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# **Rough road to the stars: A route development framework for Astro Tourism in the Karoo arid region**

## **Introduction**

Approximately 70% of the world's poorest populations live in rural areas, particularly in developing countries (Okech, Haghiri and George, 2012; Ursache 2015). Located on the distant periphery of urban and more developed metropolises, these areas are often economically disadvantaged; have sparsely scattered populations; lack inadequate bulk infrastructure; and with inhabitants with low literacy levels and very high unemployment rates. For rural areas to be developed sustainably, main attractions are ideally integrated with other tourism activities as well as agricultural. Co-existence depends on effective collaboration between the respective management authorities and routes offer a vehicle towards this end (Ashley and Roe 2002). The objective of a tourism route is to bring together a number of activities and attractions to enhance tourist satisfaction and consumption under a combined brand and joint marketing (Lourens 2007). Tourism routes are, moreover, a partnership of the "... historical, economic and cultural elements between cities, smaller towns and tourist historic cities and regions" (Meyer 2004:7) with the aim to improve the attractiveness of the area (Marques and Santos 2014). As an effective, unique and flexible tourism product offering it enables tourists to (mostly independently) plan and design their own vacation itinerary through a region (Hashim, Ismail and Ahmad 2013).

Infrastructural development at identified areas along the route and the increased demand for modern technology by tourist and commercial enterprises as well as business relationships are all improved by the establishment of a new tourist route (Kovács and Nagy 2013). As illustrated in the case study of this paper, science projects such as the Square Kilometre Array (SKA) have potential to advance ICT usage across the tourism industry (Hatchuel 2013). The tourism industry's strengths have to be matched by the commercial, economic and logistical strengths of local municipalities (Okech et al. 2012). Rural areas are most conducive towards the hosting of science and astronomy project initiatives as these areas have atmospheric transparency, low levels of light pollution, low population density and minimal radio frequency interference (Astronomy Geographic Advantage Act No, 21 of 2007:14). Such initiatives include the development of the country's knowledge base by establishing scientific and astronomy facilities in the surrounding areas. These routes provide an enabling environment for such facilities to be easily accessible and equipped for tourism consumption. Along with South African government's mandate to develop rural areas, the public's general interest in astronomy is slowly but steadily rising and coupled with effective integration of public and private sector initiatives, this field may hold great socio-economic benefits through integrating scientific facilities alongside the local tourism industry (after SKA South Africa, online). It also aligns with the worldwide trend toward niche marketing by destinations as unique selling propositions (Louren 2007).

## **Literature Review**

### ***Sustainable tourism in rural areas***

Though rural areas are regarded as "heterogeneous" (Okech et al. 2012; Polo Pena, Jamilena and Molina 2012), there is one distinct common feature: visitors seek authentic interaction with the natural and cultural environment (Huimina and Ryan 2012; Viljoen and Tlabela 2006). Sustainable tourism places emphasis on the space and duration, as well as the intent and beneficitation of development (Espiner, Orchiston and Higham 2017). Development is an

extremely complex and multidimensional concept (UNDP in UNWTO 2015). Sustainable development is defined according to the UN Brundtland Report of 1987, as “... development that meets the needs of the present without compromising the ability of future generations to meet their own needs” It entails a process of change, aiming to satisfy human needs and aspirations, while protecting the natural environment and ensuring the economic viability of communities. It is important that the various stakeholders involved support and understand the discipline of sustainable development, from the level of the decision-makers to grass-root levels. Good governance and collaboration that entrenches indigenous principles is unambiguously necessary for the positive outcome of any developmental initiative (Carr, Ruhanen and Whitford 2016; Dabpheta, Scott and Ruhanen 2012). Sustainable practices differ from region to region and understanding the concept as well as the associated roles and responsibilities enhances the social interactions that will, in the end, strengthens a region’s unique local development process (Puhakkaa, Sarkki, Cottrell and Siikamäkia 2009). Sustainable tourism contributes significantly to job creation and poverty reduction amongst local communities (Zolfani, Sedagha, Maknoon and Zavadskas 2015); effectively pairing with a pro-poor tourism approach. The South African government perceives niche markets as a unique leverage to inclusively develop a destination. Micro-enterprise development is vital for a pro-poor approach as SMME development is encouraged, thereby adding value to tourism routes and creating new business opportunities (Snowball and Courtney 2010).

### ***Tourism Routes***

Tourism routes bring together a variety of activities and attractions under a unified theme to be marketed as a collective tourism brand (Lourens 2007). This type of tourism, also known as drive tourism, entails visitor movement between attractions stretched over long distances and away from the usual tourism nodes to rural and small town areas (Atkinson 2008; Bialostocka 2013). Visitors are increasingly interested in the natural environment and experiences that offer flexibility, meaning, escape from urban life, rejuvenation and novelty (Kim 2014; Maximiliano and Séraphin 2017). Tourists are also seeking areas to get away, such as those provided by Astro Tourism (Eusébio, Kastenholtz and Breda 2014). Routes function as anchors to market offerings collectively and competing more effectively with larger established tourism destinations. It spreads tourism distribution by luring special interest tourists to less explored areas through niche offerings (Lourens 2007). These routes are a great way for towns to develop partnerships and foster co-operation, instead of competing with one another (Donaldson 2007; Meyer 2004; McLaren and Heath 2012; Rogerson, 2007). Tourism route development holds potential to stimulate economic growth and entrepreneurial opportunities through the development of ancillary products and services (Briedenhahn and Wiekens 2004; Visser and Rogerson 2004), aligning to Sustainable Development Goal nr.5 (Rogerson 2006). Success and sustainability is dependent on private businesses promotion and public sector development of the enabling environment (McLaren and Heath 2012). It demands that communities and interested stakeholders work together to market a regional theme as attractions are small-scale and vast distances from cities and major markets (Ramsey and Everitt 2007). A synergised approach strengthens regional ties and allows for a greater spread of visitor spend and bed nights (Hashemi and Jusoh 2015).

### ***Astro Tourism as emerging niche product***

Astro Tourism is defined as “... tourism using the natural resource of unpolluted night skies, and appropriate scientific knowledge for astronomical, cultural and environmental activities” (Fayos-Solé, Marín and Jafari 2014:664) and focuses visitor interests on the observation and appreciation of naturally occurring celestial phenomena (Weaver 2011:39). As a unique form

of ecotourism (Najafabadi 2012), it offers a noble way to draw tourists closer to nature (Fayos-Solé et al. 2014). Its greatest assets never need maintenance or development; are always available; completely unique in its features; and continuously considered as one of the highest sustainable fascinations (Najafabadi 2012). Location is key to looking deeper into space by means of a clear dark night sky free from artificial light (Najafabadi 2012). Considering that half of the world's population can no longer see the stars due to overcast light pollution, desolate places with their apparent emptiness have now become noteworthy attractions (Ingle 2010a). African skies remain the most accessible and biggest astronomy laboratories as the continent is situated under the clearest and darkest night sky (Govender 2011). Niche market-based or alternative tourism such as Astro Tourism permits transformation as well as inclusive empowerment across the industry as it follows a strong pro-poor approach and is characterised by "... small-scale, community-driven, local owned tourism products with low levels of negative impacts and low leakage" (Marschall 2012:726). Many astronomical sites have specific features related to agriculture and traditional practices, increasing the potential of wider product development (Collison 2011).

## **Methodology**

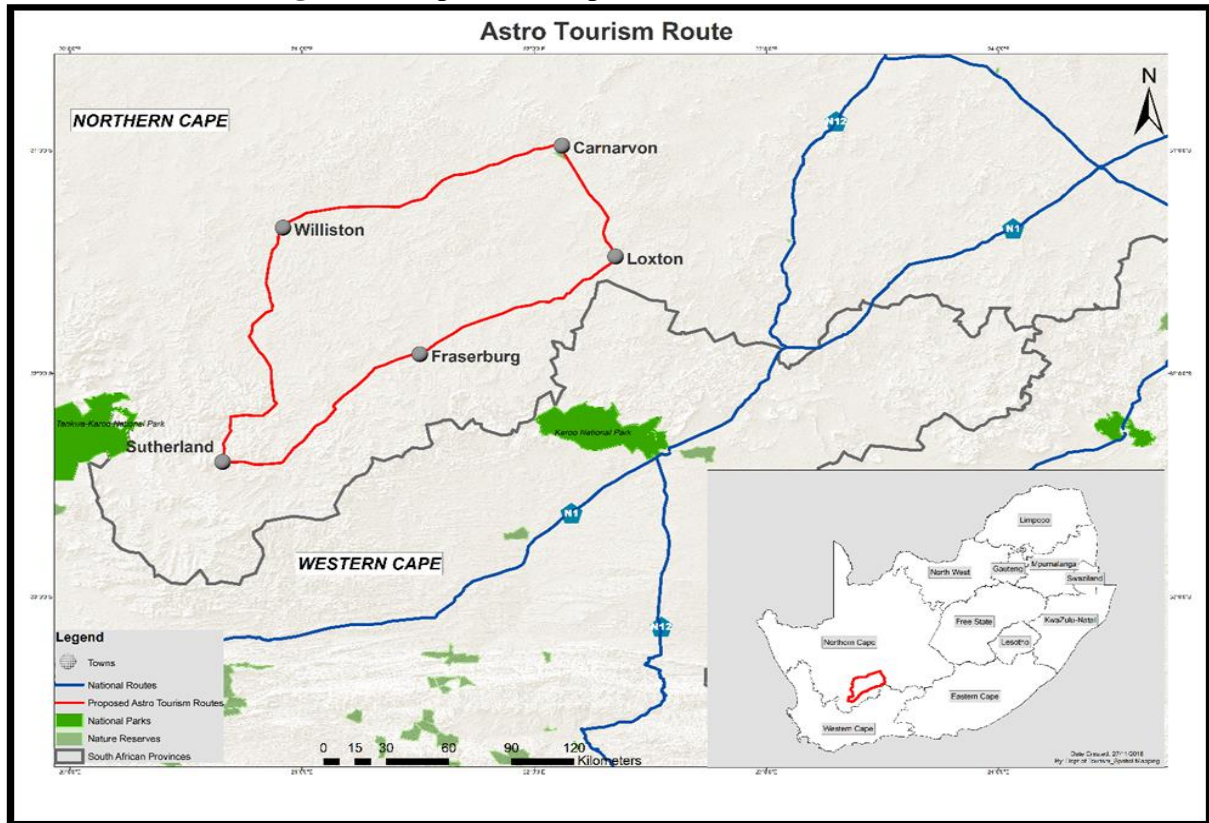
This study made use of mixed methods, which included both quantitative and qualitative research analyses to gain in-depth understanding of a case study. The case study was based on Astro Tourism in a developing country, the Astronomy Geographic Advantage Area within the Karoo rural region of the Northern Cape Province, South Africa. The region hosts the Square Kilometre Array (SKA) and the South African Large Telescope (SALT). The SKA is the world's largest radio telescope and SALT is the largest single optical telescope in the southern hemisphere (National Space Strategy, 2010). Towns forming part of the. Five towns were selected for potential inclusion in a proposed Astro Tourism route: Sutherland, Fraserburg, Williston, Loxton and Carnarvon. This was done through focus groups, semi-structured questionnaires and in-depth interviews with the respective stakeholder groups. The sample for the quantitative research was gathered from 130 visiting tourists to the respective towns, while the qualitative research involved the participation of 44 local community members and 23 tourism businesses. Of the non-residents in the region, 11 government sector representatives and nine (9) astronomy and tourism stakeholders participated. The researcher also participated in 11 pertinent stakeholder engagements such as workshops, meetings and various forums.

## **Results**

The empirical objectives of the qualitative research component were to determine the different stakeholders' perspectives and their involvement in sustainable Astro Tourism route development. These perspectives concur with the quantitative data collected from the visitors themselves. Respondents emphasized strongly that "... the Astro Tourism route is a creative link between our origins of life on Earth and the origins of the universe". The Karoo has a rich story to tell about astronomy, paleontology, eco-tourism and agri-tourism and the tourism route and destination, now have the opportunity to link these sciences and the associated phenomena. A tourism route is in a favourable position for small tourism businesses, in the rural node, to be marketed and branded collectively. The tourism route enables tourism products and offerings to become more aware of other businesses and to form networks and linkages. The proposed Astro Tourism route is from Sutherland to Fraserburg (R356), to Williston (R353), to Carnarvon (R63) and Loxton (R63). This tourism route is just off the N1 road with quick access via the R354 to Sutherland and then another quick exit onto the R63 back towards the N1 road to either of the major cities of Cape Town

or Johannesburg. The map portraying the proposed Astro Tourism route is presented in Figure 1 below.

**Figure 1.** Map of the Proposed Astro Tourism Route



**Source:** Researcher’s own construction (adapted from Department of Tourism, 2018)

The above mentioned Astro Tourism route was developed through a framework based on the triangulation of the quantitative and qualitative empirical data. The proposed framework is of paramount importance to position Astro Tourism as a potential keystone socio-economic initiative that aims to deliver tourism-led economic development in a destination. The six phases of the framework are a logical roll-out plan that could be applied to implement any theme-based tourism route. The first phase of the framework investigates the supply and demand side of the destination as well as its state of readiness to become a tourist destination. The Karoo’s attractiveness, lies within the Karoo that has the most beautiful clear sky evenings and cosmos, both of which are visible to the naked eye. There are not many places in the world that can offer the beauty and clarity of a dark night sky like the Karoo. These natural advantages should be used for the benefits that tourism could bring to outlying rural communities, while at the same time bringing economic, technological and scientific benefits to South Africa as a whole.

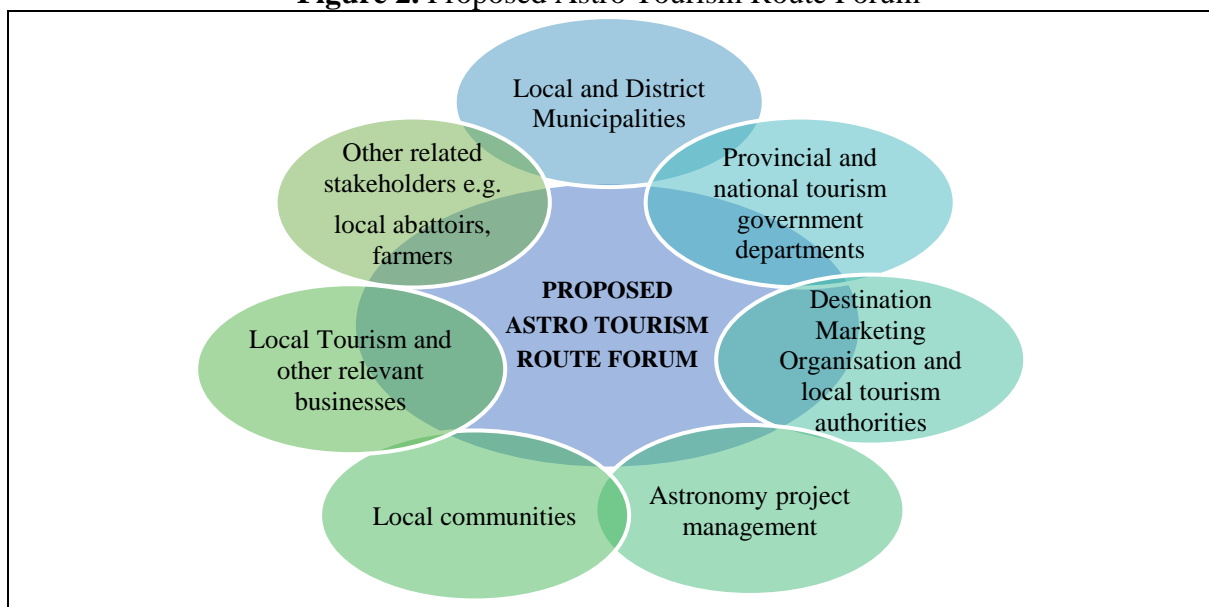
The second phase provides insights specifically into tourism product offerings, both in terms of the Astro Tourism products and the non-Astro Tourism products. Agri-tourism and Eco-tourism form a crucial part of tourism development in rural areas and should, therefore, be taken into account alongside Astro Tourism development. The overall perception from the respondents indicated that Astro Tourism niche cannot be observed in isolation as it also requires improvements to the non-Astro Tourism products and services in the region. The Karoo has a great number of available offerings but they need to be packaged and marketed as the “star gazing region of South Africa”. It is clearly indicated that Astro Tourism has the

potential to contribute positively to the socio-economic conditions of the local rural communities.

The third phase of the framework is to investigate the supporting aspects (tourism value chain and infrastructure development) of the area, which creates an enabling environment for development. Examples of this opportunities are where the local communities can play an active role within the tourism value chain by providing fresh produce, local arts and crafts, laundry services and transfer and shuttle services. Tourism businesses feel that “... as individuals they spend thousands to create a ‘spin-off’ from an astronomical perspective. It is therefore recommended that “... more national and international advertising about SALT and the Observatory is necessary in order to bring more visitors to the telescopes”. The observatory should include tourism products and services throughout their marketing activities. A respondent further mentioned that “The story of life on Earth is dated back to 4 and a half billion years and the story of the universe goes [back] 14 and a half billion years”. The Karoo has the opportunity to follow suit and share and showcase a phenomenal story to the rest of the world.

Phase 4 is usually overlooked, but plays an important role in the effective implementation of the route. Resources need to be allocated and provincial and national policies and strategies need to be aligned (UNWTO, 2013). Alignment of governmental priorities gives the route the necessary leverage when assistance from the government sector is required. Furthermore, in this phase, compliance with requirements for the route by businesses and establishment of a tourism route forum is highly important. The niche also needs to take realistic cognisance of the importance of a collaborative approach from all those who find themselves operating in the Karoo. The major stakeholders should be represented on the proposed Astro Tourism Route Forum, which is based on all the suggestions made by the various respondents who participated in the research study.

**Figure 2.** Proposed Astro Tourism Route Forum

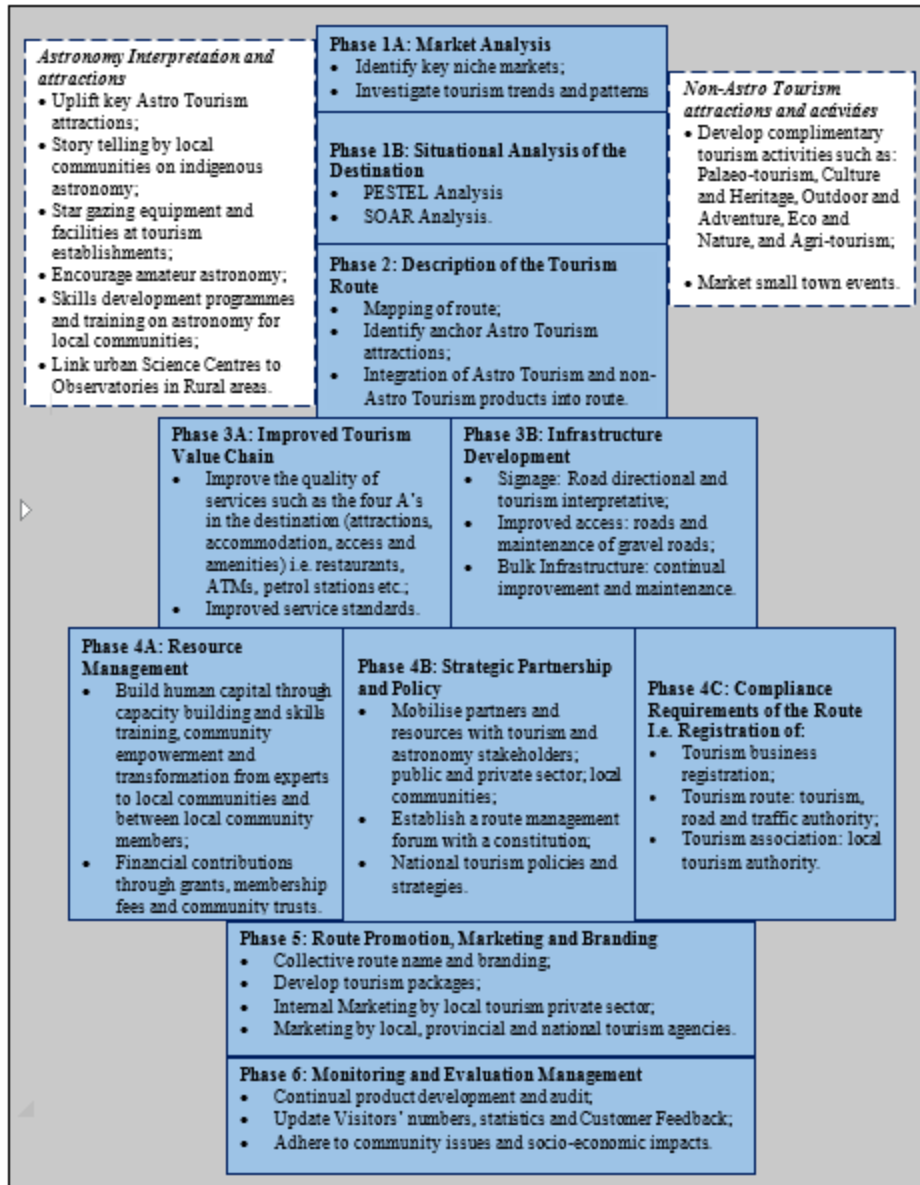


Source: Researcher’s own contribution

Compliance with these regulations provides the route developers with a solid case for the formation of partnerships and for gaining support from both the public and private sectors. After all the above mentioned aspects have been put in place, Phase 5 is initiated during which the route becomes a reality. Phase 5 focuses on the collective branding and marketing of the route, followed by Phase 6 which is the monitoring and evaluation management

process (McLaren and Heath 2012). These last two phases are continually undertaken, as they scrutinize the implementation and re-packaging of the tourism product offering for an evolving tourism niche market. The figure below illustrates the phases for the implementation of the proposed Astro Tourism Route Development Framework.

**Figure 3.** Proposed Astro Tourism Route Development Framework



This paper presents a framework, built on a firm foundation of literature that small-scale niche markets should not be overlooked, but valued for the difference they make to the livelihood and self-sustainability of rural communities. This research study complements the study conducted by Manwa, Saarinen, Athopeng and Hambira (2017), which demonstrates that the tourism industry is a vital vehicle for sustainable development. The proposed Astro Tourism Route Framework presents very specific phased-in guidance that can be considered by tourism decision-makers and developers to ensure sustainable development in rural areas. The proposed framework links the less familiar types of tourism within an area together by adding value to the existing local tourism products and offerings.



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