

"Environmentally responsible - committed to conserving resources and maintaining biodiversity.
Culturally responsible - committed to respecting local sensibilities and building on local heritage.
Synergistic - bringing together all elements of geographical character to create a travel experience that is richer than the sum of its parts and appealing to visitors with diverse interests'
National Geographical website (2019)

Allan (2012) contends that this definition lacks any direct or indirect indication of geological and geomorphic features; the

Access this article online

DOI: 10.30486/gcr.2019.666592

Received: 9 March, 2019 | Accepted: 1 June, 2019

use of this definition leads to a predicament as it widens and exploits the concept geotourism to multidimensional activities.

McKeever & Zouros (2005) defined a "Geopark" as an amalgamated area with geographical heritage of global worth and where this is being used to espouse the socioeconomic sustainable development of the local communities who live in the area. The Global Geoparks Network, a UNESCO assisted organisation established in 1998, defines a "Geopark" as an area protected by a country which contains a number of geological heritage sites of certain importance, uncommonness, or aesthetic appeal. These heritage sites are part of a unified idea of fortification, education, and sustainable development. A Geopark achieves its goals via a three-pronged approach comprising conservation, education, and geotourism. The key word in UNESCO's definition is the education component and the reason why many destinations are developing Geoparks is to use these areas as educational sites for preservation.

Although still at the inception stage and developing as a niche market pending refinement and commercialization, geotourism and geoparks have already been qualified as key concepts that make meaningful contributions to environmental, social-cultural, and economic development in many local communities (Ngwira 2015). However, as the National Geographic Society contends, geotourism is not a niche market; one geotourism study conducted by the Travel Industry Association of America (2003) that was sponsored by National Geographic discovered that 65 million American households were inclined to support the principles of geotourism. National Geographic also noted that as the global population of travelers increases and destinations become more globalised and homogenous, these principles are resonating with travelers around the globe (National Geographic n.d.). Farsani et al. (2011) intimated that it is through involving local communities in innovative sustainable development strategies such as creating geotourism and geoparks it is possible to contribute to the promotion of public local knowledge and the socioeconomic emancipation of underdeveloped communities.

Proponents of the contemporary concepts "geotourism and geopark" emphasise the sustainable development activities that involve local communities for their own benefit. Chen et al. (2015), for example, emphasized the need for geotourism to be developed based on principles that bolster or improve the geographical character of the environment, heritage, aesthetics, and culture of an area as well as the well-being of the residents that live within and around the area. The National Geographic Society is a nonprofit scientific and educational organization that pushes the limits of exploration to advance our understanding of the planet and enables humans to generate solutions for a more sustainable future. This organization argues that geotourism is founded and should be developed and promoted based on a set of principles that foster the enhancement of sustainable destinations. The UNESCO Global Geopark development approach, the European Geoparks Network (EGN), and Charter and the Global Geopark Network (GGN) regulations all insist that geoparks should be developed in rural areas and be founded on sustainable development principles.

The purpose of this review is therefore threefold. Firstly, this article provides a general introduction to the subject matter in this area and provides a conceptual background for sustainable tourism development, geotourism, and geoparks. Secondly, this article discusses, identifies, and examines the geotourism and geopark opportunities (abundance of geological resources) present on the African continent. Major challenges in this area are also identified and examined that hinder Africa from exploring abundant geological resources for sustainable tourism development. Thirdly, based on an examination of opportunities and challenges, a way forward for Africa is proposed to take advantage of the prospects presented by geotourism and geoparks for the development of sustainable tourism on the continent.

2. Methodology

This article is based on a qualitative research design using methods of document and content analysis. As noted by Bowen (2009), document analysis is a systematic procedure for reviewing or evaluating documents that can be either printed or electronic (computer-based and Internet-transmitted). As with other analytical methods in qualitative research, document analysis requires that data be examined and interpreted in order to elicit meaning, gain understanding, and develop empirical knowledge (Owen 2014; Caracelli & Greene 1993; Downe & Wamboldt 1992). Bowen (2009) also noted that the greatest challenge to using document analysis as a research method is sifting through all data to make general observations. This approach is a social research method, an important research tool in its own right, and an invaluable component of most schemes of triangulation, the combination of methods to the study of the same phenomenon (Bowen 2009). Thus, in order to seek convergence and corroboration, qualitative researchers usually use at least two resources via different data sources and methods. The purpose of triangulation is to provide a confluence of evidence that breeds credibility (Bowen 2009). Corroborating findings across data sets can reduce the impact of potential bias by examining information collected through different methods. Combining qualitative and quantitative in document analysis is called the use of mixed-methods.

Various documents contained information on sustainable tourism development, geotourism, and geoparks were collected from diverse scientific literature comprising scholarly publications that have documented original empirical and theoretical work

in this area including journal articles, books, government policy documents, and research reports. Personal observations and experiences gained through considerable work with the World Tourism Organization (UNWTO) coupled with extensive travel across the African continent and the world were other sources of data. Data collection and analysis followed a detailed planning process in order to ensure reliable results and a list of documents to be reviewed was compiled with particular emphasis on the original purpose of this document, the issue of bias both in an author or creator.

The data collected here was analyzed using three distinct approaches, conventional, directed, or summative. Relevant texts from these data were gathered, an organization and management scheme was developed, copies of originals were made for annotation, their authenticity was assessed, and document agenda biases were explored including tone, style and purpose explored and relevant questions were asked in relation to who produced it? Why? When? Type of data? Data content was then explored and content disassembled and reassembled to draw out uniqueness in pattern or behavior. Data was then coded wherever possible in order to trace it back to its origin to carry out a conformability audit to verify the process and research method. The analysis and synthesis followed a development process continually evolving and emerging through constant comparison of newly, acquired data with previously acquired material.

This review should be seen as both complementing and extending the previous work of Ngwira (2015) and Girault (2019). The plan of the paper is as follows; the findings from the data analysis are presented in conceptual background and discussions sections (sections 3 & 4). Conclusion is also provided as a way forward (section 5).

3. Conceptual Background

3.1. Sustainable Tourism Development

The concept of sustainable development is the result of a worldview which views the survival, progress, and continued maintenance of the human community as dependent on the continued health and viability of the Earth's life support systems (Keiner 2005). Sustainable development therefore implies processes of fundamental change in our social systems, institutions, and individual actions. The drive of this change relates to addressing the challenges embedded in 21st Century global awareness that the Earth is finite, and all the planet's life support systems, including environmental, social-cultural and economic, are globally interconnected and interdependent.

The publication of the 1987 Brundtland report, *"Our Common Future*", widely criticised in some circles as lacking specifics, pronounced the moment of truth in introspecting issues of environment, development, and governance. This arguably triggered the concept of "Sustainable Development". The UN-sponsored World Commission on Environment and Development (WCED) led by Gro Harlem Brundtland issued a bold call to recalibrate institutional mechanisms at global, national, and local levels to promote economic development and guarantee the security, well-being, and survival of the planet (WCED 1987, p. 23). Sneddon et al. (2006) emphasises that this call for sustainable development is a redirection of the enlightenment project, a pragmatic response to the problems of our times. The Brundtland report also provided the widely accepted definition of sustainable development: "*Sustainable development is a development that meets the needs of the present without compromising the ability of future generations to meet their own needs*."

The World Tourism Organization (1998) notes that the United Nations Conference on Environment and Development, popularly known as the Earth Summit, held in 1992 in Rio de Janeiro, Brazil, further stimulated the need for sustainable tourism development and was expressed in agenda 21, adopted by the conference. Subsequent to this conference, many nations, organizations, and governments began adopting sustainability as a fundamental development policy. The UNWTO was one of the first international organizations that adopted a sustainable approach to tourism development and preaches sustainable principles in all its tourism planning and development guidelines through the Tourism Global Code of Ethics.

Hunt (1992, p. 2) suggested that the concept of sustainable tourism development is "*one of the healthiest insights of tourism*". [However, the concept is not easily understood and - as policy - certainly not easily implemented (Haider & Johnston 1992; Burr & Walsh 1994). Butler (1993) suggested that a working definition of sustainable development in the context of tourism could be taken as "tourism which remains viable over an indefinite period and does not degrade or alter the environment (human and physical) in which it exists to such a degree that it prohibits the successful development and well-being of other activities and processes"(see more detail in Burr 1995).

In line with Butler's suggestion, UNWTO has defined "sustainable tourism" as "Tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities." This 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 (World Tourism Organization 2017).

According to Wight (1993), Liu (2003), Harris et al. (2002), and Saarinen (2006), the concept of sustainable tourism development is anchored on three pillars, or approaches, environmental, social-cultural, and economic sustainability. The tourism industry consequently needs to be fully sustainable, deeply anchored on these three processes, and address factors that hinge on these approaches. Environmental sustainability is probably the most familiar or best-known aspect of sustainable tourism.

In relation to sustainable tourism development, "Environmental sustainability" is probably the main pillar. This concept means and emphasizes the conservation of both the natural environment, (such as forest and water sources), natural landmarks, and the artificial built environment which includes tangible cultural heritage, art, architecture and historic monuments (Melville 2010). Dyllick and Hockerts (2002) stress that environmental sustainability should be more than just ecologically friendly and should focus on ensuring that tourism has little effect on existing natural and manmade environment and heritage so that this is preserved for future generations to enjoy. Environmental sustainability therefore entails limiting human stresses on ecosystems central to the sustainability of our global system (Wackernagel and Rees 1998). The concepts of geotourism and geoparks ensure that all tourism activities do not pressure the geomorphological and ecosystems within a region beyond their inherent renewal processes.

Tourism is a human industry that has an impact on the social-cultural sustainability of people's way of life (Higgins-Desbiolles 2006). Consequently, an increase in tourism activities at any destination brings both positive and negative socio-cultural impacts on the community. There is an exchange of ideas and cultural values on the one hand, while on the other hand there is increased congestion and overcrowding in towns and cities, possibly an increase in crime, the introduction of new languages and values, and perhaps even an influx of migrant workers who are employed in enterprises. As noted by Mbaiwa (2005a) the main objective of socio-cultural sustainability is to encourage the positive aspects of these changes while minimising the negative influence of tourism. Socio-cultural sustainability in tourism focuses on encouraging cultural exchanges between tourists and locals, preserving local traditions, and protecting tangible and intangible cultural heritage of the community (Farsani, et al. 2012). Socio-cultural sustainability in tourism development advocates for the reduction of negative impacts and focuses on more positive ones, such as promoting cultural exchange and preserving local traditions, mainly achieved by getting local communities involved in tourism development activities (Ashley et al. 2000; Briassoulis 2002; Ritchie & Crouch 2003). Community involvement not only offers visitors a more genuine experience, but locals will be more likely to view tourism in a positive way because they will be part of it and benefit. Social-cultural sustainability is therefore at the centre of the concept of geotourism and geoparks.

The last pillar and perhaps the most important part of sustainable tourism development revolves around economic gains. Many people don't consider economics that much when thinking about tourism sustainability, but it is one key element in making any tourism venture sustainable. Economic sustainability means building linkages and reducing leakages, essentially keeping earnings within the local community (Mowforth & Munt 2015). Mbaiwa (2005b) argued that foreign owned and operated tourism enterprises are not likely to contribute much to the local economy because expected revenues will likely leak overseas. This is not sustainable. Milne & Ateljevic (2001) contended that not only should the community be involved in tourism, they should also share in the financial benefits. As emphasized by Tosun (2000), the main objective of economic sustainability in tourism development is to ensure that the local community profits economically through activities. Ryan (2002) reaffirms that economic sustainability in tourism development should focus on keeping economic gains within the local community. Promoting locally run businesses and offering employment opportunities to locals in varied tourism enterprises helps in promoting sustainable tourism while still giving back to the local community.

The three pillars of sustainable tourism development, environmental, social-cultural, and economic are inter-related. Thus, any impact on one of them will trigger similar effects on the others. This means that to realize long-term success in sustainable tourism development, a balance should be struck among key approaches. Geotourism and geopark concepts as tools for sustainable tourism can provide a lot of benefit to the local community, creating a solid foundation for the locality community and the tourism industry at large. Tourism can only be sustainable and successful in the long term when it has minimized negative effects on the environment and socio-cultural and economic activities while still adding to the development of the local community.

3.2. Geotourism and Sustainable Tourism Development

As assumed by Dowling (2013), geotourism is a new form of tourism based on the geological environment. Ngwira (2015) quoted Neto de Carvalho & Rodrigues (2009) and asserted that, this mode can be traced as far back as 1956 when one pioneer of Italian geology, Michele Gortani, stated that: "*to the geologist's mind, the landscape comes alive and talk. Every stone, every form of coast or mountain or valley tells its story, evoking the vicissitudes of its history and it's becoming*". Hose (1995)

argues that the concept of geotourism was developed and promoted at the beginning of 1990s, while others have contended that this is a relatively noetic term and did not yet appear in dictionaries (Farsani 2011; Joyce 2006; Pralong 2006). Despite all the academic arguments regarding the sources or the beginning of geotourism, this concept has received wide attention over the last ten years both in theory and in practice.

Geotourism offers a new form of sustainable tourism which is more holistic than other previous niche forms such as ecotourism, green tourism, pro-poor tourism, and rural tourism. Although ecotourism and other forms centered on biodiversity have been widely investigated and applied in both theory and practice for more than three decades, geotourism and its subsidiary concept of geoparks, geoheritage, geodiversity, and geoconservation are all relatively new (Buckley 2003; Hose 2006; Hose et al. 2011; Dowling 2014). In contrast to other forms of sustainable tourism, geotourism focuses on an area's geology and landscape as the basis of fostering sustainable development. It starts with a conversance of the inanimate environment, to build greater awareness of the animate environment of plants and animals as well as the cultural environment of people, past and present (Dowling & Newsome 2006).

Newsome et al. (2012 a,b) underscores geotourism as an emerging sustainable tourism phenomenon globally with initial focus on experiencing the Earth's geological features in way that encourages cultural understanding, appreciation, and conservation and that is locally beneficial. These workers further noted that it promotes tourism to geosites and the conservation of geo-diversity and an understanding of Earth sciences through appreciation and learning. Robinson (2008) notes that geotourism is ecologically sustainable tourism that explains the scenery in terms of how geological processes formed the patterns that can be observed in landforms in a plethora of landscapes such as mountains, deserts and islands as well as in the rock outcrops that can be observed in coastal cliffs, creeks, road cuttings, lookouts, quarries, mine sites, and through walks in national parks. Many of these are erosional sites; none need to be ecologically challenged. Ngwira (2015) adds on stating that "*Potential impact of increasing world tourism is immense, and this should preclude, or at least severely restrict, its involvement with wilderness areas, global tourism must be ecologically sustainable and shifting the emphasis from other forms of sustainable tourism such as ecotourism to geotourism represents a positive step towards a more sustainable global tourism industry*".

Kiernan (2013) contends that geotourism is sustainable tourism invigorated, which means that it sustains the geomorphological features of a tourist destination and augments them by of restorative and constructive geological and other tourism products in a manner that fits the nature of a destination. Lazzara and Aloia (2014) added that geotourism is a new form of sustainable tourism that helps to revamp local economies through the revenue generated from geotourists. Tourism development and the application of systems that assess the tourism potential of cultural and heritage assets including cultural, physical, products and experiential values is of vital importance for the sustainability of destinations. Geotourism helps to preserve and develop local cuisines based on distinctive local ingredients supplied by local farmers and can help to retain traditional cultural celebrations and performing arts that would otherwise disappear. This kind of tourism can also help to beautify ugly places and enrich poor places (Zangmo et al. 2015). Dowling (2013) notes and stresses that geotourism will only be sustainable where there are benefits for the host community which may be social and/or cultural or environmental and will not necessarily be confined to economic benefits. Gordon (2018) also intimates that in today's contemporary world, geotourism is a cultural response to the physical landscape. More specifically, this combines geologically based tourism in suitable locations with understanding, education, and consciousness raising to foster geoconservation and sustainable economic benefits for local communities based on geoheritage

3.3. Geoparks and Sustainable Tourism Development

The United Nations Educational, Scientific and Cultural Organization (UNESCO) is responsible for coordinating international cooperation in education, science, culture, and communication as well as strengthening ties between nations. UNESCO ensures that societies grow and live in a cultural environment rich in diversity and dialogue and where heritage serves as a bridge between generations and peoples. This organization states that associated to the development of geotourism is the evolution of geoparks; consequently, UNESCO has defined a geopark as "*an area with a geological heritage of significance, with a coherent and strong management structure and where a sustainable economic development strategy is in place*" (UNESCO 2006). Previous workers, such as McKeever and Zouros (2005), have defined a geopark as a "unified area that advances the protection and use of geological heritage in a sustainable way and promotes the economic well-being of the people who live there". These are therefore unified geographical areas where sites and landscapes of international geological significance are managed within the holistic concepts of protection, education, and sustainable development.

According to Gordon (2018), the philosophy behind the concept of "geoparks" was first initiated in 1991 at the Digne convention as a means to preserve and promote geological heritage and sustainable development at the local level through a global network of territories that hold geology to be of exceptional value. In 1997, in direct response to the "Declaration of the

Rights of the Memory of the Earth", the UNESCO Division of Earth Sciences introduced the UNESCO Geoparks Programme to support national and international endeavors in Earth heritage conservation. Some scholars however argue that geoparks are neither a UNESCO program nor a UNESCO initiative although the organisation has made tremendous contribution towards the promotion of the concept (Ngwira 2015).

Zouros & McKeever (2009) note that the geopark concept highlights the potential for interactions between social, economic development, cultural development, and conservation of the natural environment, all key factors in sustainable development. Over past decades, the geopark concept has been pursued by many tourism destinations as an efficient management approach for protecting natural and cultural resources and promoting geotourism. The contemporary geoparks initiative adds a new dimension to the 1972 Convention relating to the protection of the World Cultural and Natural Heritage by highlighting the potential for interactions between socioeconomic, cultural development, and conservation of the natural environment. Geoparks address the strong need for the effective management of important geological sites and for the sustainable economic development of rural areas through the development of geotourism and thus enhance the value of Earth heritage, landscapes, and geological formations. The main purpose played by the geopark concept as a means of sustainable development is to make a meaningful contribution to the improvement of local economies (Zouros & Mc Keever 2004).

As noted by Farsani et al. (2011), the establishment of geoparks as a means for developing sustainable tourism helps to generate new job opportunities, new economic activities, and additional sources of income, especially in rural areas. These also encourage the production of local products such as arts and handicrafts which are directly linked to geo- and ecological products. A geopark bottom-up development approach of combining conservation with sustainable development while involving local communities is becoming increasingly popular and significant to rural communities around the world. Results from studies on the development of geoparks and from the regions where geoparks have been adopted, developed and promoted confirm that at local community levels, the trickle-down effect of growth that benefits from activities easily reach poor and vulnerable groups (Halim et al. 2011; Farsani et al. 2012; Newsome et al. 2012a, b).

Despite all the positives of the geopark concept, there are challenges to development and implementation. The main challenge in the development of geoparks as a means for sustainable tourism development lies in ensuring the effective participation of local communities and multifaceted sustainability which requires commitment from individuals, the community, development agencies, and policy makers to channel suitable socio-economic-driven policies and projects aimed at improving local livelihoods and to encourage bottom-up participation among locals by including them in development and planning processes.

3.4. Opportunities presented by Geotourism and Geoparks

Geotourism and geopark concepts have emerged as opportunities for sustainable tourism development, rural development, and poverty alleviation. Debatably the two concepts have immense potential to help in the global fight against poverty especially in developing countries and make contribution to the conservation of the environment, heritage and economy of many poor rural areas in the world. Studies on geotourism and geoparks have concluded that great opportunities can be derived from these two concepts in terms of contributions to poverty alleviation and environmental conservation (see:., Ngwira 2015; Farsani et al. 2011, 2012, 2014; McKeever et al. 2010; Dowling 2009; Piranha et al. 2009). Farsani et al. (2011) noted that one of the main strategic objectives of a geopark is to stimulate economic activity and sustainable development. A geopark seeking UNESCO's assistance also fosters socioeconomic development that is culturally and environmentally sustainable; this will have a direct impact on the area involved by improving human living conditions and the rural environment. Geotourism development also represents a partnership between the government, local people, and private sectors, local businesses, outdoor companies, tour agencies, restaurants, and accommodation. These partnerships are welcome because they make good economic sense and benefit all partners (Dowling 2009).

In one example, Dowling (2009) discusses the first Australian geopark, the Kanawinka ("the land of tomorrow") Geopark that was created by the local Buandik people. Through the creation of this geopark, a number of local enterprises and small businesses have been established which are generating new sources of revenue. A number of employment opportunities have also been created within the community while protecting georesources. This geopark has also fostered an educational and training regime for the community which includes several tools and activities to communicate geoscientific knowledge and environmental concepts to the public and local community.

McKeever et al. (2010) discussed the creation of the Lesvos Petrified Forest European Geopark and noted that it transformed the western Lesvos region, attracting 90,000 visitors annually and employing 35 locals directly alongside hundreds of new indirect jobs. This geopark is now the island's main visitor attraction and is an excellent example of how a holistic approach to conservation can be successful from the perspective of the local community. As geoparks and geotourism are opportuni-

ties for rural development, they also reduce unemployment and migration rates by engaging local communities. Thus, geopark authorities have adopted some positive policies toward stimulating the participation of locals for economic prosperity and the preservation of natural resources (Farsani et al. 2011).

The concepts of geotourism and geoparks are becoming more and more popular due to their combination of conservation, sustainable development, and community involvement. At the same time, however, although there has been a growing body of research in this area and an understanding of the supply side of geotourism and geoparks, relatively little is known about the demand for these products.

4. Discussion

4.1. Africa's geotourism and geoparkpotential.

As noted by Ngwira (2015), the African continent is one of the most fortunate regions in the world, blessed with abundant undisturbed natural resources unparalleled on any other continent. Some examples of Africa's rich geomorphology include the Drakensberg mountains of South Africa, the ancient pyramids of Egypt, the cradle of mankind in the Ethiopian rift valley, the rushing sand dunes of the Sahara desert, the best white sandy beaches in the world in the Seychelles, the h slave coast of West Africa, the smoke thundering water sprays of the mighty Victoria Falls, and the rich Serengeti plains overflowing with wild animals still roaming the wilderness. The geomorphological heritage of Africa is diverse and complex.

Africa encompasses rich geodiversity which regrettably is not well known to the public (Errami et al. 2015). Indeed, as noted by Reimold (1999), the treasures of exceptional geological sites and the value African stratigraphy has in the midst of the global geological record, practical geoconservation on this continent has not been prominently highlighted to date. In the interest of science, education, and tourism, unique and typical geosites need to be identified, categorised, compiled, and prioritised with the aim of then being protected to make contributions to the overall sustainable development of the continent. In contrast to other parts of the world like Europe, America and Asia where geoconservation is actively pursued for preservation and for economic benefits to local communities, geoconservation development and management in Africa has been very poor. As noted by the Struik Nature House of South Africa, "*Africa is home to more than the Cradle of Human kind. It was the core of the ancient supercontinent Pangaea and comprises some of the oldest and most extraordinary geology on planet Earth*" (Anhaeusser et al. 2016). The continent offers geologists, business and leisure travelers, and lay enthusiasts alike the opportunity to understand Africa's most intriguing landforms, sites, and geological features.

The geosites and rich biodiversity of Africa encompass different heritage values ranging from scenic, documental, symbolic, iconographic and representative, all implicitly usable for diverse purposes including educational, economic, and scientific. The most important and probably most neglected purpose, however, is the development and advancement of sustainable tourism (Henriques & Neto 2015). Schumann et al. (2015) noted that a sound perspective of geological heritage and a compensatory reverence to this is a significant feature in the holistic approach to sustainable development. Geosites around the world very often contain a multi-faceted "story" which may date back from very recent times to billions of years ago. As such, geosites and biodiversity are of great historical, educational, scientific, cultural, and socioeconomic value. In Africa, such sites have regrettably not received the attention they deserve; indeed, of the many geosites that Africa possesses, the Drakensberg Escarpment M of Southern Africa and parts of the Sahara in North Africa are two with the potential to be developed as geoparks for the benefit of local people who live in, or around, these areas.

Harrison et al. (1997) noted that the Drakensberg Mountains are one of the major mountain ranges in southern Africa and have dramatic scenery, high levels of biological endemism, and a concentration of rock art spanning 4,000 years. The highest reaches of these escarpments feature sheer basalt cliffs with ramparts of golden sandstone rising above high rolling grasslands, rocky gorges, and pristine steep-sided valleys. Hundreds of sandstone caves and rock shelters harbour the largest concentration of early rock art in sub-Saharan Africa. The Drakensberg range is characterized by basaltic buttresses, golden sandstone cliffs, and steep sided forested river valleys as well as a diversity of habitats protecting endemic and threatened species of plants and animals. In terms of tourism, the spectacular Drakensberg Mountains in KwaZulu-Natal, South Africa, were awarded World Heritage Site status by UNESCO in 2001; this range offers scenic beauty, great hiking, world renowned San (bushmen) rock art, and a spiritual atmosphere as well as numerous other tourist activities and accommodations (Blignaut et al. 2008; Bushell and Eagles 2006). The communities who live within, and around, this geosite have also benefited, and continue to benefit, from its presence. The Drakensberg area represents a pole for tourist due to the diversity of activities offered here, in addition to friendly climatic conditions. Tourism in this area has grown remarkably, has involved local communities, and provides positive socioeconomic benefits (Draper 2000).

The Sahara Desert is the largest hot and third largest desert in the world after Antarctica and the Arctic. This region measures 9,200,000 square kilometers (3,600,000 sq mi), similar in size to the area of China or the United States (Tucker et al. 1991). In terms of climate, Kröpelin et al. (2008) noted that

the Sahara is the world's largest low-latitude hot desert. This area occurs at steep latitudes and subtropical elevations and experiences a significant belt of semi-permanent subtropical warm-core high pressure where the air from upper levels of the troposphere tends to sink towards the ground. This steadily descending airflow causes a warming and a drying effect in the upper troposphere; sinking air prevents evaporating water from rising and, therefore, prevents adiabatic cooling which makes cloud formation extremely difficult. The flora of the Sahara is highly diversified because of the biogeographic characteristics of this vast desert. Floristically, the Sahara encompasses three zones based on the amount of rainfall received which are the Northern (Mediterranean), Central, and Southern Zones. The Saharan flora includes around 2,800 species of vascular plants, approximately a quarter of which are endemic (Mares 1999; Le Houérou 2009).

The attractions and activities found within the Sahara Desert are incredibly popular with tourists who want an authentic experience, especially those which include outdoor adventure activities. The Sahara is actually home to a great many tourist attractions and several breathtakingly beautiful oases. Tourists chose to stay in resorts or camps under the stars and dine with local communities who live in the desert (Di Lernia 2005; Keenan 2005). The emergency of geotourism and geopark concepts over recent decades presents a unique opportunity for Africa to advance the role its varied geosites and biodiversity can play in development, conservation, and the promotion of a sustainable development agenda.

In order to contribute to this cause, the African Geoparks Network (AGN) was created to increase the awareness of the local population and decision makers regarding the need for the sustainable use and management of geoheritage for the benefit of locals. Africa's extraordinary geodiversity together with ecological resources and profound cultural heritage provides a valuable basis for the development of geotourism and geoparks (Errami et al. 2015).

4.2. Tourism potential

Tourism is one of Africa's most promising sectors for socioeconomic development. The African continent is one of the remaining regions in the world that has a wild and unspoilt culture as well as landscapes and pristine wildernesses packed with undisturbed and undiscovered biodiversity. The tourism potential of Africa includes raw, refined, complex, simple, and inspiring products and services which means that visitors to this unspoilt continent often experience a desire to return (Teye 1988; Ankomah and Crompton 1990; Dieke 2003). Africa's tourism offering has been attractive to many tourists. Africa's tourism potential is an amalgamated of varied products ranging from rich cultural heritage, abundant wildlife, unspoiled wilderness, varied cuisines, diverse linguistic, rich and unrivaled history (Ankomah and Crompton 1990; Fayissa et al. 2008).

Briedenhann and Wickens (2004) pointed out that with every successive tour to Africa, whether one is visiting the southern part of the continent or the north, east, west or central, this region always has something new and unique to offer from climbing mount Kilimanjaro (the highest mountain in Africa) to safari viewing of the big five and other wildlife in unspoiled parks, to visiting the historical Gold Coast of west Africa (major slave trading sites in West Africa) or spending time with diverse African communities. The tourism experience and affection, the continent offers, increase humans' deeper appreciation.

Osunde et al. (1996) contended that in the eyes and minds of many westerners and those who have never visited Africa; this continent is often perceived as just a land of adventurers and explorers. Although Africa is undeniably diverse and different, this has never been a "lost continent", just unfamiliar, underappreciated, misunderstood, and forgotten. Anybody who has ever visited Africa has taken a part of it away.

Despite its immense potential, tourism in Africa remains largely untapped. However, if developed effectively, there is clear potential for this sector to accelerate both economic growth and job creation. The sector also has the capacity to contribute significantly to the social inclusion agenda, as cultural endowments and natural assets can be leveraged to create opportunities for local communities (Gauci et al. 2002; UNWTO 2016). Africa's place in the global community is defined by the fact that this continent has an indispensable resource base that has served humanity for so many centuries.

4.3. Key challenges

Despite the geomorphological and tourism potential of Africa, this continent continues to face challenges on many fronts that are hinder ability to move at the same developmental pace as the rest of the world. Some of these major challenges include:

- *Limited research*: Limited empirical studies and research work has been undertaken on the geoheritage and geoconservation of various countries in Africa, especially those with that explore, inventory, and valorise the inherent geodiversity (Errami et al. 2015). In today's' ever-changing world, humans at all levels are tasked with delivering foundational concepts and content necessary for the next generation to incorporate evidence-based solutions

to problems. Africans need skills to evaluate the quality and relevance of the content they are incorporating into their expanding development knowledge database. A large gap remains in research capacity between Africa and the rest of the world in all disciplines. Addressing challenges in the physical sciences and tourism remain particular hurdles.

- *Lack of strong, vibrant non-governmental organisations (NGOs):* The bulk of African countries do not have vocal and vibrant NGOs such as a strong geological society (which could drive projects like geoconservation) or strong support from the private sector for environmental work. Fowler (2013) asserted that strong and vibrant NGOs necessitate collaborative performance that continually draws upon ideas and techniques from other fields as part of an ever-changing development agenda.

- *Lack of innovation:* As discussed by Reinganum (1989), innovation is the driving force of development; without innovative concepts and ideas we would not have most of the tools and services that provide us with a level of prosperity today that far surpasses that seen in the past. Innovation is not solely represented by new devices, ideas, or methods, but also by the process of uncovering new ways to do things. This can also pertain to modifying business models and adapting to changes to achieve better products and services (Rennings 2000). Africa has lagged behind in this area, an unfortunate situation that has contributed to an inability to exploit the sustainable opportunities presented by geotourism and geopark concepts.

- *Underdeveloped infrastructure*: An adequate supply of infrastructural services have long been viewed as a key ingredient for economic development both in the academic literature and in practice. Africa continues to be placed at the bottom of all developing regions in terms of infrastructure performance and an increasing number of developmental researchers point to this deficit as a major hindrance to tourism development growth and poverty reduction across this region (Calderón and Servén 2010). Roller and Waverman (2001) advocated that greater economic activities, enhanced efficiency, and increased competitiveness on the African continent are hampered by underdeveloped infrastructure when compared to other regions of the world. Inadequate transport, communication, water, and power infrastructure are some of the impediments to tourism development in Africa.

- *Lack of collaboration*: Africa is the world's second largest and second most-populous continent after Asia. Encompassing 54 countries with diverse historical, economic, social-cultural, and political backgrounds, collaboration has proved to be one of the biggest challenges towards development. Small (2002) noted that in today's society, collaboration has become the norm in the world. Regions, countries, communities' corporate companies, individuals from all lifestyles are teaming up to work together face-to-face or virtually for mutual benefits. Why is collaboration so crucial? Theoretical and practical experience confirm that "collaboration" ensures that individual are trained and knowledge is generated that can be fed into policymaking and development processes. To realise the potentialities presented by geotourism and geoparks there is need for African countries to work together.

5. Conclusion

This literature review has shown that the concepts of geotourism and geoparks are relatively new, but presents essential credentials for poverty alleviation and sustainable development for many African countries. However, without in-depth understanding of role that each concept of tourism like 'Geotourism' and 'Geoparks' can play in overall sustainable economic development; the efforts of developing tourism as a key component that would make meaningful contribution to Africa's social-economic emancipation will be fruitless.

This scholarship has further reaffirmed the fact that sustainable tourism development involves balancing environmental, social-cultural and economic objectives so that tourism remains viable in a destination for an indefinite period. As a concept, 'sustainability' refers to the capability of an ecosystem to maintain ecological processes and functions, biodiversity and productivity over time. In practice, the meaning of 'sustainability' is varied, but there is agreement that people must learn how to sustain environmental resources so that they continue to provide benefits for the present generation of living things and not compromise the same for future generations.

Consequently, by utilizing sustainable tourism development paradigm this scholarship has demonstrated the economic, social-cultural and environmental potentialities presented by 'Geotourism' and 'Geoparks' in the quest for sustainable tourism development in Africa. However, despite many parts of Africa possessing exceptional geomorphological features and tourism potential the continent is lagging behind in exploiting opportunities presented by the development of geotourism and geoparks.

Through this review of what has been done before, this article has determined some challenges faced by the Africa in the development of geotourism, which mainly includes; limited empirical studies and research work undertaken in on the subject matter in various countries on the continent, especially those with the intent to explore, inventory and valorize such inherent geodiversity, lack of quantifiable policies, guidelines and legal frameworks to drive the development of geotourism and geoparks. Furthermore, possibly debatable lack of strong vocal and vibrant non-governmental organizations such as a strong geological society which could drive projects like geoconservation as the driving force for sustainable development, lack of innovation among private sector business to exploit opportunities presented by geotourism and geopark concepts, under developed infrastructure to aid the development of geotourism and geoparks in communities and lack of collaboration and strong support among stakeholders. Both theoretical and practical experiences show that collaboration ensures that all concerned parties are trained, and knowledge is generated that can be fed into policymaking and development processes.

Consequently, going forward there is need for further research and investigation of the role that Geotourism and Geoparks can play in the overall development of Africa. Since geotourism and geoparks are opportunities for rural development, they offer prospects for reducing the rate of poverty through engaging local communities through various social-economic activities; there is need for quantifiable actions. Respective African policy makers need to develop and implement strategic policies guidelines and legal frameworks aimed at promoting geotourism and geoparks as a spring board for sustainable tourism development in Africa.

Furthermore, geotourism practioners and geopark managers must adopt some positive policies toward stimulating locals' participation for local economic prosperity, poverty alleviation and sustainable development. This new vision of geotourism and geoparks has presented an opportunity for Africa to create new products (geo-products, geo-menus in restaurants, etc.), new jobs (geotourism, geo-restaurants, geo-bakeries and rural hotels) and new recreational activities (geo-sports, geo-monuments, geopark museums, etc.) for local communities. It is worth mentioning that these recreational activities that are related to topography and geology, in some ways, are educational too. To realize the potentialities presented by geotourism and geoparks in Africa there is need to identify and utilize Africa's resources (natural, monetary, human and cultural) efficiently and effectively, overall, sustainability is key to Africa's tourism development.

Conflicts of Interest

The author declares no competing interest

Acknowledgments

Thanks are due to Prof Fackson Banda, a UNESCO Programme Specialist (Memory of the World Programme Section for Universal Access and Preservation Knowledge Societies Division Communication and Information Sector).

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