

# Considering nature-based solutions for place-branding: A spatial planning perspective

**DW de Ridder**



**orcid.org 0000-0002-0627-5596**

Dissertation submitted in fulfilment of the requirements for  
the degree *Masters of Science in Urban and Regional  
Planning* at the North-West University

Supervisor: Prof EJ Cilliers

Examination November 2018

24143197

## **PREFACE**

“God is most glorified in us when we are most satisfied in Him”

— John Piper

An earnest thank you to:

The North-West University – Potchefstroom, for the opportunity and facilities to conduct the study.

This research (or parts thereof) was made possible by the financial contribution of the NRF (National Research Foundation) South Africa. Any opinion and conclusions or recommendations expressed in this study are those of the author and therefore the NRF does not accept any accountability in regard thereto.

Special acknowledgement is merited to my study leader, Professor Juaneé Cilliers for excellent guidance, expertise and friendship.

I am immensely grateful to all my friends and loved ones, in particular, Hans, Elsie, Elé, Maret and Melinda for the unconditional support and encouragement you gave me throughout all the years of my studies.

Finally, my Heavenly Father, for letting me be satisfied by your glory in me. One way – Jesus.

## ABSTRACT

"Branding has invaded all aspects of public and private life" (Van Ham, 2002:249). Certain geographic locations devote significant efforts to enhance place marketing and place-branding strategies (Vuignier, 2016). Place-branding interconnects with pertinent factors related to humanity (Zenker & Braun, 2017; de Noronha *et al.*, 2017) and is inevitably linked to the quality of life and to the well-being of humans (Cilliers *et al.*, 2013:1). Efforts to differentiate places have evolved in recent years because the demand for resources has increased (Kaplan, 2010). Natural spaces and green environments have now become a marketable commodity (Cilliers & Cilliers, 2016) and place-branding approaches are increasingly turning towards nature as its unique selling point in cities. Nature-based solutions (NbS) are thus also gaining importance as natural resources and are increasingly being considered to address the complex urban problems faced by countries across the globe.

From a spatial planning perspective, NbS align with the objectives of sustainability and resilience (Peter *et al.*, 2017). The challenge, however, lies in linking places and place-branding with objectives of "Nature-based solutions" to enhance innovation opportunities" (Nesshöver *et al.*, 2017:2). Various place-branding models and indexes exist within academic literature (Bothma, 2015), but little or no indexes indicate the relation between NbS and place-branding. This research departs from the understanding that NbS have the potential to contribute to place-branding and thus explored such from a spatial planning perspective. This research contributes to the debate on place-branding and the application of branding practices within spatial planning approaches, introducing NbS as a critical consideration. It considers a literature review on place-branding and NbS, along with purposefully selected branding indexes, to propose a framework for considering NbS for place-branding from a spatial planning perspective.

Key terms: Place-branding, Nature-based solutions (NbS), Spatial planning.

## OPSOMMING

Stad handelsmerkgewing het alle aspekte van die openbare en privaat sektore verander (Van Ham, 2002: 249). Sekere geografiese plekke maak aansienlike pogings om plekbemarkingsstrategieë te verbeter en strategieë vir handelsmerkgewing te ontwikkel (Vuignier, 2016). Stad handelsmerkgewing koppel met relevante faktore wat verband hou met die mensdom (Zenker & Braun, 2017; de Noronha *et al.*, 2017) en is ook gekoppel aan lewenskwaliteit en die stand van die mensdom (Cilliers *et al.*, 2013: 1). Pogings om plekke te onderskei, het in onlangse jare baie ontwikkel omdat die vraag na hulpbronne toegeneem het (Kaplan, 2010). Natuurlike ruimtes en groen omgewings het nou 'n bemerkbare kommoditeit geword (Cilliers & Cilliers, 2016) en die proses van plek-brandingbenadering word toenemend in die rigting van die natuur as sy unieke verkooppunt bevorder. Natuurgebaseerde oplossings (NgO's) word dus as koppeling tussen natuurlike hulpbronne en die verbruik daarvan gesien en word toenemend oorweeg om die komplekse stedelike probleme waarmee lande regoor die wêreld gekonfronteer word, aan te spreek.

Uit 'n ruimtelike beplanningsperspektief, pas NgO's by die doelwitte van volhoubaarheid en veerkrachtigheid (Peter *et al.*, 2017). Die uitdaging lê egter in die koppeling van plekke en handelsmerkgewing met doelwitte van NgO's om innoeringsgeleenthede te verbeter (Nesshöver *et al.*, 2017: 2). Verskeie modelle en indekse bestaan binne akademiese literatuur (Bothma, 2015), maar min indekse dui die verband tussen NgO's en handelsmerkgewing aan. Hierdie navorsing vertrek uit die idee dat NgO's die potensiaal het om by te dra tot stad handelsmerkgewing en sodoende vanuit 'n ruimtelike beplanningsperspektief ondersoek te word. Hierdie navorsing dra by tot die debat oor plekbemarking en die toepassing van handelsmerkpraktyke binne ruimtelike beplanningsbenaderings, en stel NgO's as 'n kritiese oorweging voor. Dit beskou 'n literatuuroorsig tesame met doelgerigte gekose indekse, om 'n raamwerk voor te stel vir die oorweging van NgO's vir stad handelsmerkgewing vanuit 'n ruimtelike beplanningsperspektief.

Sleuteltermes: Plek handelsmerk, Natuurgebaseerde oplossings (NgO's), Ruimtelike beplanning.

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# CHAPTER 1: INTRODUCTION

## 1.1 Points of departure

This research departs from the assumption that Nature-based Solutions (NbS) have the potential to contribute to place-branding. According to Kladou *et al.* (2016), the overall idea of place-branding is to activate the implementation of positive relations with the place and to differentiate it from other places. When considering place-branding, it is principal to derive the connection between places and people and how they impact each other. According to Bothma (2015), the current available academic literature with regards to city and place-branding is limited, with indexes not including implementations that take nature into consideration to a full extent. A scrutiny of available literature discloses that there is a lack of theoretical lucidity and exact definitions, research papers related to place-branding touch on an extensive diversity of topics (Vuignier, 2016). Even though the topics are extensive it could be derived that “place-branding is implemented with the help of very concrete measures that constantly seek to balance substance (tangible aspects) and image (perception)” (Zavattaro, 2014).

Resources are limited and should be managed with caution as the world’s population and demand for resources is currently spiralling. The European Union’s Horizon 2020 program is investing resources and time to address the numerous challenges faced by the countries across the globe. The program includes a thorough investigation and consideration of nature and how it could be harnessed in assisting in the advance of humans on a sustainable scale. (Maes and Jacobs, 2015). NbS have many beneficial factors and could resolve many of these issues. Spatial planning is continually challenged with clashes amid pro-development approaches and pro-environment approaches. As such, resources are distributed in an unbalanced manner and linked factors develop accordingly. Even though there is a vision of a united, all-inclusive planning process, the environment and development of places are regarded as contrasting concepts with contradictory objectives (Cilliers, 2010). It is therefore key to take into account all the relevant spatial planning factors when attempting to link a place-branding framework or index with NbS. If various frameworks are taken into consideration, a justified and clear suggestion for the integration of the factors between place-branding and NbS can be made within context. This research departs from the understanding that NbS can contribute to place-branding and therefore investigate the interfaces between branding and NbS in an attempt to propose a framework to guide place-branding approaches through solutions that are nature-based.

## **1.2 Problem Statement**

Places develop and are branded in accordance with certain characteristic factors. Place-branding is inevitably linked to the quality of life and to the well-being of humans. Consideration is not necessarily made to the full extent when places are branded in conformity to the link it could have with NbS. Places are branded in terms of the unique features they have and could as such be classified accordingly. Place-branding ought to be considered from a spatial planning perspective where the role of NbS should be explored in terms of broader sustainable thinking and reasoning. Therefore, an effective integrated approach is essential, which will safeguard the natural environment and its limited resources and provide an embedded foundation as a valuable commodity within place-branding approaches. Solutions derived from nature could contribute to place-branding but until now, has not been adequately investigated or discussed in the academic discourse on place-branding. This research addressed this gap by contributing to the academic considerations on place-branding and the role that NbS could potentially have therein.

## **1.3 Aims and objectives of the research**

The primary research aim is to:

*Consider nature-based solutions for branding of places, as perceived from a spatial planning perspective.*

The research objectives are to:

1. Define NbS and indicate the innovative opportunities it could provide to global environment-related issues.
2. Explore the notion of place-branding and related factors in the context of spatial planning.
3. Create a link between place-branding and NbS by developing a 'green place-branding index' and linkages with NbS.
4. Refine the proposed green place-branding index through best practice analysis and expert inputs.
5. Recommend a green place-branding index focussing on nature-based solutions that can contribute to broader spatial planning approaches.

## **1.5 Primary research question**

Five research questions were articulated in line with the research aim and objectives. These research questions directed this research and the research methodology engaged, and include:

1. What is NbS and what opportunities could it provide for global environment-related issues?
2. What are place branding and related factors and how does it influence spatial planning?
3. Can a link be drawn between NbS and place branding through the development of a green place branding index?
4. Can the green place branding index be refined through best practice analysis and expert inputs?
5. How can a suggested green place branding index focus on NbS that can contribute to a broader spatial planning approach?

## **1.6 Methodology**

The methodology comprises of a literature review and empirical investigation to inform on conclusions and recommendations drawn from this research.

### **1.6.1 Comprehensive literature review**

The theoretical overview starts in Chapter 2, with a discussion on NbS. It forms the theoretical basis of this research and how it interrelates with place-branding. An investigation on the notion of NbS is made which consists of the origins of NbS, what related disciplines and concepts there are, the types of NbS that exist, the history and development of the term, and how it is applied in current realities. It also includes the benefits it comprises and the link it has with spatial planning.

This is followed by Chapter 3 which is based on place-branding. An in-depth theory-based investigation on what the need is for branded places, what a 'place' is, what branding is and how place-branding is comprehended. It also considers how it is an objective of spatial planning and how it is connected to green place-branding and as such NbS.

Chapter 4 provided an investigation that consisted of a systematic review on a purposefully selected case study, place-branding models and frameworks. The cases, models and frameworks were collectively considered to inform a single place-branding index, focussing on NbS, referred to as a green place-branding index. This green place-branding index was further

considered in the empirical investigation, to refine the index to inform broader spatial planning approaches.

## **1.6.2 Empirical study**

The aim of the empirical study was to refine the theoretically based index. Therefore, the empirical study comprised of converting the gathered literature of the systematic review conducted in Chapter 4 into a structured questionnaire.

A convenience sampling method was employed where purposefully selected expert stakeholders were requested to complete an E-questionnaire. The data of this questionnaire was captured and statistically interpreted to inform the green place-branding index and conclude on NbS in terms of place-branding and the applicability thereof within local spatial planning approaches.

### **1.6.2.1 Questionnaire design**

A questionnaire could be described as a formal set of questions with the goal of obtaining information from relevant respondents (Malhotra, 2010).

The E-questionnaire created for this study started with a preamble in order to inform the respondents of the nature of the study. This was followed by instructions for completing the questionnaire and the time that was anticipated to complete it. The respondents were also informed that the questionnaire was developed according to the Ethics guidelines of the subject group Urban and Regional Planning of the North-West University.

The questionnaire consisted of three sections:

**(1) Respondent profiles.** These questions were used to determine the field the respondent work in, as the study is based on purposeful sampling where specific experts are asked to participate in the study. The creation of respondent profiles was also designed to establish the level of education of the respondent. This was to measure the level of experience and knowledge the respondent potentially could have on the subjects of NbS and place-branding factors.

**(2) Definitions to provide context.** Definitions on what “place-branding” and “NbS” are, and how it is approached within the study were given in order to provide the respondent with efficient information to contextually complete the questionnaire.

**(3) Questionnaire.** A set of questions were compiled using the existing indexes of branding and NbS (see Table 4-7). Each of the questions consisted of sub-questions in order to explore the associated factors more efficiently. The questions were intended statements based on the related factors considered in Table 4-7. The questionnaire used a Likert scale consisting of 5 points to indicate the level of agreement with each of the statements. Burns & Bush (2014:208) indicate that a Likert scale is a kind of interval-scale utilised by researchers where respondents are asked to indicate their level of agreement or disagreement on a symmetrical scale for every statement or question provided. The respondents were informed that questionnaire aims to capture their perception of place-branding and what the interface is with Nature-based Solutions (NbS). The results of the survey could assist in the development of a green place-branding index to inform future urban planning approaches to enhance NbS as part of broader place-branding initiatives. A total of 95 potential respondents were nominated structured from a purposeful sampling method where specific expert stakeholders are asked to participate in the study. 45 of the 95 respondents replied to the questionnaire and successfully completed it. This section is consequently comprised of intervals, allowing a ranking of the responses in orders and analyse it with subsequential value (Burns & Bush, 2014:205).

### 1.6.2.2 Selection of participants

The questionnaires were distributed to various experts in both the private and public sectors within the Republic of South Africa. The expert stakeholders were selected based on specific criteria as displayed in Table below.

**Table 1-1: Criteria on which experts were selected**

Criteria	Field of work
<ul style="list-style-type: none"> <li>• Level of education (The participants were selected based on the minimum level of education they had to have, this was to ensure their knowledge regarding the subject would be insightful).</li> <li>• Level of knowledge (The participant had to have a basic knowledge of the relevant terms and subjects investigated in the study).</li> <li>• General field (The participant had to be within the broad field and have relevant connections to the subject of research).</li> </ul>	Real estate agent
	Real estate / property development
	Researcher
	Town / Urban Planner

Source: Own construction (2018).

A total number of 135 questionnaires were distributed to experts electronically (via internet) using Google forms. A yield of 45 valid responses was received and as such a response rate of 33.3%. Some of the responses did not answer all the questions to the full extent, but this is taken into consideration in the statistical interpretation.

### **1.6.2.3 Data collection, recording and ethical considerations**

The following steps were followed to conduct the research of Chapter 5:

Step 1: A report based approach was followed to design a questionnaire based on the green place-branding index compiled by Chapter 4.

Step 2: The completed questionnaires were captured as electronic data and transferred to SPSS, which is a software platform that offers advanced statistical analysis.

Step 3: The data was interpreted and conclusions of the statistical interpretation were made in accordance with the results.

In terms of the ethical considerations; the participants were informed of the nature of the study prior to answering the questions. They were informed that the participation of the study is voluntary and meets the standards of the NWU.

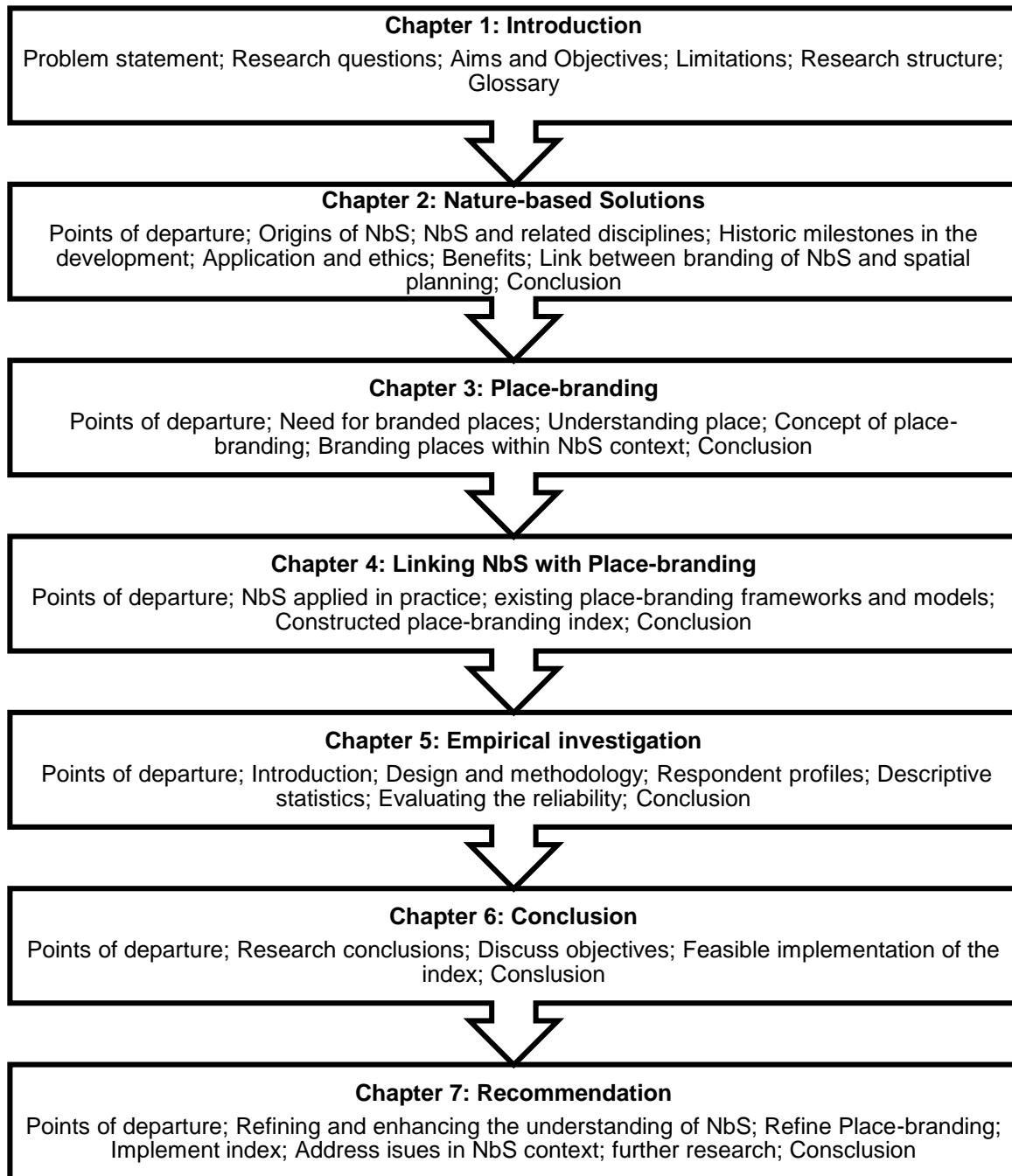
### **1.7 Limitations of the research**

The study focused on NbS and place-branding from a spatial planning perspective. Therefore, the socio-economic components of place-branding were considered, but emphasis placed on NbS as part of the green place-branding index. The recommendations are based on the findings and conclusions in the context of the developed green place-branding index. Some generalisations were drawn, as the statistical interpretation indicated it as viable. However, as a limited sample was considered further studies with more stakeholders should be considered to enhance the trustworthiness of the findings. This research is a point of departure for considering NbS as part of place-branding indexes and a first of its kind for the planning profession.



## 1.8 Research structure and Chapter layout

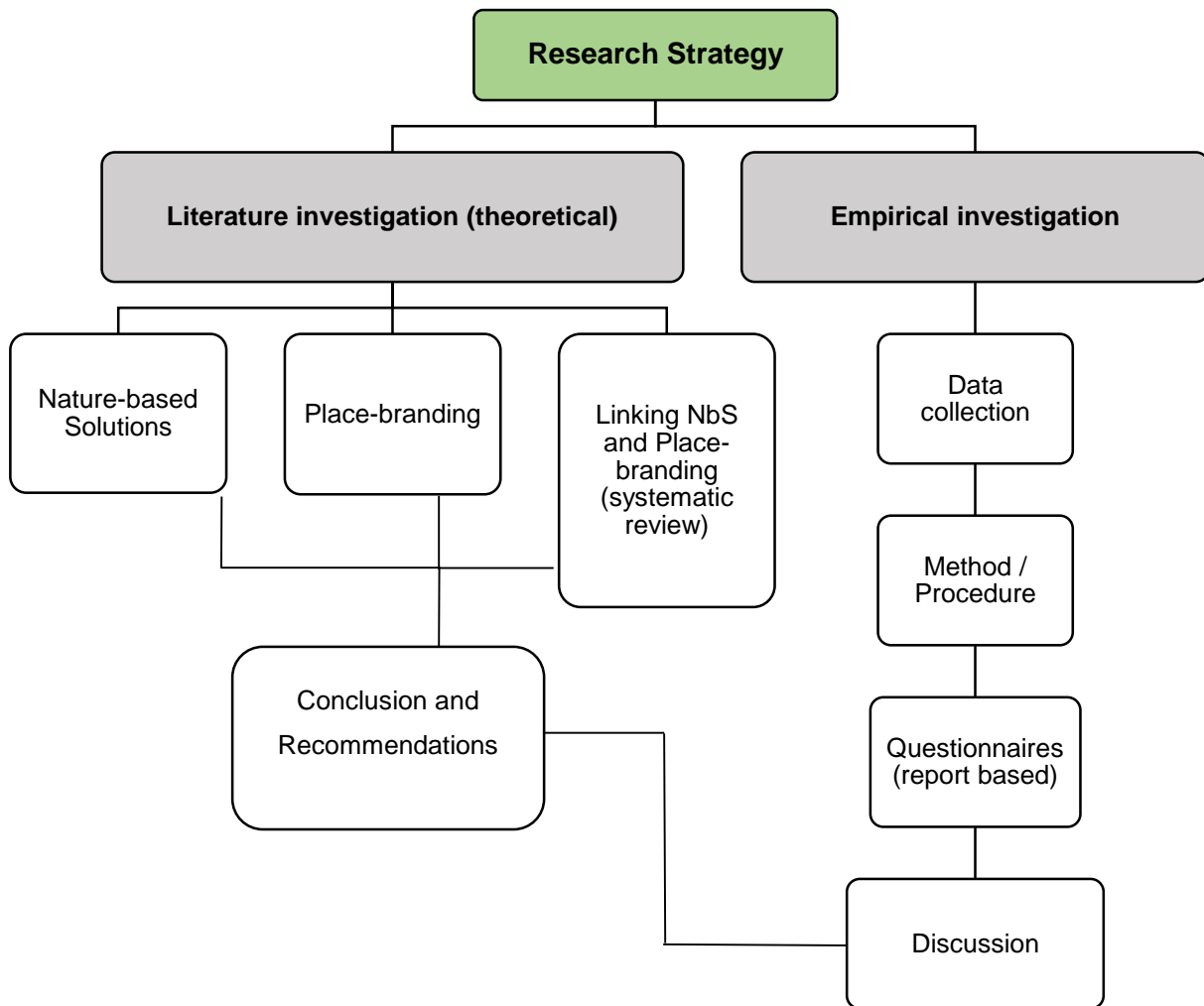
The research is divided into 7 Chapters as contextualised in the following figure.



**Figure 1-1: Research Structure**

Source: Own construction (2018).

Figure 1-2 illustrates the strategy that was employed in this study.



**Figure 1-2: Research Strategy**

Source: Own construction (2018).

## 1.9 Definitions and Acronyms

### 1.9.1 Definitions

The following core concepts were included in this study and their definitions are captured accordingly in context of the theme of research:

**Table 1-2: Glossary**

<b>Bottom-up method</b>	A bottom-up approach is the mending composed state of systems to give growth to more compound systems, consequently producing the original systems as sub-systems of the developing system.
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	(Collins English Dictionary, 2016a)
<b>Branding</b>	Branding can be defined as the procedure of endeavouring to distinguish an element from those of the participants by providing a product with a dissimilar and unique distinctiveness, and then creating the correct connotation with that brand to guarantee that the brand is pertinent and diverse (Bothma, 2013:152).
<b>Eco-branding</b>	“Eco-branding is a market instrument which helps both companies and consumers achieving sustainable goals and contributing to environmental protection and amelioration.” (Rahman & Haq, 2016:14).
<b>Green Spaces</b>	Greenspace is usually, land in an unbuilt condition comprised of vegetation and associated with natural elements and protecting the natural habitat. It is accessible to people and could serve as recreational facilities (Taylor & Hochuli, 2017).
<b>Nature-based Solution</b>	Nature-based Solutions are measures and procedures put in place to solve socio-environmental challenges. It is the sustainable use of nature or challenges supported by nature, which simultaneously provides benefits for social, economic, and environmental needs to help build resilience for human wellbeing. The efficient management of natural resources and natural capital are key when implementing NbS in practice (Cohen-Schacham <i>et al.</i> , 2016:2; IUCN, 2009; Raymond <i>et al.</i> , 2017).
<b>Place-branding</b>	The progression of producing a value between a geographical area and an individual by generating a clear image of the historic, economic and social characteristics of the place in order to produce a constructive image of the location (Miguez, 2011).
<b>Resilience</b>	The ability of a system to engross variations and disturbances without losing its rudimentary structure and purpose, or else it will change into an alternative state (Cilliers, 2016:23).
<b>Sense of place</b>	The structural and emotional feelings and general ideas that connect humans to a geographical locale or place (Agnew, 1987).
<b>Spatial planning</b>	Provides geographical countenance to the economic, social, cultural and ecological policies. Also, it is a scientific field, an administrative method and a policy established as an interdisciplinary and inclusive methodology (Cilliers, 2010:7).

<b>Sustainable development</b>	“Everything that we need for our survival and well-being depends, either directly or indirectly, on our natural environment. To pursue sustainability is to create and maintain the conditions under which humans and nature can exist in productive harmony to support present and future generations.” (EPA, 2016).
<b>Trade-off</b>	A condition in which one finds equilibrium between two contradicting states or assets. (Collins English Dictionary, 2016b)
<b>Urban green space</b>	“Public and private open spaces in urban areas, primarily covered by vegetation, which are directly (active or passive recreation) or indirectly (positive influence on the urban environment) available for the users.” (Cilliers, 2010:7).

Source: Own construction (2018).

### 1.9.2 Acronyms

The following acronyms were used in this dissertation:

**Table 1-3: Acronyms**

BI	Blue infrastructure
CBD	Convention on Biological Diversity
CSE	Catchment Systems Engineering
EA	Ecosystem Approach
EBA	Ecosystem-based Adaptation
EC	European Commission
EE	Ecological Engineering
ER	Ecological Restoration
ES	Ecosystem Services
EU	European Union
GI	Green infrastructure
IUCN	International Union for Nature Conservation
NgO's	Natuurgebaseerde oplossings
NbS	Nature-based Solutions
NC	Natural Capital
UGS	Urban Green Space
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change

Source: Own construction (2018).

## **CHAPTER 2: THE NOTION OF PLACE-BRANDING**

### **2.1 Points of departure**

Chapter 2 introduces the notion of place-branding within broader spatial planning approaches. Accordingly, the contextual comprehension of place-branding, and the link between spatial planning, and green place-branding is explored.

### **2.2 The need for branded places**

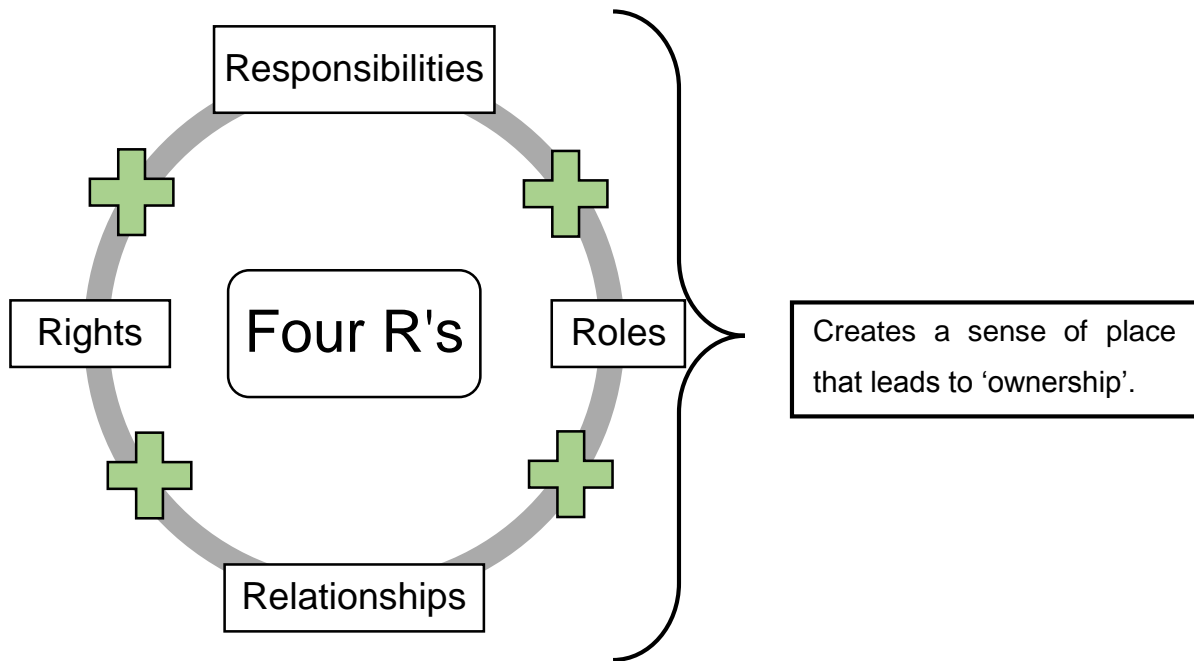
People are complex beings with specific needs and preferences. This complexity results in a system of psychological associations based on the graphic, verbal, and behavioural expressions they experience, influenced by what they are surrounded by (Zenker & Braun, 2010:4). This is personified through the intentions, communications, standards, and the overall culture of the place that they are situated in (Zenker & Braun, 2010:4). As a research topic, place-branding could be connected to the mid-1950's and interlinks literature between tourism, marketing and geography (Hankinson, 2015). When considering geographic locations (i.e., places), resources are strategically being spread in and around these eminent places for development in order to sustain human well-being (Vuignier, 2016). According to Eshuis *et al.* (2014), in order to identify and relate with the places people are in, a way to brand the place have been developed to sustain their basic needs and preferences. Consequently, the branding of places includes developing a comprehensive image that includes socio-political, economic, and historical components, contributing to the revealing of diverse places connected to the people (Isabel & Gonzalez, 2011).

### **2.3 Understanding 'place'**

Agnew (1987), created a comprehensive definition of place which is divided into three central parts. The first being location, where the geographical area offers the setting for social relations and interactions. Secondly is locale, where relations are created in an informal and institutional manner. Thirdly is the 'sense of place', this is the structural feelings or emotions that connect the people to the place. Together the three establish 'place' and Warnaby & Medway (2013:358) then further illustrate the relation of the elements in 'place'; from the standpoint that places develop as "socially constructed products, developed and endlessly redefined and reinterpreted via spoken and written word." Warnaby & Medway (2013) have considered relevant literature and has recognised numerous components of place and its identity, as such, he set out the character of place-related fundamentals.

Efforts that aim to differentiate places have evolved and altered, as the competition for resources and related factors have increased (Kaplan, 2010). Kavaratzis & Ashworth (2005) state that places are entities which could be branded in the event that their features are able to differentiate them from one another. Warnaby & Medway (2013) also argue that the term 'place' could be considered as a dynamic notion, collectively changing and competing with other related terms as it is perceptible and constantly evolving. Place is not a concept which describes something stationary and it does not have a static identity; it is interchangeable and constantly developing in relation with two main components as explained and indicated by Kavaratzis & Hatch (2013). The first component is 'established matter' which is tangible and physical, for example, the built environment. The second of the two are concepts that consist of a more non-concrete and intangible nature, for example, 'sense of place' (Kavaratzis and Hatch, 2013). However, the ways in which the two concepts interrelate and connect are not necessarily clearly defined and evidently set out across literature (Kavaratzis and Hatch, 2013).

Aitken & Campelo (2009) suggested that there are four central fundamentals that summarise the inclusionary experience of place: Rights, Roles, Relationships, Responsibilities, and connections amid them. The notion surrounding place could be contextually considered as it influences the comprehension of related concepts. Figure 2-1 illustrates how the 'four R's' of place are fundamentals and are crucial in order to grasp a sense of place. The four R's represent the actions to be undertaken by the consumer who will experience and be involved with the place. The consumer finds himself to form an opinion on the sense of the place. It forms a structure of the community's engagements towards this sense of place and ultimately leads to a key part of ownership (Aitken & Campelo, 2009).



**Figure 2-1: The fundamentals of experiencing a place**

Source: Own creation (2018) adapted from Aitken & Campelo (2009).

Anholt (2008:2) states that “places have images just as products and corporations have images”. This underlines the idea that the concept of a place is shaped and fashioned by people and how they engage, individually or within organisations (Warnaby & Medway, 2013). Shared perceptions impact states of mind, characterise values, produce meanings and generate the level of significance of life within communities (Aitken & Campelo, 2011:922). People, therefore, form and develop shared perceptions like above mentioned in an attempt to create positive relations and connections in the place consumer’s life and how it influences that ideas (Zenker & Braun, 2017).

Places in this context are products which people utilise, and how a place is perceived is possibly a way of exploiting it (Warnaby & Medway, 2013). The comprehension of what a place could influence is, therefore, a perception approach and idea. When attempting to signify, comprehend and define the aspects of a place, local cultures and the enhancement of community identities are key (Aitken & Campelo, 2011:913). The nature of a place is thus continually reshaped by the actions of people (constructive or destructive, intentional or unintentional) (Warnaby & Medway, 2013). Experts have recurrently established and created the theoretical dynamic nature of places and their identities, formed by an interaction of humans and their changing rudiments (Kavaratzis and Hatch, 2013).

## 2.4 The concept of place-branding

“What is place-branding? The easy answer to this central question is that place-branding is merely the application of product branding to places” (Kavaratzis & Ashworth, 2005: 508)

This quote provides a simple answer, yet creates complexity to apply it in reality. According to Anholt (2005:118,119), a significant part of the comprehension towards the idea of place-branding emerges from the prevalent and basic understanding of the term “brand”. Anholt (2005:118,119) also states that; when new catchphrases and ideas are applied, mentalities will change within a social structure. The author expresses that only when the best lessons, procedures and perceptions from advanced branding techniques are applied to ideas or situations, will the results be appealing. The results could also be broad and possibly result in global change. This is substantiated by Aitken & Campelo (2009) who is of the opinion that branding has the potential to integrate places in alignment with the social aspects and needs of people, in light of the fact that at the centrality of the idea, the culture and the people who create it, are the main focal points.

“The practice of ‘branding’ has invaded all aspects of public and private life” (Van Ham, 2002:249). Even quite a few years ago, this has been realised and in accordance illustrated by Van Ham (2002). This is supported by the view of Aitken & Campelo (2009) who illustrates that branding is integrated into its own manageable system with distinct components. Therefore, it could be regarded as reliant on the public while it has private relations with the community, stakeholders, landscape, and consumers. This leaves it to be complex to grasp and consequently, Anholt (2005) suggested that almost nobody agrees on what, precisely, branding means in unfolding the place-branding practice as a composite notion in all areas of the public and private life.

Place-branding, as a developing notion, has progressed significantly over the past few years, mainly in terms of the fashion it interconnects to diverse audiences (Zenker & Braun, 2017; de Noronha *et al.*, 2017). Kavaratzis and Hatch (2013) underline this idea, by stating that the base comprehension of the concept requires the contribution of several fields of study, in order to clarify the application process on the occasion of branding places. This includes the requirement and suggestion to spatially interpret places or more specifically; countries, regions, and cities (de Noronha *et al.*, 2017). A more all-inclusive approach is that of Lucarelli & Berg (2011), who proposed that understanding place-branding is similar to a ‘progression in terms of growth and organisation of target audiences’ connection to the place’. de Noronha *et al.* (2017) states that the focus should be on the goals that influence the audiences’ behaviours and contribute to the development of the place's identity. In a dissimilar but not



necessarily different approach, Kavaratzis & Hatch (2013) argues that place-branding could provide the connection between experience, distinctiveness, and the holistic notion surrounding the subject.

A comparative term is 'place marketing' and is understood as "the coordinated use of marketing tools supported by a shared customer-oriented philosophy, for creating, communicating, delivering, and exchanging urban offerings that have value for the city's customers and the city's community at large" (Braun, 2008:43). Branding concepts are not necessarily the same as marketing concepts, they differ in nature and context (Vuignier, 2016). When considering the widely accredited definition of the term "marketing," branding is a comparative component of marketing (Vuignier, 2016; Eshuis *et al.*, 2014:154-155). When something is branded it results in the process of managing and sustaining a brand (Vuignier, 2016). Vuignier (2016) further indicates that branding generates an identity to contain all of its activities, thus, identifying them with the brand value itself. Application of the branding notion to places has developed from an overabundance of related disciplines and concepts in practice (de Noronha *et al.*, 2017). It could be regarded as an attempt which focuses on the brand via activities intended to create an important and distinguished occurrence in terms of place (Vuignier, 2016).

The concept of place-branding could be described as a tree, with one of the branches being destination branding (Zenker *et al.*, 2016). There is little research on how place-branding and destination branding influences residents and tourists, particularly focusing on the two groups simultaneously (Hanna & Rowley, 2015; Zenker *et al.*, 2016). Place-branding includes developing a comprehensive image surrounding the subject including socio-political, economic, and historical components, also revealing diverse places holistically (Isabel & Gonzalez, 2011). There is barely any steadiness in finding a clear definition of what establishes destination branding, in both industry and research related literature (Pike, 2009). Evidently, there is a requirement for studies related to the processes supporting the private and public sectors in terms of destination branding (Morgan *et al.*, 2004). The market of destination and place-branding is especially challenged when places are naturally iconic physical sites and have features that attract tourists with an exact function, creating a unique place (Kotsi *et al.*, 2016). 'Destination branding' and 'place-branding' are regarded as substitutable terms by some and are seen as closely related (Merrilees *et al.*, 2009), yet it is worth noting that there are some differences (Kotsi *et al.*, 2016).

Anholt (2005:120) calls attention to the fact that there is little alignment between place-branding and the advantages of nations, for example, the environment, tourism, culture, and exports. Tourism is only one segment contained inside urban areas, nations or regions. The

author likewise takes note that in order to promote nations, regions, and cities, branding methods are potentially the best way to advance their products (Anholt, 2005:120). Destination branding is designed to focus on attracting tourism activities and factors surrounding it (Kotsi *et al.*, 2016; Zenker *et al.*, 2016), while the place-branding market is vastly competitive, with various national economies and a substantial amount of places competing for tourist interaction and spending (Kotsi *et al.*, 2016). Place-branding also entails the basic branding of places for the majority of target groups such as companies, residents, and tourists (Kerr, 2006), resulting in destination branding being a mere branch on the tree of place-branding (Zenker *et al.*, 2016).

The influence of stakeholder involvement is key in the process of branding, as it correlates with what desires and social contributions are required, resulting in coherent relations (Klijn *et al.*, 2012; Zenker & Braun, 2017). Meta-analysis of literature regarding place brands done by Lucarelli & Berg (2011), illustrated a considerable growth in contributions surrounding the literature, but the researchers detected an absence of conceptual and theoretical frameworks (Zenker and Braun, 2017). Evidently, the branding of places could be regarded as a heterogeneous concept, with a considerable need of people for places to be branded, leading to a diversity of interpretations concerning the notion (de Noronha *et al.*, 2017). For branding to occur, a brand should exist and be in the process of production (Vuignier, 2016). It should be aligned with the role played by images, identities, and the resources used for development on regional and local scales (Pasquinelli, 2014). Kavaratzis & Hatch (2013) indicated that Lucarelli & Berg (2011) have analysed branding studies in depth, and identified three main standpoints related to the branding of places: (1) Branding as a production process (concentrates on managing the procedure while creating place brands). (2) Branding as appropriation (concentrating on the manner in which place brands are consumed and used). (3) Place-branding critically analysed (investigating the impacts it could have). It could as such be substantiated that the background of place-branding could verify whether a link with natural elements could be made within a spatial planning context.

#### **2.4.1 Place-branding as an objective of spatial planning**

“Territorial entities such as cities, regions, and countries are now also being branded like companies and products.” (Van Ham, 2002:250). Connections and similar characteristics have been drawn between the branding of places (de Noronha *et al.*, 2017) destinations (Pike, 2009), urban regeneration (La Rosa *et al.*, 2017), and urban planning (Van Assche & Costaglioli, 2011). The concept of place-branding is tremendously complex and could be regarded as a political action which is able to enhance and improve a nation’s self-image, economy, and identity (Morgan *et al.*, 2004). Several public organisations at local, regional,

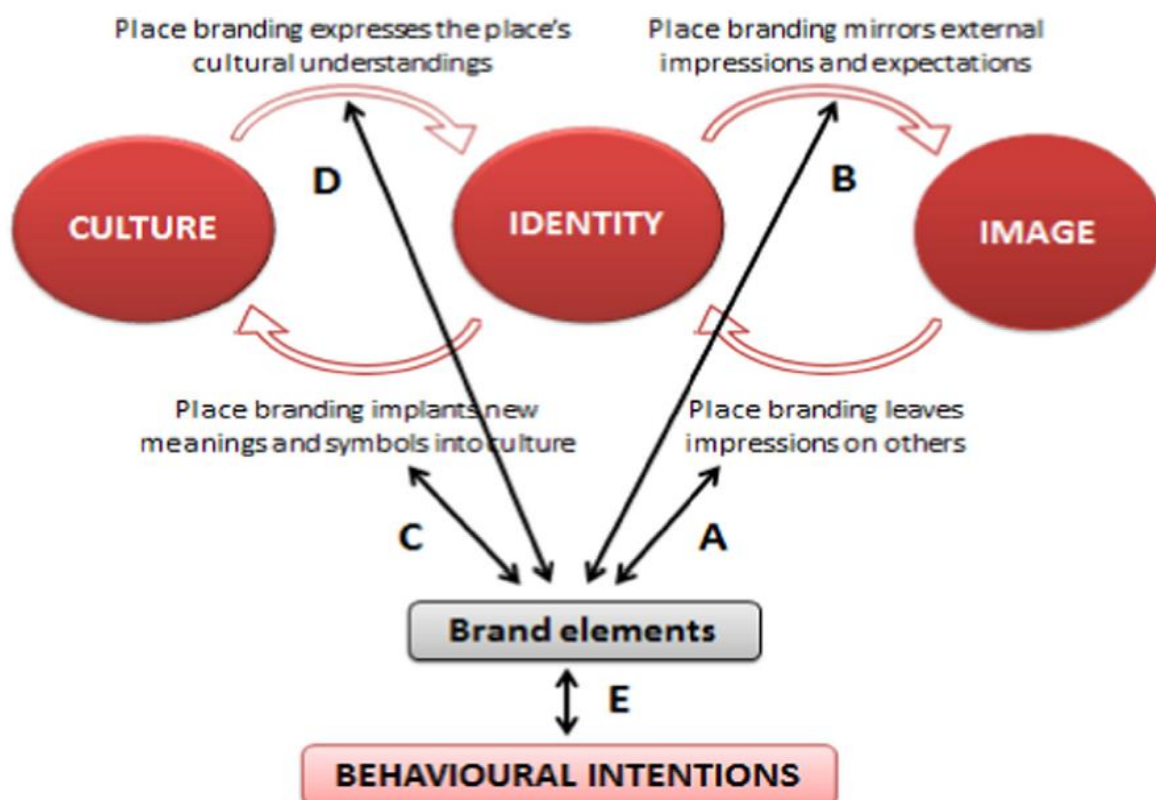
national, and international levels reflect that these concepts and strategies are vital for regional development (Vuignier, 2016). According to Kotsi *et al.* (2016), the brands of places have interdisciplinary natures, create a competitive market, assort stakeholder requirements, and create a capacity to impact national necessities. Míguez (2011:297-298) is of the opinion that place-branding is a process where the generating of value between an individual and a geographical area take place. This is arguably achieved by creating an image of the social, economic and historical features of the place in order to create a positive idea surrounding the notion of place (Míguez, 2011).

Even though they are complex, place brands are regarded as flexible and could thus support several interpretations around the branding concept, as there is a component of co-creation in terms of cultural and social setting contexts (Kotsi *et al.*, 2016). As an outcome, the fields of research came forth which are dedicated to the scientific examination of these practices (Vuignier, 2016). Place-branding is advancing in the academic field and becoming a popular term to use in practice (Kavaratzis & Hatch, 2013). The spread of the place-branding concept and studies involving it (Lucarelli & Berg, 2011), also the increasing quantity of place-branding consultancies indicate that it has become widely used (Kavaratzis & Hatch, 2013). Numerous of the concepts and ideas related to place-branding are already established concepts (Kavaratzis & Hatch, 2013). The notion around place brand has been defined in various ways (Braun, 2008) with apparent and clear differences between the numerous definitions (Kavaratzis & Hatch, 2013). Zenker & Braun (2017) provide an encompassing description of place brand. He describes it as a system of relations to the consumers grounded on the verbal, visual, and behavioural encircling of a place while being personified through the goals, communication, standards, and the culture of the stakeholders involved (Kavaratzis & Hatch, 2013).

The branding theory and surrounding notions have been adapted to geographical settings and the development of branding concepts such as communities, regions, and cities (Pasquinelli 2014; Vuignier, 2016). The adaptation has included the similarity between place brands and corporate brands, which both deal with various stakeholders while accounting for numerous identities (Pasquinelli, 2014). Therefore, place brand and corporate brand could be regarded as concurring with organisation brands (Anholt, 2005:117). Accordingly, the branding of places has to manage a diverse array of stakeholders, determinations, and potentials (Pasquinelli 2014; Kotsi *et al.*, 2016). This is in an attempt to brand social spaces in functional contexts, in order to enable economies to pool resources, while sustaining the goals of stakeholders (Pasquinelli, 2014). The branded social space shapes the place-branding idea with an understanding of the identity of a place (Pasquinelli 2014; Pike, 2009). The application of

branding methods when approaching the location or place could address the related physical and strategic issues (Kerr, 2005). It is key to approach and set out some of the relevant brand concepts that are imperative when applying and integrating brand practices to a location when creating the identity (Kerr, 2005).

According to Kavaratzis & Hatch (2013), there is a general agreement on the formation of place brand and place identity, both are formed through a complex, multiparty system of relations. Perceptions of both place brand and place identity, determine the distinctiveness of a place and this could form and shape it when comparable perceptions are shared within a liable community (Aitken & Campelo, 2009). Relations like above mentioned generate and reveal characteristics that sustain cultural foundations which would result in regulation of the nature of ownership (Aitken & Campelo, 2009). Successful place-branding implementation allows locals to express cultural identity, that leads to forming part of the identity of the specific place (Kavaratzis & Hatch, 2013). Not only does brand implementation promote the identity of the place and improve the culture, but also increase stakeholder participation (Aitken & Campelo, 2009). Kladou *et al.* (2016) constructed a conceptual model on how the identity relates to the culture and image of a place when it is branded, as illustrated in Figure 2-2.



**Figure 2-2: Branding and the relation between culture, identity, and image**

Source: Kladou *et al.* (2016).

Cultural considerations and the place's identity should be recognised in the process of place-branding (Kavaratzis & Hatch, 2013). Aitken & Campelo (2009) underlines the importance of this by stating that impacts of this nature influence the local culture and the improve the community identity, thus, are regarded as essential on the occasion of defining the features of a place brand. This process could provide a tool to reflect on cultural considerations and place these reflections into the identity of the place (Kavaratzis & Hatch, 2013). However, place branders ought to be attentive and sure to avoid creating their own ideas and desires instead of providing for the community's cultural and social needs (Kavaratzis & Hatch, 2013). Brands henceforth impact the daily life of humans and their social relations also the creation of identities and sensations surrounding being 'in place' or 'out of place' (Vanolo, 2018:67-69).

As such (Kavaratzis, 2018) suggests that national, regional, and local governments each ought to have assigned roles in terms of the positioning, planning and implementing the decisions and planned processes, proving that branding links to urban governance. Merrilees *et al.* (2009) argue that place-branding influences the interest which rises under people in the way that communities, cities, regions, and countries promote themselves. It would ideally be set out with the goal of activating positive relations while creating a unique place (Vuignier, 2016). Place-branding influences people's notions by creating specific emotional and psychological relations with a place (Eshuis *et al.*, 2014:154-155). Braun *et al.* (2013) state that people and the way they act have three main parts in place-branding. 1) Characteristics and behaviour; 2) Ambassadors, providing credibility to communications concerning it; 3) Political legitimisation of place-branding.

Sharing a perspective with Braun *et al.* (2013), Zenker *et al.* (2016) suggest that a shared mental image of the place brand should be created. The relation between place brand and natural elements could thus be substantiated as having similar images and ideas that underlines the idea of branding a place. Kavaratzis (2008) indicated that these mental images are formed by three types of communicational place brands. 1) Primary communication, including architecture, geographical location, and infrastructure. It could also include the place's or inhabitants' behaviour; 2) Secondary communication; communicating by using official channels, for example, all methods of advertising, branding, and public relations; 3) Tertiary communication; 'word-of-mouth' supported by media and by the residents, thus labelled as 'place word-of-mouth.' This communication forms part of the basis to create a process when places are branded consequently.

#### **2.4.2 Place-branding - derived from city branding**

The concept of “branding” has developed into a multi-viewed notion, as cities comprehend the value of the brand they have and in what manner it is set out and managed (Merrilees *et al.*, 2009). Branding has globally become a crucial component for directing value in the relationship between individuals and their territorial establishments, resulting in cities being branded exclusively (Isabel & Gonzalez, 2011). “City branding is today emerging as an internationally recognised research domain characterised by a high degree of multi-disciplinarily, a rapid proliferation in and between disciplines.” (Lucarelli & Berg, 2011:22). Place-branding, which enables a city to be prominent compared to its competitors has become a key part of the regional development aspect (Kaplan *et al.*, 2010; Pike, 2009). This includes describing a specific city profile and assuring prevalent communication of the profile. Some aspects of a city are potentially highlighted in a city brand, while others are unacknowledged (Anderberg & Clark, 2012). The brand of a city could as such conceivably be centred around an upcoming or desirable attribute, goal or vision, but in order to be realistically credible and resourceful, it needs consistency (Anderberg & Clark, 2012).

Braun *et al.* (2014) argue that during recent years, various cities started to develop branding strategies and this number has increased globally. This resulted in cities being regarded as recognised tourist related hubs for activities and lead to an initiation of these strategies as sustainable approaches. Three distinct categories of city brands are identified by Fernández-Cavia & Huertas (2009:28–29). The categories are identified in terms of their degree of development, they are recognised as: graphic brands; functional conceptual brands; and emotional conceptual brands, these three categories create unique and intricate values for a city (Isabel and Gonzalez, 2011). It is clearly crucial to collaborate and integrate degrees of development at the national, regional, and city levels to sustain place brands and form a city with a unique identity (Kavaratzis & Hatch, 2013; Pasquinelli, 2014). The concept of city branding has been described and defined from various perspectives, including a range that conceptually moves from product identity to the applicability of product branding methods to places (Kavaratzis & Ashworth, 2005).

#### **2.4.3 Introduction to green place-branding**

Green place-branding is considered as it is the core when branding nature as an aspect of place. It is a local responsibility to take action on issues such as climate change that plays out globally (Busch and Anderberg, 2015). The impact of individual cities’ actions remains insignificant in compared to global issues, but with policies in place, many cities together have the potential to make a unified difference (Busch and Anderberg, 2015). The link between

branding and natural elements could provide a 'green' approach to branding places. The 'green' branding of places, has developed into an abstract activity (Konijnendijk, 2010). As such the green aspect has a worthy stance in sustainable development and forms an essential part of place-branding. Even though Konijnendijk (2010) made this statement, the author also argues that definite activities or movements could be connected and integrated with the 'green image' endorsement of cities. Investigations of green place-branding are scarce and unrefined (Andersson, 2016). Place-branding could be considered as an 'umbrella' concept that accumulates various branding concepts applied to places, where notions of products and establishments are implemented by nations, regions, and cities, while considering the environment and natural solutions (Kavaratzis & Ashworth, 2005). Green city branding, grounded on local sustainability determinations, has progressively been regarded as a potential basis for city branding (Busch and Anderberg, 2015). "To better understand the global dynamics of green city branding and the discourses of green growth championed by city leaders it is necessary to situate this trend within global neoliberal competition." (Gulsrud, 2015) This sort of branding concept has been recognised as 'eco-branding' by Anderberg and Clark (2012).

Eco-branding provides central ideas that are meant to create a mentality that leads to a positive attitude towards the environment, but we "should not assume that an appearance of environmental commitment necessarily corresponds with ecologically sustainable outcomes" (Anderberg & Clark, 2012:596). The implementation of green city branding may shape a way on how to use preceding environmental implementations when probing to develop new and improved identities (Anderberg & Clark, 2012; Andersson, 2016). The concept of 'green', when used in a marketing context, includes both the biophysical dimension and also environmental policy (Gulsrud *et al.*, 2013). Green place, and in this case city, branding has the drive to convert deprived, stagnant places into contemporary, attractive ones (Andersson, 2016). The trend is to use climate change mitigation as a basis for motivation to develop green place-branding and it is visible within various eco-cities (Busch and Anderberg, 2015).

Green city branding has the potential to syndicate two sides of city branding; "the city as a place for profitable business" and "the city as a good place to live in" (Busch and Anderberg, 2015). Urban areas are densifying and green spaces and infrastructure will keep cities liveable and should consequently be regarded as crucial by the governing body or municipality (Gulsrud *et al.*, 2013). "Literature from the field of branding and marketing depicts green city branding and green policies in general as acts that are exclusively motivated by an entrepreneurial agenda, which aims to attract mobile capital" (Busch and Anderberg, 2015:13). The transformation potential for a city and its aspects are supported by the policies

influencing the city's brand. Andersson (2016) derived a reviewed framework which is presented in Table 2-1, with the altered functionality of the policy-making rudiments after the implementation of green place-branding:

**Table 2-1: Policy-making rudiments of cities after green place-branding**

Revised analytical framework		
Elements	Functionality in green cities	After green place-branding
Historical events	Encourages policy, unintentional	Linked through storytelling as strategic and successive
Selective policy definitions	Establishes a standard and measurability	The claim of being greenest creates new demands and benchmarking, definitions of green policies become less flexible
Funding programmes and public investment	Enables implementation of policies	They are a necessity to maintain the brand pledge and to build new showcases
Extra-local policy networks	Opportunities for shared learnings, influx of ideas	Crucial for building a green reputation; provides opportunities for both shared learnings and exports
Localised networking and alliances	Presents a long-term perspective connects with local level, continuity in policy-making	Integrated into storytelling and the reproducing of the brand pledge
Imagineering and identities	Highlights competitiveness and image, instils pride	Focus on citizens' role, important to have 'everyone on board', top-down perspective

Source: Andersson (2016).

It could be derived from the Table that green place-branding forms local environmental policy-making into a more strategic, interweaved and co-dependent functions. Combinations of perspectives are developed regarding eco-branding and with environmental policy-making and governance, wider comprehensions of green cities could evolve (Andersson, 2016). The character of the community and quality of life are major parts of place-branding policies and it shapes political strategies (Gulsrud *et al.*, 2013). The relation between place brand and environmental policy is connected to urban entrepreneurialism and growing competition

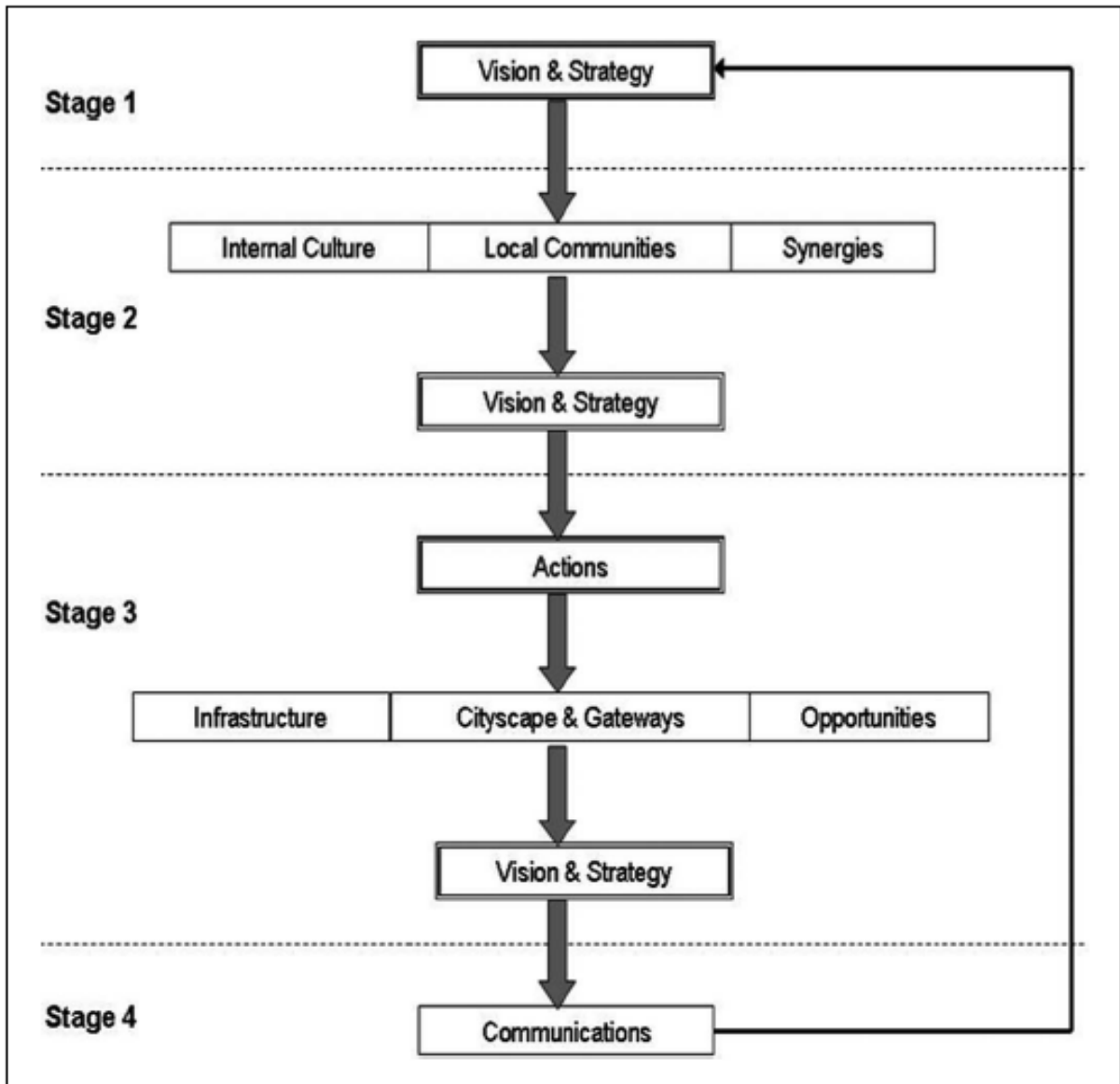


(Andersson, 2016). Another drive that branches the sustainable development of green place-branding in urban areas is related to the practice of sharing ideas between policymakers (Andersson, 2016). Green spaces are rarely one of the key aspects when cities endorse a green image in a wide-ranging sense (Konijnendijk, 2010). Green place-branding is able to develop competitive and also governing standpoints to local environmental policymaking (Andersson, 2016).

Busch and Anderberg (2015) state that green city branding is, in the majority of cases, directed at the local population. Green place brands offer a vision of health and pliability for local citizens and attract innovative residents to address upcoming environmental issues (Gulsrud *et al.*, 2013). Green city branding could then be connected to the notion of (1) an increase of urban environmental political mistakes, (2) emphasis to develop urban biophysical qualities, or (3) achieve a market advantage (Gulsrud *et al.*, 2013).

## **2.5 The process of branding places within a green context**

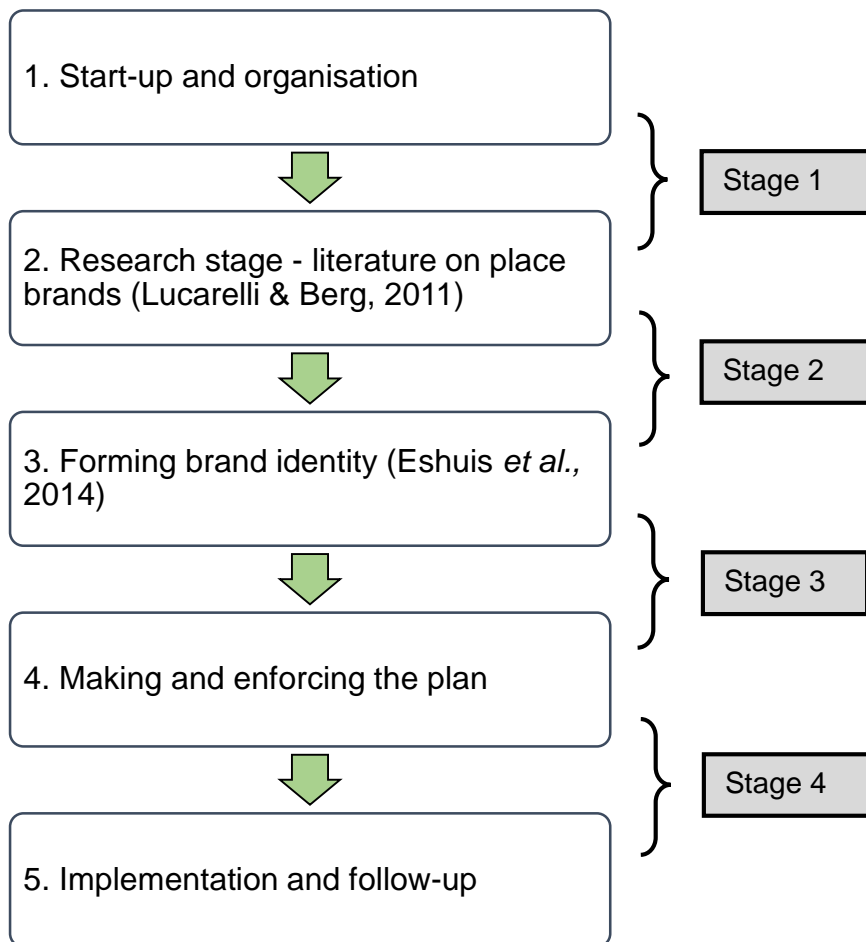
Martínez-Expósito (2014) recognises that if place-branding provides a point of view on ideas of selfhood that departs from speculations of identity, values connected with identity, for example, authenticity and subjectivity will be present. Lucarelli and Berg (2011) indicate that there is some confusion the field of branding places, and there is a progression of unanswered questions that identify with place-branding. According to Lucarelli and Berg (2011), there should be reflected on the essential questions that relate to place-branding, and there ought to be explored 'how brands and space mutually shape each other'. To create a link between green elements and place-branding a clear comprehension of how a place is branded should be comprehended. Figure 2-3 illustrates that Kavaratzis (2008) set out four stages of the place-branding process:



**Figure 2-3: A Place-branding process**

Source: Kavaratzis (2008).

With the set out four stages of the place-branding process Kavaratzis (2008) created, it is clear that the vision and strategy on how the actions and communications are connected to the communities and synergies are developed. The process is based on the communications and actions undertaken by the stakeholders. The stages interlink with each other and within this, the connection to green elements will be pointed out in further sections of the study. To utilise and integrate these stages Moilanen & Rainisto (2008) suggested a place-branding process that entails five phases, as set out in Figure 2-4.



**Figure 2-4: Place-branding process and stages**

Source: Own construction (2018) adapted from Moilanen and Rainisto (2008) and Kavaratzis (2008).

As the process and stages are interlinked with each other, a clear understanding of how the process could entail natural elements may be explored. Place-branding includes the utilisation of specific local planning implementations such as personality connotations, event uniqueness and trademark design (Isabel & Gonzalez, 2011). When the concept is applied, place brands are comprehended as static; mainly because of the fact that places could be subjects of manipulation (Kladou *et al.*, 2016). Kavaratzis & Hatch (2013) states that place-branding is evidently a multi- and cross-disciplinary integrated field. There developed a tendency to attribute several qualities and roles to place-branding in the relevant fields and scientific development principles (Vuignier, 2016). This application process happens while maintaining and differentiating disciplines at different scales to the political, economic, social, and cultural involvement of cities, regions, and countries (Kerr, 2005; de Noronha *et al.*, 2017; Kaplan, 2010).

The nature or ‘green’ approach offers foundations that create adjustments to the ideas surrounding branding to environmental inclusive change (Panno *et al.*, 2017). In this sense,

the green buildup has become increasingly important within place-branding approaches. In order to connect the term “place-branding” with natural elements and its application process, it is insightful to examine some of the trends and developments connected to the various fields related to it (Bothma, 2015). According to Kavaratzis and Ashworth (2005:511), place-branding could be subdivided into three kinds: 1) geographical nomenclature, which produces tangible product names that connect to geographical locations; 2) product place co-branding, attempting to market tangible products by associating them with places that possibly have attributes favourable to the images of the products; and 3) place management, which includes the creation of place identities which are also afterwards used to extend other attractive processes.

The process of branding a place involves connected features and relations, for example, natural resources, set out geography, tourist attractions, institutions involved, local products, characteristics of residents, and the developed infrastructure (Kaplan, 2010). It is thus important to note that place-branding is a more complex and multipart process when linking it to other multidisciplinary fields (Kaplan, 2010). The process of place-branding contains issues that are widely unresolved (Lucarelli & Berg, 2011). When implementing place-branding effectively, the result will create a clear comprehension of the concept with several perceived features with reference to the place (Kavaratzis & Hatch, 2013). By using place-branding to build solid, positive places that could be conveyed by different target groups and stakeholders, it will result into a successful, sustainable implementation process (Merrilees *et al.*, 2009; Zenker *et al.*, 2016).

According to Kladou *et al.* (2016), two specific challenges have arisen concerning place-branding's refinement. Firstly, there are characteristic alterations between products and places, for which the branding idea was originally established (Kladou *et al.*, 2016). These alterations refer to the array of stakeholders, creators, and audiences. There is little control the people have over the places being branded. Also, there is intricacy in terms of the connections between the physical place and the psychological relations of people (Kladou *et al.*, 2016). Secondly, there are inconsistencies between theory and practice which creates a challenge when a place is branded (Kladou *et al.*, 2016). Solutions derived from nature could be regarded as acceptable alternatives to separate solutions, which may not be nature-based (Nesshöver *et al.*, 2017).

When considering ‘green city branding’ the natural elements connected to it could have a distinguishing interface with place-branding. City branding creates a sub-field of place-branding and highlights the importance of marketing and branding for the residents which is already established (Merrilees *et al.*, 2009). Elements such as the environment, urban

planning, commerce, education, quality of life and 'green conservation' are all related to the city's development and could be considered as place-branding defining elements and this potentially makes a link between place-branding and nature. (Isabel & Gonzalez, 2011). Place-branding could as such be comprehended as a sub-field of city branding. A refinement of concepts will thus be made and utilised within the study. The study will consequently refer to the term 'place-branding' as it focuses on the link between natural elements and place-branding. It should be noted that the terms and notions related to places and brands, developed into more reliable practices such as 'city branding' (Kavaratzis & Hatch, 2013).

Ideas surrounding the various fields have moved towards an integrated approach in terms of place-branding (Kavaratzis & Hatch, 2013). An excess of cities and urban-related areas using communication campaigns, claim to have fashioned a place brand, although being a brand means having brand awareness and confirming that such statements are integrated with a brand effect (Vuignier, 2016). Multi-dimensional influences highlight the consequence of a holistic approach when considering environmental issues from a branding perspective. (Raymond *et al.*, 2017). Solutions derived from nature aim to optimise for the well-being of all people while additionally keeping up relevant, dependable values and feasible ecosystems (Kabisch *et al.*, 2017a). Green spaces contribute to social unity and to a better quality of life (Gulsrud *et al.*, 2013). The branding of green spaces and places could subsequently directly be linked as having similarities and correlation to the components of natural solutions. Derived from literature, natural solutions provide distinctive characteristics within a spatial planning context, and a connection could be made with green place-branding.

## **2.6 Conclusion**

The general aim of place-branding is to activate the creation of positive relations with the place and differentiate it from other places (Kladou *et al.*, 2016). Anholt (2005:120) supports the statement of Kladou *et al.* (2016) by indicating that even though place-branding began in the tourism industry, places need to consider branding in a more extensive context concerning the management of brand images and encounters of stakeholders. Place-branding is not only meant for urban communities and towns that regard themselves as tourism destinations, but also for the majority of cities and towns striving to distinguish themselves (Hanna and Rowley, 2011:458).

When generating a place brand, it is necessary to have a clear understanding of the association between people and places (Anholt, 2005:118, 119). People have a diverse set of interpretations of place-branding also the role it has in place management (de Noronha *et al.*, 2017). The branding of places is in conclusion used to create a notion around the field of place

marketing and place strategy (Vuignier, 2016). The concept of place-branding is set-out in such difficult to comprehend terms, that the terms are confused and used incorrectly by several authors (Vuignier, 2016). However, the term 'place-branding' could be regarded as a process where a series of unique associations are formed in alignment with 'place' through the presentation of functions, relationships, and strategic factors (Zhao *et al.*, 2017).

The clear distinction between what a place is and how it is branded provides an effective place-branding strategy that should be able to deliver expectations to the impacted and also promote a sense of belonging and objective-sharing related to the location (Zhao *et al.*, 2017). In order to comprehend branding and NbS, clarification on what NbS is and how it links with place-branding is crucial. The following Chapter will provide an investigation to capture the link between place-branding and NbS by considering NbS within pertinent context.

## CHAPTER 3: INTRODUCTION TO NATURE-BASED SOLUTIONS

### 3.1 Points of departure

Chapter 3 introduces the notion of Nature-based Solutions (NbS) and how the concept emerged. It reflects on the history of the development of the concept and the current reality thereof within the broader spatial planning framework.

### 3.2 Origins of NbS

Societies are continually challenged by issues such as climate change, disaster risks, and uneven resource distribution (Garmestani *et al.*, 2013). A range of environmental and social challenges across the globe are addressed and subsequently solved by using the beneficial factors of nature and its ecosystems (Thorslund *et al.*, 2017). Acknowledging the key part ecosystems have in supporting the well-being of humanity, is foundational for numerous societal frameworks and is reflected in various conventional knowledge systems (Cohen-Schacham *et al.*, 2016). Quantitative understanding of the issues natural systems could potentially resolve is vital in order to conserve nature while holistically sustaining human well-being (Thorslund *et al.*, 2017). Sustainable development and nature conservation, are in this sense, interlinked with each other (Cohen-Schacham *et al.*, 2016).

The need for sustainable development has existed since the starting point of humans. In Greek antiquity, Plato (400 BC) explained the relation between nature and man, and the exhaustion it brings to natural systems (Cilliers, 2010). Garmestani *et al.* (2013) stated that socio-ecological systems are dynamic and thus creates a complex situation for human development, not leaving many areas for self-reorganisation and a tendency to change with resilience. Challenges related to ecological development in a sense of resilience integration should be greatly considered on the occasion of developing for the well-being of humans (Gulrud *et al.*, 2018). Research of Barton *et al.* (2017) captured the challenging trade-offs between natural, social and economic objectives and goals in terms of sustainable development (section 3.5). These trade-offs indicate that a result in a challenge of pliability, between economic, social and natural capitals is present (Barton *et al.*, 2017). Accordingly, there is a considerable need for managing resources toward solutions, conveying various ecosystem services to fulfil the challenges faced concerning the sustainability of humans and their living environment (Liquete, 2016:392). In order to address and face complex challenges like above mentioned, platforms and bodies are starting to focus on Nature-based Solutions (NbS) as a relief to some of the climate change, disaster risks, and resource distribution challenges faced within the human spectrum (Raymond *et al.*, 2017).

Cohen-Schacham *et al.* (2016:2) stated that NbS have the potential to engage the natural components of ecosystems and the services they provide to address societal issues. Following a similar approach, 'natural solutions' have been employed as a comparable concept with set out knowledge regarding the subject (Dudley *et al.*, 2010). "NbS explicitly address societal challenges. The solutions are not aimed at addressing only environmental challenges or minimising only environmental impacts, although these may be part of what the NbS is targeting." Cohen-Schacham *et al.* (2016:2). In this sense, NbS could be regarded as a concept which is strongly integrated with relevant ideas and proposals, for example, natural solutions in terms of human development (Dudley *et al.*, 2010), natural systems agriculture (Jackson, 2005), and ecosystem-based approaches (Cowan *et al.*, 2010). Biodiversity-related to humans and local social communities are at the core of these natural solutions (Eggermont *et al.*, 2015). As NbS benefit the environment while sustaining solutions concerning humans that are in alignment to respond to environmental change and fluctuations in the long-term.

### **3.3 NbS and related disciplines**

NbS is a relatively new 'umbrella' concept with various perspectives for the usage of the concept (Albert *et al.*, 2017). In this context, NbS have been considered by various stakeholders from distinct frames of reference (Eggermont *et al.*, 2015). The focus of stakeholders has shifted and evolved, in particular, the International Union for Nature Conservation (IUCN) as well as units applying policy, for example, the European Commission (EC) (Eggermont *et al.*, 2015). The attention shifted to resolving challenges related to the society while incorporating the sustainable use of nature and factors associated with it (Eggermont *et al.*, 2015). As 'actions inspired by, supported by or copied from nature' (European Commission, 2015), NbS is considered as a developing concept and is currently invested in by the European Union's Horizon 2020 program as an answer in order to address societal challenges (Maes and Jacobs, 2015).

There is a lack in literature of the evaluation of the suitability for NbS in terms of broadening and diversifying the notion (Peter *et al.*, 2017:284). Evidently, there is considerable research on the diversity of population subgroups, but not necessarily on NbS and where it prevents problems through the decreasing of urbanisation-related risk elements in the long haul where it is not compliantly integrated (Hartig *et al.*, 2014). The main branded ideas and concepts have an extensive potential, but lack in diversifying future development processes which include natural solutions as a grounded feature (Peter *et al.*, 2017:288). In relation to above stated, a more direct outline of how urban natural environments may influence humans are required to provide a more grounded framework and notion for urban planners and decision



makers in planning spatially for the upcoming development of areas (Kabisch *et al.*, 2017a:363).

When distinctly considering the on-going political discussion on jobs and development, the European Union (EU) stated that NbS have the potential to transform ecological and societal issues into innovative opportunities and solutions to complex problems (Eggermont *et al.*, 2015). These natural solutions form part of the EU's 'Research and Innovation' agenda, and it is expected to help with delivering the vision of an innovative green economy (Nesshöver *et al.*, 2016). "A wide range of NbS-related initiatives is being undertaken by IUCN and its Members" (Cohen-Schacham *et al.*, 2016:10). The IUCN also supported the vision of the EU by stating that NbS "can deliver effective solutions to major global challenges, such as climate regulation, using nature while providing biodiversity benefits in terms of diverse, well-managed ecosystems and respecting and reinforcing communities' rights over natural resources" (Eggermont *et al.*, 2015:244).

NbS thus create the possibility for concepts related to nature and the developing principles surrounding it, to connect and integrate with solutions connected to the broader understanding of the idea. The NbS notion is closely linked to other notions that include "sustainability, resilience, ecosystem services, coupled human and environment, and green (blue) infrastructure" (Lafortezza *et al.*, 2018). The development and present state of related and connected principles are key to confining the wider view of NbS (Cohen-Schacham *et al.*, 2016). Ideas related to NbS, are valuable to consider, to grasp the scope and scale of the functioning and implementation of NbS to broader societal problems and challenges. "Concepts such as green infrastructure, ecosystem services and disservices, resilience, sustainability, transdisciplinary planning and adaptive planning should form part of the common language of future planners" (Cilliers & Cilliers, 2016:39). Table 3-2 captures usage of associated terms and frameworks of reference and it implies the notions set out and used by various stakeholders and participants (Eggermont *et al.*, 2015).

**Table 3-1: Concepts related and comparable to NbS**

Concept	Definition (by examples)	Relation to NbS
Green/Blue infrastructure (GI/BI)	GI includes “public goods” (Rics, 2006) which are not just “green” when regarded in terms of land use but also comprises of grey-infrastructure rudiments that adds to GI in various values (Van Leeuwen <i>et al.</i> , 2009:4). An example includes; agricultural land with field margins, tunnels made for Fauna of the area, protected earthly areas, parks and green roofs within cities. Blue infrastructure (water related): rivers, coastal areas, lakes, wetlands and also designed structures for example ponds, man-made channels, water reservoirs, water retention tanks and then also wastewater networks (Nesshöver <i>et al.</i> , 2017; European Commission, 2015; Haase, 2015; Naumann <i>et al.</i> , 2011).	The same as NbS in some fields. The environmental connection on a natural level, supporting development (Nesshöver <i>et al.</i> , 2017). GI is able to provide habitats for a wide variety of species consequently increasing biodiversity in ecosystems (Martínez <i>et al.</i> , 2010).
Ecosystem Approach (EA)	A procedure for participatory and foundational natural resource management. It depends on the use of proper scientific systems concentrated on levels of biological association which include the fundamental capacities and connections among organisms and their environment. It perceives that humans, with their social aspects, are a necessary segment of ecosystems. It is executed by means that are correlative and interlinked (Nesshöver <i>et al.</i> , 2017).	Humans being the focal point in the development of the natural environment and factors associated with it (Dudley <i>et al.</i> , 2010).
Ecological Engineering (EE) and Catchment Systems Engineering (CSE)	Ecological engineering (EE) is “the design of sustainable ecosystems that integrate human society with its natural environment for the benefit of both” (Mitsch, 2012:5) Catchment Systems Engineering (CSE) is “an interventionist approach to altering the	CSE and EE are forms of NbS: both are concentrating on societal challenges in order to benefit humans wellbeing. (Nesshöver <i>et al.</i> , 2017). “Ecologists need to recognise the applied nature of their field to offer

	catchment scale runoff regime through the manipulation of hydrological flow pathways throughout the catchment.” (Wilkinson <i>et al.</i> , 2014:1245)	prescriptions, not just descriptions, for environmental problems.” (Mitsch, 2012:5).
Ecosystem Services Approach/Framework (ES)	Ecosystem services (ESs) are services and Goods provided by ecosystems for human well-being. This comprises providing services (water, nourishment, heating), cultural amenities (tourism, recreation, schooling), controlling services (corrosion or flood fortification, climate parameters) and supportive services (earth formation and nutrient cycling) (Nesshöver <i>et al.</i> , 2017).	When designing and assessing NbS; ES are vital components and contribute to the process (Nesshöver <i>et al.</i> , 2017).
Natural Capital (NC)	NC a segment of the natural field, of which humans benefit from. There are various types: renewable resources (water), non-renewable resources (fossil fuels); wastes recycled; services, for example, climate regulation. NC isn't the same as nature, however, it is the premise of all generation in the human economy and the supplier of services without which human culture could not manage itself (Coffey, 2015).	Demonstrates the role of nature in meeting human needs. The value of NbS when considering the wellbeing of humans. (Nesshöver <i>et al.</i> , 2017).
Ecosystem-based Adaptation (EBA)	“Local and landscape-scale strategies that enable both people and nature to adapt in the face of climate change” (IUCN, 2009). Converting measures and policies that consider the role of ecosystem services by decreasing the risk of climate change. EBA involves various governing levels addressing the dissimilar burdens on ecosystem services, including climate change, and managing ecosystems to upsurge the pliability of humans and economic subdivisions to climate change (Nesshöver <i>et al.</i> , 2017).	EBA creates a relation between conservation and management for human well-being. It balances interests by increasing the range of stakeholders, using the same design framework as NbS (Nesshöver <i>et al.</i> , 2017).

Source: Own construction (2018) adapted from Nesshöver *et al.* (2016).

Eggermont *et al.* (2015) state that current realities are going past the customary biodiversity protection and management standards by 're-focusing' the ongoing deliberation on humans and particularly to integrate societal factors. Solutions integrated with nature's benefits are often used in correlation with other interventions that aim to achieve environmental sustainability. Cohen-Schacham *et al.* (2016) provide the example of food security challenges; they are most effectively addressed using an integration of measuring scales including solutions received from nature. At the same time, the "net benefit of nature-based solutions depends on how much non-renewable energy can be replaced without decreasing total production of ecosystem services" (Maes and Jacobs, 2015:3). While numerous open deliberations are radicalised, these solutions could offer a change with sensible, incremental strides toward a maintainable economy (Maes and Jacobs, 2015:121).

The notion around NbS is evolving prevalently but, Eggermont *et al.* (2015:246) state that it is important to note that stakeholders and policymakers ought to be aware of the uncertainties and complexities that are associated with NbS. NbS can provide various trade-offs with it being implemented in accordance with a plan that will increase viability. "People also consider the appropriateness of how they relate with nature and with others, including the actions and habits conducive to a good life, both meaningful and satisfying" (Chan *et al.*, 2016:1462). It is thus important to comprehend the scope of NbS in order to ultimately obtain the most value. Liqueste (2016) indicated that Eggermont *et al.* (2015) distinguish three types of NbS that share the aim of enhancing the scope of ecosystem services. Cohen-Schacham *et al.* (2016) also identified three types of NbS. The views of the authors are compared with relevant examples provided by other sources, presented by Table 3-3.

**Table 3-2: Three types of NbS**

	Description	Examples
<b>Type 1</b>	The first type has minimal or no intervention and interference in ecosystems. It aims to only maintain and strengthen the already established range of ES. It considers and makes use of resources for the protection of natural necessities and to create sustainability in the area.	<ol style="list-style-type: none"> <li>1. Protecting mangroves in coastal areas in order to limit risk factors related to extreme weather.</li> <li>2. Provide beneficial opportunities to the local population.</li> <li>3. Measures that increase fish stocks in an intact wetland to enhance food security.</li> <li>4. Establishing marine protected areas, while the biodiversity is conserved within these areas</li> </ol>
<b>Type 2</b>	The second type resembles the management approaches which develop sustainable and multifunctional protocols to restore ecosystems. Enhances selected ES, compared with what might be obtained with a more regular intervention. Strongly associated with ideas, for example, natural systems agriculture, agro-ecology, and evolutionary-orientated forestry.	<ol style="list-style-type: none"> <li>1. Increasing multifunctionality of agricultural landscapes by planning innovatively.</li> <li>2. Enhancing tree species and genetic diversity in order to improve resilience in forests to extreme events.</li> <li>3. Re-establishing traditional agroforestry systems based on commercial tree species to support poverty alleviation</li> </ol>
<b>Type 3</b>	Thirdly, the overseeing ecosystems in exceptionally intrusive manners, solutions creating new ecosystems with natural solutions could help meet different standards. Relational and intellectual problems are solved by directly utilising NbS. Sharing elements and resources with other ideas and approaches are more holistic with the relative potential in order to help develop environmental sustainability.	<ol style="list-style-type: none"> <li>1. Artificial ecosystems.</li> <li>2. Humans designing and creating NbS.</li> <li>3. Establishing green buildings</li> </ol>

Source: Own construction (2018) based on Liqueste (2016:393), Cohen-Schacham *et al.* (2016) Jackson (2005), Grorud-Colvert *et al.* (2014), Eggermont *et al.* (2015).

The three types of NbS focus on developing, maintaining and protecting natural areas in order to secure and support the solutions they provide. According to Cohen-Schacham *et al.* (2016), the advancement of the NbS concept has globally been grounded as the nature preservation and development sectors. The concept has previously been regarded as having opposing objectives and have pushed toward a typical acknowledgement of the positive as well as negative connections amongst nature and people (Cohen-Schacham *et al.*, 2016). This has been evidenced by, for instance, the rise of the entire field in terms of sustainable development. Likewise, opinions on nature conservation have widened significantly over the last few years, growing past the select focus on the protection of nature (Cohen-Schacham *et al.*, 2016).

### **3.4 Historic milestones in the development of NbS**

For many years, nature has been used as a technique to resolve various challenges. People have been making use of their natural surroundings and resources to increase the sustainability of their living environment (Keesstra *et al.*, 2018:1002). Waylen *et al.* (2014:1221) are of the opinion that the growing terminology surrounding NbS could be regarded as an encouragement through time for efficient resource management. The NbS concept emerged in environmental sciences and contexts as there were searched for ideas to work with ecosystems as solutions rather than depending on engineering intercessions (Cohen-Schacham *et al.*, 2016). For NbS to be successfully comprehended as solutions in relevant terminology and context, Cohen-Schacham *et al.* (2016) proposed 8 principles to provide a full understanding of NbS: “1) embrace nature conservation norms (and principles), 2) have the ability to be implemented alone or in an integrated manner with other solutions to societal challenges (e.g. technological and engineering solutions), 3) are determined by site-specific natural and cultural contexts that include traditional, local and scientific knowledge, 4) produce societal benefits in a fair and equitable way, in a manner that promotes transparency and broad participation, 5) maintain biological and cultural diversity and the ability of ecosystems to evolve over time, 6) are applied at a landscape scale, 7) recognise and address the trade-offs between the production of a few immediate economic benefits for development, and future options for the production of the full range of ecosystems services, and 8) are an integral part of the overall design of policies, and measures or actions, to address a specific challenge.”

In order to understand the 8 principles which are set out by Cohen-Schacham *et al.* (2016), a clear origin of the principles should be created. Cohen-Schacham *et al.* (2016) used foundational concepts and facts that were utilised to produce each of the NbS principles, as illustrated in Table 3-4.

**Table 3-3: Foundational ideas used in the development of NbS principles**

The basis for principle development	Principles developed
Nature-based Solutions are not a substitute for nature conservation as they embrace nature conservation and its principles. At the same time, not all conservation efforts would necessarily be considered as NbS.	Principle 1
NbS offer one group of solutions, among numerous others, to solve global societal challenges; NbS is able to complement, and be implemented alongside, other types of interventions.	Principles 2, 8
A clear objective of NbS should be to support cultural and social components and values.	Principles 3, 4, 5
NbS are context-specific, both in time and space. For example, although climate change is a global issue, the issue could be addressed in different ways, at different scales, and in different parts of the world. The appropriate NbS will need to be tailored to the specific conditions present.	Principle 3, 4

Source: Cohen-Schacham *et al.* (2016).

The principles provide a base comprehension of the term NbS and as the principles are developed, various milestones mark NbS as a compatible concept with the international comprehension regarding natural solutions. NbS could be subsequently compared to the principles even though it was not at all times labelled as ‘NbS’. Few systems and frameworks existed before the official labelling in terms of recognising and evaluating the value of co-beneficial solutions connected to nature (Raymond *et al.*, 2017). Through an observable timeline, NbS were continually considered as a core objective and design principle (European Commission, 2015). The evolvement of the term provided motivating frameworks to governments, institutions, business, and citizens (European Commission, 2015). This motivation created innovative approaches which is pliable enough to coordinate natural capital in policies and planning while maintaining the integrated goals of sustaining the environment and human well-being (European Commission, 2015).

During the 2000’s, the concept of ‘Nature-Based Solutions’ emerged, denoting a vital move in context: not only were humans the uninvolved recipients of nature’s advantages but where

they could also secure, oversee and restore natural ecosystems, integrating it with social components (Cohen-Schacham *et al.*, 2016). The 2005 Millennium Ecosystem Assessment, provided substantial foundations for policies to promote the restoration, conservation, and sustainable management of ecosystems, “Some people and social organizations hold worldviews that encompass kinship between people and nature, including many indigenous and rural societies” (Chan *et al.*, 2016:1462-1465).

Globally, since 2005, cities have attempted to mitigate the challenges within cities by designing urban parks and sustainable green areas as an approach that has been labelled as NbS (Panno *et al.*, 2017:249). This was followed by means of the report of the World Bank (2011), where natural solutions were initiated and as such applied as possible solutions to manage issues regularly at a local level (Eggermont *et al.*, 2015). The IUCN (2009) followed with a position paper and natural solutions report, helping humans cope with climate change. Workshops on NbS were initiated in 2014 and the EU has put NbS at the focal point of relevant development in 2016. Natural solutions were incorporated into the Horizon 2020 program and the UN integrated it into the World water development report in 2018. The chronological development of the notion of NbS is illustrated in Figure 3-1.





**Figure 3-1: Timeline on the evolvement of principles related to NbS**

Source: Own construction (2018) adapted from Cohen-Schacham *et al.* (2016).

### 3.5 Application of the NbS concept and what ethical challenges arise

NbS provide sustainable qualities, such as minimal input requirements and pliability to disturbances over time, also aiming to improve human well-being in general (European Commission, 2015). The manner in which NbS are applied could influence the manner in which various components of ecosystems are influenced while maintaining a legitimate ethical value system. “Conservation has long been concerned both with sustaining human resource needs and with conserving nature’s intrinsic value – the right of species and other aspects of nature to exist for their own sake” (Doak *et al.*, 2014). This impacts a possible pliable relation between humans and the environment, thus it is relevant to work in synergy to address underlying challenges and will improve the well-being of the general society (Cowan *et al.*, 2010).

Cowan *et al.* (2010:5) stated: “To effectively tackle biodiversity loss we need to address climate change, yet equally we should tackle climate change while also addressing biodiversity loss”. In this sense, evaluating the risks related with NbS ought to be compulsory and alternative solutions should be visualised, taking into consideration the potential effects, accounting for future environmental changes (Eggermont *et al.*, 2015:246). When applying the NbS concept in order to improve human well-being, ethical questions arise concerning other factors than humans.

Lafortezaa *et al.* (2018) identified four principal goals that could be addressed by NbS, and as:

“(1) Enhance sustainable urbanization through NBS to stimulate economic growth as well as improve the environment, making cities more attractive and enhancing human well-being; (2) Restore degraded ecosystems using NBS to increase their resilience, enabling them to deliver vital services and withstand other societal challenges; (3) Develop climate change adaptation and mitigation strategies using NBS to provide more resilient responses and enhance carbon storage; and (4) Improve environmental risk management and resilience using NBS to produce greater benefits than conventional”.

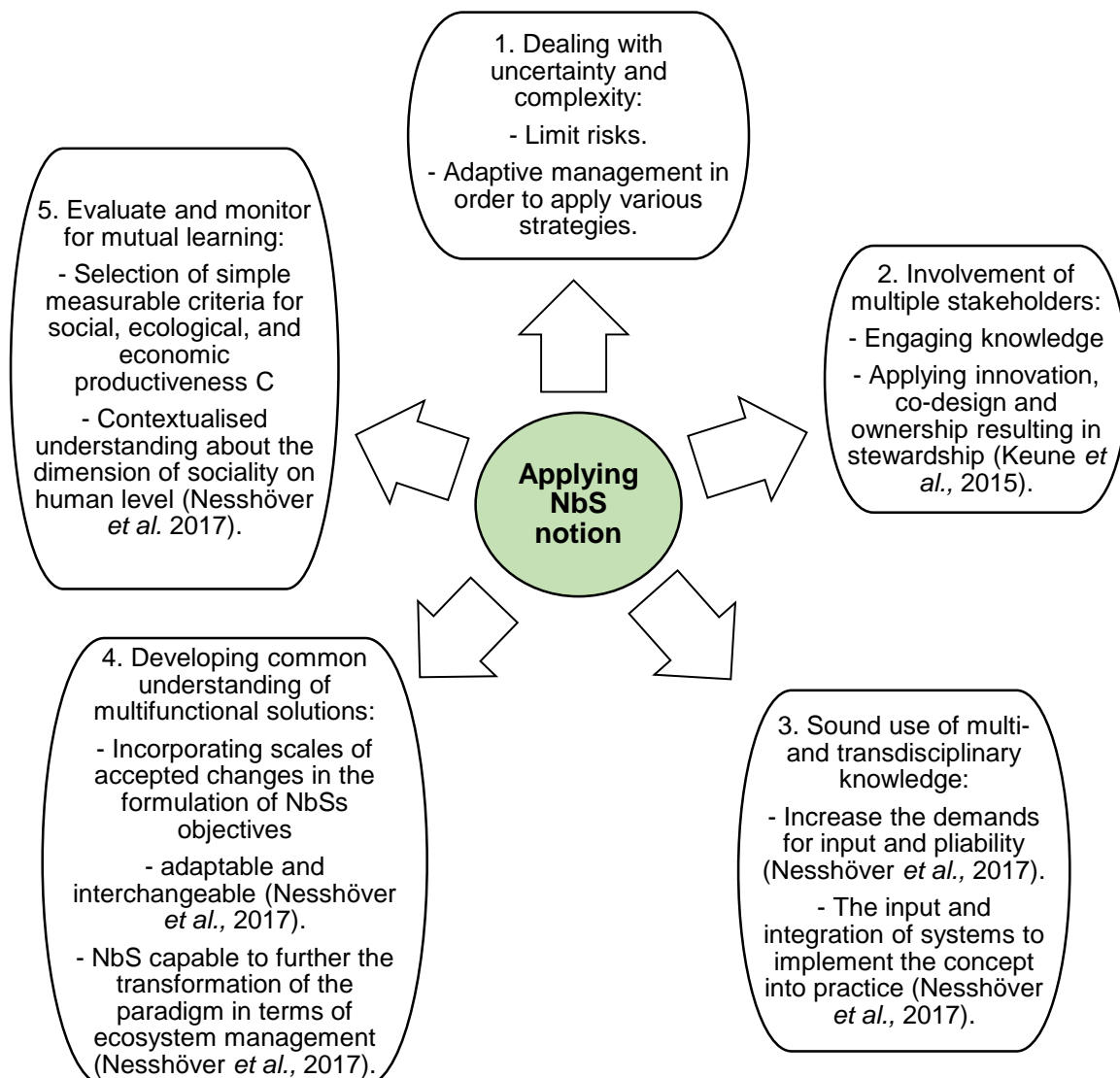
Considering the goals developed by Lafortezaa *et al.* (2018), a broad range of stakeholders are involved in the essential decisions with reference to costs when developing natural solutions, also design, location, and scale (Nesshöver *et al.*, 2017). Decisions to be made require coherence from stakeholders coming from diverse conventions (ecosystem science and ecology, agronomy and forestry, conservation and restoration, sociological backgrounds, economic bodies, nature-based architecture, etc.). This is in order to respectively recognise and combine their key standards into an intelligent, valuable set that is comprehensible and available to all participants (Eggermont *et al.*, 2015). In order to apply above-mentioned solutions on a nature-based level instead of conventional techniques, choices underlined by relevant components have to take into account larger temporal and notion (Maes and Jacobs, 2015). This includes measuring and displaying the application process to create a sustainable ethical consideration of all scales relevant to the process (Maes and Jacobs, 2015).

It is clear that NbS could be grounded as “more sustainable relationships with nature might come in part from more responsible relationships to the products that are increasingly fixtures of ‘modern’ life” (Chan *et al.*, 2016:1462-1465). Raymond *et al.* (2017) created a framework where four specific dimensions may appear simultaneously when implementing NbS: (1) Co-benefits for the health and well-being of humans. (2) Environmental performance at an

integrated level. (3) Trade-offs and synergies to health, biodiversity or economy. (4) Citizen's involvement in evaluation and governance.

As seen with the framework Raymond *et al.* (2017) created, perceptions of how natural solutions could influence attitudes, generate meaning, define values and regulate the scale of importance on an economic level. It is thus crucial to recognise that applying it in practice require the consideration of essential components that influence both humans and the environment (Aitken & Campelo, 2011:922). Cilliers (2010) suggested that nature has value connected to it and created an ethical approach explained accordingly. The approach regards nature as having an independent value of any usefulness to people. Preservation and maintainable use of biodiversity and ecosystem services have the potential to create and sustain a crucial input towards knowledge surrounding the subject (Cowan *et al.*, 2010).

Eggermont *et al.* (2015) state that two main ethical challenges arise regarding the subject; NbS is: (1) A human-centred functionality concept, and (2) It is not including other knowledge systems, for example, local and indigenous knowledge. The ethical approach regards non-human life, for example, plants, animals, and eco-system parts, to have rights to exist and ought to be valued as important regardless of what they mean and provide to people (Cilliers, 2010). In spite of the fact that the ethical approach isn't frequently utilised as exclusive in urban planning, segments of this approach are acknowledged by numerous stakeholders (Cilliers, 2010). Applying the NbS notion could as such include an array of challenges related to the ethical payoff between nature and humans. Considering the process Nesshöver *et al.* (2017) established relevant components for the application process of the NbS notion as illustrated in Figure 3-2.



**Figure 3-2: NbS in practice - 5 essential components for the application process**

Source: Own construction (2018) adapted from Nesshöver *et al.* (2017).

According to Laforteza *et al.* (2018) “applications of NBS as ‘living’ and adaptable tools to boost the capacity of landscapes and cities to face today’s critical environmental, economic and societal challenges”. Applying the NbS notion to meet sustainable ends could be challenging and complex (Nesshöver *et al.*, 2017). Risks have to be limited by dealing with uncertainties because various ethical challenges arise (Eggermont *et al.*, 2015). When stakeholders are involved in applying NbS, an engaging knowledge surrounding the concept will develop, resulting in co-designing and ownership (Keune *et al.*, 2015). The knowledge developed would create standards to implement the concept into practice (Nesshöver *et al.*, 2017). Implementing NbS within ethical standards transforms the paradigm of ecosystem management which leads to mutual learning for stakeholders and participants involved in the

process (Nesshöver *et al.*, 2017). The levels of environmental consideration ought to be kept to certain standards within the relevant policy guidelines of the area regarding natural conservation (Anholt, 2006).

The nature of an NbS ought to stand as a foundation for the provision for the intellectual mass and swift cross-comprehension of standards and ideas need to reach comprehensive goals (Eggermont *et al.*, 2015). The facilitation and ethical values of these transdisciplinary concepts are created by promoting and illustrating research models, where fundamental sciences are not opposed and pertinent knowledge systems are included (Barot *et al.*, 2015). Creating foundations in order to deploy participants toward attaining environmental sustainability in a diverse field of socio-ecosystems, while considering what impact the application will have, are substantial factors that impact the broader value of the concept (Eggermont *et al.*, 2015). Acknowledging that it is rare where there are only positive outcomes in social-ecological systems is foundational for 'nature-based' solution design (Barton *et al.*, 2017). Merrilees *et al.* (2009) are of the opinion that the conservation of nature should be regarded as crucial when applying NbS from a spatial planning perspective. The author also states that the outdoor leisure and development activities that take place could influence the ethical standards on which nature is protected. The tranquillity of an area should be kept as sufficient as possible in order to sustain the future of resource distribution and usage (Zenker, 2009).

### **3.6 The benefits of NbS from a spatial perspective**

Natural solutions have a part in the properties related to multifunctional 'green' interventions which is integrated with the complexity of nature to create innovative opportunities in terms of environmental, economic and social challenges (Nesshöver *et al.*, 2017:2; Peter *et al.*, 2017:284; Eggermont *et al.*, 2015; European Commission, 2015). Validated undertakings ought to be initiated to prove how the various social, economic and natural values are interlinked with NbS and how it could be most viably conveyed toward spatial planning (Kabisch *et al.*, 2017a:371). It is an opportunity for sustainability features connected to nature to attain more credit in policy, projects, and practice, also to compose notions from all pertinent spatial planning principles and how this composition relates to the NbS and the value it displays (Nesshöver *et al.*, 2017:1225).

Natural solutions play a critical part in advancing 'transitions' from a resource-intensive development model towards a more resource-efficient, comprehensive and sustainable development display (Faivre *et al.*, 2017). Research of Barton *et al.* (2017) proved that there are unique trade-off values between the economic, social and environmental objectives in terms of sustainable development. Together with more research and reliable evidence, the

expectation is to discover and optimise NbS for the well-being of all people while additionally keeping up the sound, dependable values and feasible ecosystems. Raymond *et al.* (2017) point out that an NbS provides various co-benefits, for example, the enhancement of place attractiveness, wellbeing, quality of life and creating green employment opportunities (Kabisch *et al.*, 2017a:371). It is clear that these solutions optimise benefits for numerous interests (particularly - environmental, societal and economic) and advance sustainability while having the ability to soften the trade-offs between values. However, there will be only a few situations where all objectives are met at the same time, as trade-offs will come forward (Eggermont *et al.*, 2015:246).

“Throughout its history, and across the globe, environmental conservation has been motivated By a wide range of ethical, utilitarian, aesthetic, and economic concerns.” (Doak *et al.*, 2014:77-81). NbS is able to start social, economic and ecological innovation, increasing the transition process to sustainability, providing various benefits as set out in the following Table 3-5 with the content introduced and initiated by Faivre *et al.* (2017) and Liqueste (2016:393).

**Table 3-4: Social, economic and environmental benefits of NbS**

Benefits	
<b>Social</b>	Eggermont <i>et al.</i> (2015) refer to components of an NbS as societal solutions (ontological dimension), benefits of solutions characterised by humans (epistemic dimension), and the sustainable utilisation of nature (practical dimension), it is clear that the concept is anthropocentric. These anthropocentric values lead to solutions that could be classified as a productive concept, integrating perspectives in order to yield positive societal resolutions, being beneficial to the value of the notion. (Faivre <i>et al.</i> , 2017). This notion has a physical impact on the living costs of the place where the NbS is applied. Accordingly, there is a drive toward managing natural resources to resolve social issues, assuring various ecosystem services to fulfil the challenges faced concerning the well-being of humans (Liqueste, 2016).
<b>Economic</b>	NbS could provide wholesome opportunities for innovation when promoted by both practitioners and policymakers as a cost-effective way of creating a competitive economy with more sustainable aspects (Faivre <i>et al.</i> , 2017:509). This leads to utilisation of the concept which might offer a sufficient transition of realistic incremental steps toward a sustainable, well-induced economy (Maes and Jacobs, 2015:121). This is done by fostering innovative planning implementation of the natural solutions and control on set out frameworks, also new models for finance and institutions including the larger social communities (Wolfram and Frantzeskaki, 2016; Faivre <i>et al.</i> , 2017). “Economic or monetary benefits of green space include market values, competitive values, and natural systems values” (Cilliers, 2010:51). These values and price indexes of green spaces (thus NbS) could have a direct influence on communities and their economies (Cilliers, 2010).

<b>Environmental</b>	<p>For successful implementation of NbS, a profound comprehension of nature's functioning and procedures is required, leading to an increase in knowledge of the concept (Keesstra <i>et al.</i>, 2018:998). Firstly, there should be adequate access to the natural phenomena involved in the application of the NbS. (Zenker, 2009). This knowledge contributes to the concept of ecosystem services in certifiable circumstances to advance sustainability and environmental aspects more expressively (Faivre <i>et al.</i>, 2017). Cilliers &amp; Cilliers (2016) suggested that GI (related to NbS) have various benefits on household- and neighbourhood-levels, both directly and indirectly. The environment could thus represent the brand of the area. (Kavaratzis, 2008). The number and size of the green areas in a measurable area could influence the application of nature towards sustainable measures which then creates awareness and long-term conservation of natural resources (Maes and Jacobs, 2015; Merrilees <i>et al.</i>, 2009). The effect the place has on the area, cleanliness of environment, attractiveness and the pleasantness all could be influenced by the relevant NbS which is applied (Anholt, 2006).</p>
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Source: Own construction (2018).

De Noronha *et al.* (2017) state that the focus should be on the goals in terms of value that contribute to the development of the place's identity. Eggermont *et al.* (2015:246) underline this in a way that the NbS approach might help meet three sorts challenges – ethical, intellectual and relational. NbS could be regarded as beneficially building on, and sharing features with other concepts, methods and implementations, but could be more holistic and have the possibility to sustain the environment (Eggermont *et al.*, 2015:246). Ecological aspects are regarded as natural innovations, for example, NbS are some of the main rudiments when designing NbS, which positively adds to sustainable growth and development in social, economic and environmental innovations (Maes and Jacobs, 2015). The innovative approach to the application of NbS integrates the standards of cultural representation. To outline successful NbS and relative, proper ideas with systematic thinking, and parallel ones, in order to comprehend and foresee how a system will behave in response to the implementation of a specific strategy (Keesstra *et al.*, 2018:999), as such resulting in a long-term, cost-effective solutions for reducing negative influences and trade-offs (Keesstra *et al.*, 2018:1006).

### **3.7 The link between the branding of NbS and spatial planning**

The Eleventh sustainable development goal of the UN calls for sustainable cities and communities. From a spatial planning perspective, solutions derived from the benefits of nature provide various qualities that align with the objectives of sustainability and resilience that relate to planning spatially (Peter *et al.*, 2017). By utilising nature's broad elements, well-designed measures require less maintenance, are more cost-effective. In the event that measures are built and maintained capably, it may be more viable on the long run, since nature could expand the productivity of the structure and the contribution to the sustainable economy

and society of the definite place (Kabisch *et al.*, 2017b; Villegas-Palacio *et al.*, 2016). The place could as such be promoted and branded with the characteristics of an NbS. NbS consequently provide versatile management approaches dealing with compound socio-ecological issues (van der Jagt *et al.*, 2017:265).

Some nature-based engineered solutions already implemented in water management and urban planning (e.g. green roofs, vegetation in street canyons, bio-infiltration rain gardens) have proven to be more cost-effective, efficient, flexible, multi-purpose and enduring than the 'grey infrastructure' possibilities (Liquete 2016:393). Eggermont *et al.* (2015) found that in order to successfully utilise an NbS, it should not be regarded as the only possible way, but rather lodged in a broader, reasoned strategy at applicable policy and research levels. Otherwise, it could be misinterpreted and misapplied within the practice. Planning spatially, solutions derived from nature are able to enable the planner to remain inside the safe operating space for humans, enhance ecological and social sustainability, and guaranteeing long haul productive systems (Maes and Jacobs, 2015).

In order to identify and relate to the places people are in, a way to brand the place with NbS should be developed to sustain their basic needs and preferences (Eshuis *et al.*, 2014). Governing bodies thus have the responsibility and reliability to apply the NbS while sustaining the brand of the place. Ecological innovations are some of the main elements when designing NbS to fit in accordance with the spatial plan, which successfully adds to sustainable growth (Maes and Jacobs, 2015). In this context, Liquete (2016:393) states that a portion of the engineered solutions effectively utilised as a part of urban planning has proved to be more cost-effective, efficient, flexible, multi-purpose and enduring. For this implementation to be successful, Barton *et al.* (2014) conclude that NbS need to be implemented in the existing policy mix. To brand the place with a relation to NbS there should be the protection of biodiversity measures, planned spatially, valid environmental evaluation, economic inducement, and feasibility (Barton *et al.*, 2014).

Branding NbS in relation to spatial planning ought to emphasise the importance of available opportunities within nature. (Barton *et al.*, 2017) It should also place focus on barriers and trade-offs present in order to maintain and evolve strategic natural capital to ease and efficiently evaluate spatial planning processes (Barton *et al.*, 2017). Maes and Jacobs (2015), also regard spatial planning context as crucial for the environment and that it needs to grow and expand to enable the required changes to occur. Solutions toward branding derived from nature could be regarded as acceptable alternatives to separate solutions, which may not be necessarily nature-based (Nesshöver *et al.*, 2017). Not only does the brand promote the identity of the place and improve the structure, but also increase stakeholder participation



(Aitken & Campelo, 2009). Multi-dimensional impacts highlight the significance of a holistic approach when designing the brand of NbS from a spatial planning perspective (Raymond *et al.*, 2017). The implementation and control in urban areas are widely considering the potential of synergies and potential trade-offs between nature and people (Raymond *et al.*, 2017).

According to Raymond *et al.* (2017), to sustain and successfully develop a holistic approach like above mentioned the following is required: (1) comprehending the socio-ecological and environmental context of the NbS design, implementation, and monitoring, in order to identify anticipated costs and benefits, assessed for various stakeholder groups preceding to the NbS design; (2) designing solutions to address numerous interconnected challenges and to rely on NbS co-benefits; (3) Natural solutions ought to be implemented within various scales with a 'learn-by-do' approach, in order to promote ownership of NbS and adjusted management in response to upcoming risks (4) maintaining, managing, monitoring and assessing NbS using co-production processes in the long run, to follow changes in natural solutions impacts determine how to manage trade-offs and take advantage of co-benefits.

Green areas, and as such NbS, commonly increase the quality level of the urban environment (Arvanitidis, 2007). NbS have the potential to create opportunities for recreation, association, and social interaction while shaping communities' brands and increase the resilience of their spatially induced plans (Arvanitidis, 2007). When considering urban blue and green spaces (Table 3-1) within the spatial plan, the provision of these ecosystem services could be regarded as a form of NbS, contributing to face the challenges urban planners and decision-makers have (McHale *et al.*, 2015). The integration of natural solutions in urban design and planning are able to enhance the well-being of urban dwellers through the execution of UGS, offering various co-benefits while making urban areas more resilient and sustainable (Raymond *et al.*, 2017). The NbS approach offers supportable clarifications in order to adapt to environmental change in urban areas and brand it consequently (Panno *et al.*, 2017:249). In this sense, the green hype and NbS as a branding link has become increasingly important within spatial planning approaches.

### **3.8 Conclusion**

Even though NbS is a relatively new 'umbrella' concept, there are numerous perspectives for the usage of the term and how it should be applied (Albert *et al.*, 2017). Cohen-Schacham *et al.* (2016) concluded that the advancement of the NbS concept has been clearly grounded as nature preservation and as such the development sectors have pushed toward and recognised the positive and also negative connections between people and nature. NbS have been approached by numerous stakeholders from distinct frames of reference (Eggermont *et al.*,

2015). There are still vulnerabilities and learning gaps in terms of the overlapping and connecting related literature with ideas linked to NbS (Nesshöver *et al.*, 2017). For instance, stakeholder involvement and the reception of fundamental perspectives are not necessarily aligned in terms of uncertainties when regarding the essential idea of natural solutions (Nesshöver *et al.*, 2017). Likewise, opinions on nature conservation have broadened significantly in recent years, evolving past the single focus on the protection of nature (Cohen-Schacham *et al.*, 2016). Eggermont *et al.* (2015) state that the focus shifted to resolving challenges connected to society while integrating the sustainable use of nature and associated factors.

Even though there is evidence that supports the fact that there are benefits related with NbS, predominantly in highly dense places, more applicative studies ought to be done in order to address a substantial amount of challenges (Laforteza *et al.*, 2018). To have the best prospect of progression, NbS projects ought to be based on an adjusted, clear, generally acknowledged and implementable arrangement of principles (Nesshöver *et al.*, 2017). Keesstra *et al.* (2018:999) also indicate that in order to create effective NbS, proper ideas with orderly thinking, comprehension, and predictions should be made. How a system will behave in response to the implementation of branding it in a specific manner are key, followed by long-term, cost-effective results (Keesstra *et al.*, 2018:999). As 'actions inspired by, supported by or copied from nature' (European Commission, 2016), it is essential to utilise every relevant source of expertise when creating and linking NbS with place-branding. It is inductive to reason that help and offers to learn and comprehend the ideas related to NbS ventures, depending on the core concern (Nesshöver *et al.*, 2017). Accordingly, the following Chapter will explore the interface between NbS and place-branding.

## **CHAPTER 4: THE INTERFACE BETWEEN NBS AND PLACE-BRANDING**

### **4.1 Points of departure**

Chapter 4 considers place-branding case studies, models and frameworks as part of a systematic review to identify the interface between NbS and place-branding. The cases, models and frameworks were considered collectively to inform a single green place-branding index, emphasising the interface between NbS and place-branding.

### **4.2 Application of NbS in practice**

The relationship between place-branding and NbS is complex, with a variety of methods associated with what extends places are branded. The process of branding a place involves connected features and relations of NbS, for example, natural resources and the set-out geography (Kaplan, 2010). Kladou *et al.* (2016) state that the main aim of place-branding is to trigger the development of positive relations with the place and consequently differentiate it from other places. The means in which NbS are applied could affect the manner in which numerous workings of systems such as place-branding are influenced. Every place is unique and has its distinguishing characteristics. It is therefore important to comprehend each place in context and relevance to what aims it should meet.

Considering an all-inclusive approach on the various roles and effects different places could have and how they are branded would provide a more clarifying approach. A substantial number of scholars that investigate place-branding, recognise that corporate branding has set the way for a more urbane appreciation of place-branding (Da Silva Oliveira, 2016). Only recently place-branding has meaningfully widened its scope to comprise a broader range of additional socio-spatial and spatial-economic issues. (Da Silva Oliveira, 2016). Including various case studies creates a more holistic approach in order to substantiate the relationships of the factors relating to place-branding. In order to fully comprehend the relevance of the relationship, Table 4-1 indicates distinguished case studies where NbS have been applied and to what extent it impacted on place-branding. Each case study has a unique value and place-branding goals, as such different impacts on the branding process.

**Table 4-1: Suite of 3 case studies where NbS have been applied and the effect it has on place-branding**

Source	Location	Title	Thematic goals	Impacts on place-branding
Kabisch <i>et al.</i> (2017a)	Europe	1. “Nature-Based Solutions to Climate Change Adaptation in Urban Areas – Linkages between Science, Policy and Practice. Theory and Practice of Urban Sustainability Transitions.”	To enhance sustainable urbanisation while restoring degraded ecosystems by efficiently using available resources and energy. Adapting to climate change and improving risk management and resilience by increasing carbon requisitioning, regeneration and human wellbeing.	Bottom-up concerted partnerships lead to the effective implementation of NbS and the repetition of place-branding initiatives, towards sustainable measures.
Asian Development Bank (2016)	Greater Mekong Subregion, Asia	2. “Nature-based Solutions for Building Resilience in Towns and Cities: Case Studies from the Greater Mekong Subregion.”	To apply principles of GI and utilising NbS of relevance to the Mekong towns. Issues such as flood management, slope stabilisation and pollution are to be resolved. Policies are shifted to enhance the implementation process of NbS and improve risk management.	The importance of rehabilitating ecosystems and managing NbS as a central part of sustainability within the interconnected towns, brands the strategy and implementation on managing levels.
Wamsler <i>et al.</i> (2016)	Berlin, Germany	3. “Mainstreaming Nature-Based Solutions for Climate Change Adaptation in Urban Governance and Planning.”	To adapt to climate change by efficiently utilising available resources, especially green roofs and walls. Restoring degraded ecosystems within Berlin by managing access to urban green sources and changing of land uses. Enhancing sustainable Urbanization. Regenerating Urban areas to improve human well-being.	An indicator of ‘socio-environmental justice’. NbS may not at all times be beneficial for all population groups in the same way, as such each place is branded in accordance with its characteristics.

Source: Own construction (2018).

### 4.3 Existing place-branding frameworks and models

Various place-branding models and indexes exist within academic literature (Bothma, 2015). This section reviews selected models and indexes and attempt a synthesis of such to create a viable green place-branding index interlinked with NbS and associated factors. The models and indexes that were considered in this Chapter were purposefully selected based on the reference made to spatial planning, NbS or place-branding. Based on the collective analysis of the selected models and indexes, a place-branding index considering NbS and the role it plays within these frameworks of place-branding was created. This then strengthened the comprehension of the link between the place-branding indexes and NbS.

Simon Anholt was one of the main developers of the term ‘brand’ and an index was consequently established on how to brand a place (Anholt, 2006:555). This index was translated to a city brand model and could, therefore, be regarded as relevant to have similar characteristics as a place-branding index. City branding creates a sub-field of place-branding (Merrilees *et al.*, 2009). Subsequently, a distinctive link and justification could possibly be made between city branding and place-branding. Exploring various models in context with place-branding would provide a thorough comprehension of the different factors to take into account when branding a place. Firstly, the holistic value of a place (or city) is considered to create an all-inclusive foundation when branding a place. The following Table describes the 6 main factors of the model developed by Anholt.

**Table 4-2: A city (place) brand model**

Factor	Description
Presence	The international status of the area and the global knowledge of the city or place.
Place influence	The effect the place has on the area, cleanliness of environment, attractiveness and the pleasantness.
Pre-requisites	Quality of the place. In the event that the area is satisfactory to certain standards and affordable in relation to the quality.
People	The mindset and feeling of the people in the area. Is the area welcoming and user-friendly?

Pulse	The amenities and recreation available in the place. Does it provide activities for the people
Potential	Economic and educational opportunities available. Job availability and income scales.

Source: (Anholt, 2006).

Anholt (2006) explained that the information surrounding these factors allows the inhabitants of the place or city to make more informed decisions when branding themselves. Following this holistic interpretation when branding a place, more direct and tangible factors are considered. When a place is branded, a compatible process ought to be followed in order to ensure an efficient and thorough procedure. The components and process to brand a place (see Table 2-1) includes planning and set out principles in order to create a sustainable branded place in accordance with in-context descriptions. Even though this is regarded as crucial, Kavaratzis (2008) states that the branding process is not linear. The components are complex and interrelated, thus, they redefine each other. It is, therefore, crucial to constantly monitor and consider each component. Consequently, Kavaratzis (2008) developed city branding components (Table 4-3) which correlates with place-branding principles.

**Table 4-3: Relevant city branding components developed by Kavaratzis (2008)**

Component	Description
Vision and strategy	The role of the government, its effectiveness in making decisions and relation with the impacted participants, while sustaining a vision for the future of the specific place.
Internal culture	The availability and potential for culture to develop and spread while thriving within the place and whether there are sub-cultures present.
Multi-disciplinary	Complexity, involving the present aspects interlinking with each other (Social, economic and environmental).
Identity	Marketing to create a distinctive identity and involve a variety of branded elements and appealing to other places.
Communities	Linking a uniqueness and value to the residents, creating communities within the place or city

Synergies	Between brands agreement and cooperation takes place with stakeholders at all levels
Infrastructure	Providing basic needs, and that the place is able to provide for the required functions.
Cityscape/ gateways	The environment representing itself, influencing the brand of the city/place.
Opportunities	The opportunity for companies and individuals (financial, lifestyle, work).
Communication	Mixes between different groups impacted by the branding strategy, communication should be 'fine-tuned'.

Source: Zenker (2009).

Kavarratzis (2008) explained that the branding of places should not be partially done or only to a certain extent. The place should be clearly defined and a set-out strategy followed to identify the key parts of the process (Kavaratzis, 2008). As mentioned earlier, the components redefine each other and should thus thoroughly be evaluated and assessed, in order to clearly define a place. The branding could as such be directly correlated with the evaluation of a place. When evaluating a place, Zenker (2009), suggested that four basic factors should be taken into consideration. The factors investigate the basic needs of target groups within the area and identify the branding of the area. It is set out in a logical hierarchy, considering the diverse classes associated with the specific place or city, as illustrated by Table 4-4.

**Table 4-4: Four basic factors of city brand evaluation**

Factor	Description
Urbanity and diversity	Various cultures/sub-cultures and related activities, the energy of a place, the urban 'image' present, shopping opportunities, and tolerance of the city/place.
Nature and recreation	A number of parks/open spaces, the tranquillity of the place, access to water, levels of pollution, outdoor activities available.

Job chances	Available professional networks, economic growth, opportunities for jobs, the scale of wages.
Cost-efficiency	Cost of living in the area, housing market, availability of properties.

Source: Zenker (2009).

As observed in the Table, the 4 factors that evaluate place and city branding could create widespread ideas and images of places when they are branded. Accordingly, Foroudi *et al.* (2016) developed a framework that links the various concepts and ideas of place-branding, place image and the reputation of a place. The framework comprehensively takes into account the antecedents of place-branding and consequently, the findings can be displayed. Findings indicated that two main captions, namely national culture and infrastructure were the main categories to take into account in order to logically set out the understanding of the framework. The components of place-branding could be sub-divided into these two categories, as illustrated by Table 4-5.

**Table 4-5: Antecedents of Place-branding**

National culture	Infrastructure
Name of the country	Security
Brand of the country	Economic condition
Attributes	Technological advancement
Social changes	Tourism goals
Geography and environment	Place marketing
People	Promotion/strategy
Culture	

Source: Foroudi *et al.* (2016).

Foroudi *et al.* (2016) considered some of the most important aspects when branding a place in his model, but the model did not include specific social aspects that are impacted. Merrilees *et al.* (2009) suggested factors, rooting from literature, that connects these social aspects with a city branding model. The factors were divided into a descriptive Table to illustrate their role in the branding process. Place-branding interrelates with the spatial plan and how it is implemented. A place could have distinctive factors that connect the process of branding with a direct correlation of the antecedents. It is as such imperative to include the social liability of a place and consider the impact it could have on the branding of the place. The factors are



regarded as main affecters when a place is being branded and how it influences the relevant place, as presented by Table 4-6.

**Table 4-6: Factors to consider when branding a city (place)**

Factor	Description
Nature	Access to outdoor areas for recreation, parks, open fields, a green belt, natural wonders and conserving it.
Business creativity	Innovative, thriving economy, employment rates successful.
Shopping	Variety of choices, quality of products, range and uniqueness.
Brand	Integrity, prime lifestyle, reputational standards.
Intentions	Why residents choose the specific place to work/live
Transport	Road networks, maintenance and services
Cultural activities	Events, activities related, community centres available, design and appeal.
Social bonding	Diversity, the potential for social activities to take place and appreciating the place.

Source: Merrilees *et al.* (2009).

Table 4-6 concludes the investigation and systematic review of 5 sources regarding place-branding models and indexes. It considered a variety of opinions and perspectives and also collated all relevant evidence regarding the subject. The numerous factors and components described by each of the sources could be interpreted in order to develop a virtuous green place-branding index to brand places and cities. The models, frameworks and indexes prove to have similar characteristics and coherent factors. However, some of the factors are not considered in all of the models and it is, therefore, necessary to consider each factor with caution and thorough investigation.

#### **4.4 Theoretical constructed green place-branding index for NbS**

The models and indexes were accordingly compiled into a single Table (Table 4-7). The literature was captured using a systematic review where the relevant information was extracted from each source and compiled consequently (Moher *et al.*, 2016). The synthesis is grounded and developed from the 5 sources. Theory-based sampling was employed as a qualitative approach into the place-branding indexes and NbS in order to identify constructs for a green place-branding index that is grounded by NbS. Considering the variety of perspectives and deriving an encamped description of the relation between the aspects,

relevant place-branding factors are hence compiled and as such presented in Table 4-7. Each factor is supported by an applicable source.

**Table 4-7: Green place-branding index**

	Place-branding factors	Sources
<b>Economic</b>	Business development and condition	Foroudi <i>et al.</i> (2016) Merrilees <i>et al.</i> (2009)
	Economic opportunities	Anholt (2006) Kavaratzis (2008) Merrilees <i>et al.</i> (2009) Zenker (2009)
	Employment availability	Kavaratzis (2008) Merrilees <i>et al.</i> (2009) Zenker (2009)
	A price index of the place (property value)	Zenker (2009)
	Professional networks	Zenker (2009)
	Salary scale	Anholt (2006)
	Living costs (affordability)	Anholt (2006) Zenker (2009)
<b>Cultural</b>	Cultural events in the area	Zenker (2009) Merrilees <i>et al.</i> (2009)
	Community centres	Merrilees <i>et al.</i> (2009)
	Diversity in culture	Kavaratzis (2008) Zenker (2009)
	Cultural development	Kavaratzis (2008) Foroudi <i>et al.</i> (2016)
	Subcultures present	Kavaratzis (2008) Zenker (2009)
<b>Image</b>	International status (global knowledge)	Anholt (2006)
	Appeal in relation to other branded places	Kavaratzis (2008)
	Promotion of the place	Zenker (2009) Foroudi <i>et al.</i> (2016)
	Intentions to work or live at the place	Merrilees <i>et al.</i> (2009)
	Reputation and distinctive identity (brand)	Kavaratzis (2008) Foroudi <i>et al.</i> (2016) Merrilees <i>et al.</i> (2009)
<b>Governance</b>	Technological advances	Foroudi <i>et al.</i> (2016)
	Infrastructure quality and standards	Anholt (2006)
	Basic needs (water, sanitation, electricity etc.)	Kavaratzis (2008)
	Basic services present (education, healthcare etc.)	Anholt (2006)

	Transportation network (maintenance)	Merrilees <i>et al.</i> (2009)
<b>Nature</b>	Access to natural phenomena	Zenker (2009) Foroudi <i>et al.</i> (2016) Merrilees <i>et al.</i> (2009)
	Environment representing the brand of the area	Kavaratzis (2008)
	Green areas (number and size)	Zenker (2009)
	Levels of pollution (cleanliness)	Anholt (2006) Zenker (2009)
	Tranquillity	Zenker (2009)
	Recreation/leisure	Merrilees <i>et al.</i> (2009)
	Outdoor activities	Zenker (2009)
	Conservation	Merrilees <i>et al.</i> (2009)
<b>Social</b>	Communication	Kavaratzis (2008)
	Social activities present	Anholt (2006) Foroudi <i>et al.</i> (2016)
	Attractiveness/pleasantness for social activities	Anholt (2006) Merrilees <i>et al.</i> (2009)
	Community participation and stakeholder involvement	Kavaratzis (2008)
	Social inclusion and value	Anholt (2006) Kavaratzis (2008)
	Recreational facilities and amenities	Anholt (2006)
	Leisure	Merrilees <i>et al.</i> (2009)
	Tourism satisfaction	Foroudi <i>et al.</i> (2016)

Source: Own construction (2018).

Table 4-7 captures the factors that should be considered to brand a place (according to the indexes considered in this research). NbS may to some extent link with each of these factors, as discussed in previous Chapters. Derived from literature and Table 4-7 an index regarding NbS and how it links to place-branding is presented by Table 4-8. The factors regarded as most relatable to NbS were fixated on and described according to literature. Links to literature and case studies discussed in Table 4-1 are made in context with the relevant factor. Highlighted factors are henceforth pointed out within the context of place-branding aspects. A clear link between NbS and place-branding factors is established in order to contextualise the study.

**Table 4-8: NbS literature link to place-branding indexed factors**

		Description (summary)	Highlighted factors (place-branding)	Literature link
Economic	Viable correlation	NbS could provide wholesome economic opportunities when promoted as a cost-effective way of creating a competitive economy with more sustainable aspects. A value of the set-out area is established, considering the impact of the NbS. The resources are managed to concur with the NbS, to create a sustainable outcome. These valued resources and price indexes of NbS could have a direct influence on communities and their economies, how and to what end the living costs are.	<ul style="list-style-type: none"> <li>• Economic opportunities</li> <li>• A price index of the place (property value)</li> <li>• Living costs (affordability)</li> </ul>	Regulated economic scale (2.2); Economical benefits (3.4), price index (Table 3-5), living costs (Table 3-4)
	Non-viable correlation	Little to no link could be derived based on the literature concerning the economic factors of place-branding.	<ul style="list-style-type: none"> <li>• Business development and condition</li> <li>• Professional networks</li> <li>• Salary scale</li> </ul>	
Cultural	Viable correlation	An innovative approach to the application of NbS integrates the standards of cultural representation. Successful implemented NbS implementation allows locals to express cultural identity.	<ul style="list-style-type: none"> <li>• Cultural development</li> </ul>	Cultural values (Table 3-3) Cultural standards (Table 4-6)
	Non-viable correlation	Little to no link could be derived based on the literature concerning the cultural factors of place-branding.	<ul style="list-style-type: none"> <li>• Cultural events in the area</li> <li>• Community centres</li> <li>• Diversity in culture</li> <li>• Subcultures present</li> </ul>	

<b>Image</b>	<b>Viable correlation</b>	The global knowledge of a place affects the status it has. When NbS is implemented, the brand of the place could be derived within certain criteria, thus classifying it as 'green'. Specific NbS could create a distinctive reputation and promote the place in accordance with a 'green' identity.	<ul style="list-style-type: none"> <li>• International status (global knowledge)</li> <li>• Promotion of the place</li> <li>• Reputation and distinctive identity (brand)</li> </ul>	Knowledge and status of the place (Table 4-2); Place promotion (Table 4-5); Identity created (2.3)
	<b>Non-viable correlation</b>	Little to no link could be derived based on the literature concerning the image factors of place-branding.	<ul style="list-style-type: none"> <li>• Appeal in relation to other branded places</li> <li>• Intentions to work or live at the place</li> </ul>	
<b>Governance</b>	<b>Viable correlation</b>	Governing bodies typically provide basic services and thus basic needs for the local community. When an NbS is implemented, the quality of the services is impacted and the provisional services and infrastructure provided ought to be considered.	<ul style="list-style-type: none"> <li>• Basic needs (water, sanitation, electricity etc.)</li> </ul>	Role of the government (Table 4-3)
	<b>Non-viable correlation</b>	Little to no link could be derived based on the literature concerning the governance factors of place-branding.	<ul style="list-style-type: none"> <li>• Basic services present (education, healthcare etc.)</li> <li>• Transportation network (maintenance)</li> <li>• Technological advances</li> <li>• Infrastructure quality and standards</li> </ul>	
<b>Nature</b>	<b>Viable correlation</b>	For successful implementation of NbS, a profound comprehension of nature's functioning and procedures is required, leading to an increase in knowledge of the concept. Primarily, there should be adequate access to the natural phenomena involved in the application of the NbS. The area is outlined and identified in accordance with its standards. The environment could thus represent the brand of the place. The developmental activities taking place also	<ul style="list-style-type: none"> <li>• Access to natural phenomena</li> <li>• Environment representing the brand of the area</li> <li>• Green areas (number and size)</li> <li>• Levels of pollution (cleanliness)</li> <li>• Tranquillity</li> <li>• Recreation/leisure</li> <li>• Outdoor activities</li> </ul>	Environmental impacts and influences of NbS (Table 3-4) Conservation ethics (3.2); Utilising nature's elements (2.4.2); Case studies (Table 4-1).

		impact the identity of the area, cleanliness of the environment, attractiveness and the pleasantness. Various recreation and leisure activities could be impacted when an NbS is applied. The number and size of the green areas to a measurable extent could influence the application of nature towards sustainable measures which then creates awareness and long-term conservation of natural resources.	<ul style="list-style-type: none"> <li>• Conservation</li> </ul>	
	<b>Non- viable correlation</b>	Little to no link could be derived based on the literature concerning the natural factors of place-branding.		
<b>Social</b>	<b>Viable correlation</b>	The communication within a development in the nature of NbS is between participants and stakeholders is crucial to ensure social inclusion. NbS could provide an increased or decreased attractiveness or pleasantness of the specific area it is developed. It could socially brand the place by setting a value for tourism activities and amenities contributing to the social viability.	<ul style="list-style-type: none"> <li>• Communication</li> <li>• Social activities present</li> <li>• Attractiveness/pleasantness for social activities</li> <li>• Community participation and stakeholder involvement</li> <li>• Social inclusion and value</li> <li>• Recreational facilities and amenities</li> <li>• Leisure</li> <li>• Tourism satisfaction</li> </ul>	Social challenges addressed by NbS (3.2); social values as principles (Table 3-3) Social benefits (Table 3-4) Social sustainability (3.7); Participation (2.4.1); Recreation/leisure (Table 4-6)
	<b>Non- viable correlation</b>	Little to no link could be derived based on the literature concerning the social factors of place-branding.		

Source: Own construction (2018).

## 4.5 Conclusion

It could be clearly concluded that numerous place-branding models and indexes exist within academic literature (Bothma, 2015). This section reviewed these models and indexes and attempted a synthesis. Factors were identified and described in context with the relevant literature. The overall idea of place-branding is to trigger the implementation of positive relations with the place and to distinguish it from other places. (Kladou *et al.*, 2016) The various frameworks that were included, provided a justified and clear suggestion for the integration of the factors between place-branding and NbS.

Kavaratzis & Hatch (2013) is of the opinion that place-branding is patently a multi-disciplinary and integrated field. The frameworks were considered peculiarly and provided a basis from which a green place-branding index could be developed. Also, a place-branding index considering NbS and the role it plays within these frameworks of place-branding was recognised. An efficient place-branding strategy promotes a sense of belonging and objective-sharing related to the location (Zhao *et al.*, 2017). The link and importance of NbS within the green place-branding index ought to be considered within the context of the study. As such, further investigation will be undergone in imminent Chapters.

The next Chapter will provide an empirical investigation using a convenience sampling method to give a report based investigation with the objective to refine the developed index in order to guide spatial planning.

## **CHAPTER 5: EMPIRICAL INVESTIGATION**

### **5.1 Points of departure**

The green place-branding index developed in Chapter 4 is accordingly considered in the empirical investigation with the objective to refine the index to guide local spatial planning approaches. The content of the index was related to specific questions and structured in an online questionnaire that was distributed to respondents using a purposeful sampling method. This chapter captures the methodology employed, as well as the results obtained, analysed and discussed within the context of the study.

### **5.2 Methodology employed in the empirical investigation**

The preceding chapters captured the base comprehension of both NbS and place-branding. A synthesis of the models and indexes resulted in a holistic green place-branding index, taking into account the diverse factors associated with them. In order to further interpret the relation between NbS and place-branding, further research is conducted in this study and presented in this chapter. By questioning relevant expert stakeholders on the subject, insight into their knowledge on the subject could be determined and as such further conclusions could be made.

Burns and Bush (2014:30) indicated that researchers ought to recognise the sources of data they are going to utilise and what composes of data it is. This is in order to solve the problem statement of the particular study and to verify the linked research objectives. There are two main types of data, namely primary and secondary data. Primary data is data that is collected purposefully for a specific research project. Secondary data is data that has previously been collected for other research projects (Burns & Bush, 2014:122). This study is composed of primary data as the research had a specific project and purposeful samples were used.

It is generally considered that there are two types of data collection methods, namely quantitative and qualitative data collection. Quantitative data collection includes the management of a set of structured questions with predetermined response options where a form of statistical analysis is as such used to calculate the data collected (Burns & Bush, 2014:146; Malhotra, 2010:73). Qualitative data collection could be described as unstructured and exploratory in nature, it involves the collection, analysis and interpretation of the data. Purposeful sampling is a technique that identifies and selects information-rich participants to partake in the study in order to use the limited resources most efficiently (Palinkas *et al.*, 2013). This study consisted of the collection of qualitative data and purposeful sampling methods.



In terms of collecting the qualitative data; a survey involves interviewing a certain number of respondents by means of a predetermined questionnaire (Burns & Bush, 2014:174). According to Babbie & Mouton (2001) questionnaires are extensively used for data collection and is able to provide a deeper insight into practice. Utilising a questionnaire to gather information has different preferences, which incorporate the standardisation of questions, simplifying administration, more thorough analysis and the capacity to obtain unseen data. (Burns & Bush, 2014:173; Malhotra, 2010:211). The questionnaire was designed in line with ethical standards and the content to help academics in practice. The questions designed were statistically approached as the questions should produce data that are suitable for the study. This study collected primary data by means of a qualitative data collection method, using a structured questionnaire.

### **5.3 Questionnaire design**

The full methodology is described in Chapter 1. The design of the questionnaire formed the base of the empirical investigation. A questionnaire could be described as a formal set of questions with the goal of obtaining information from relevant respondents (Malhotra, 2010:335). Expert stakeholders were selected based on certain criteria (see Table 1-1). The questionnaire used for this study started with an introduction in order to inform the respondents of the nature of the study. This was trailed by directions for completing the questionnaire and the time that was anticipated to complete it. The respondents were also informed that the questionnaire was developed according to the Ethics guidelines of the subject group Urban and Regional Planning of the North-West University.

As discussed in Chapter 1, the questionnaire aimed to get information on three sections:

**(1) Respondent profiles.** These questions were used to determine the field the respondent work in, and what level of education the respondent has.

**(2) Definitions to provide context.** Definitions on what “place-branding” and “NbS” are, and how it is approached within the study were given in order to provide the respondent with efficient information to contextually complete the questionnaire.

**(3) Questionnaire.** A set of questions were compiled using the existing indexes of branding and NbS as mentioned in the previous chapters (see Table 4-7).

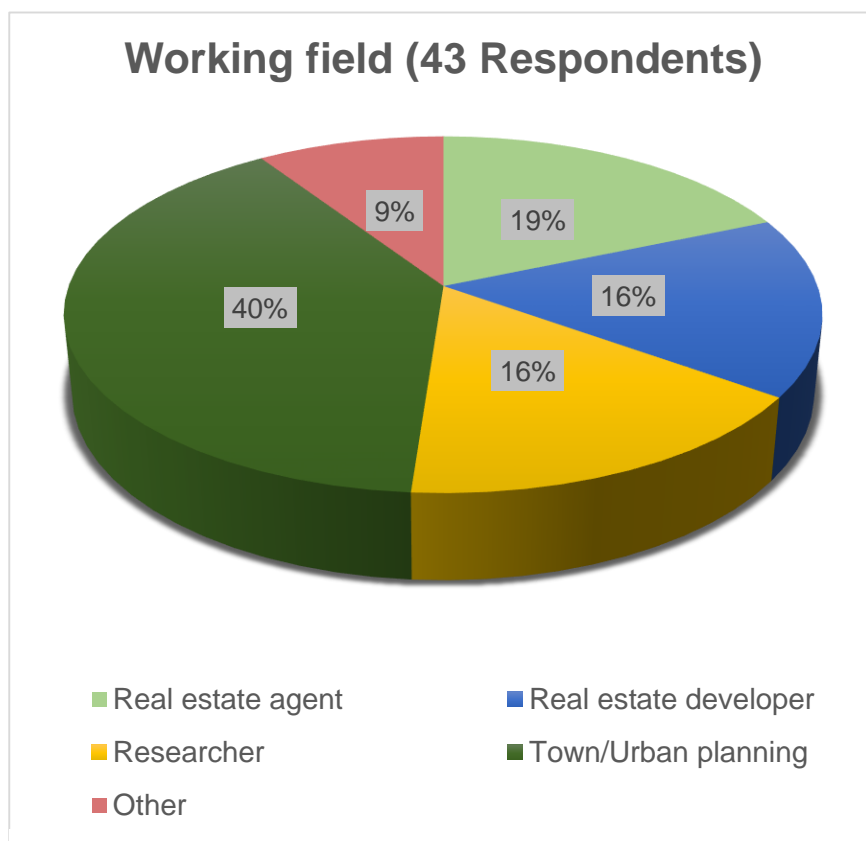
### Based on an NbS perspective

The respondents had to answer the questions while maintaining a grounded opinion based on NbS and a sustainability perspective surrounding the promotion of the subject. A certain data collection, recording and ethical considerations were made. The objectives of the study intended to identify what factors of the developed green place-branding index are important and how it relates to NbS. Therefore, conclusions will be drawn in relation to the viability and potential implementation of the index surrounding NbS. All of the factors will be considered in line with this and compared accordingly.

The results of the questionnaire are accordingly discussed.

### 5.4 Respondent profiles

In the first part of the empirical investigation, the questionnaire captured the respondent profiles of the purposefully selected expert stakeholders. The respondent profiles of the field the experts (n=43) work in are displayed by Figure 5-1:

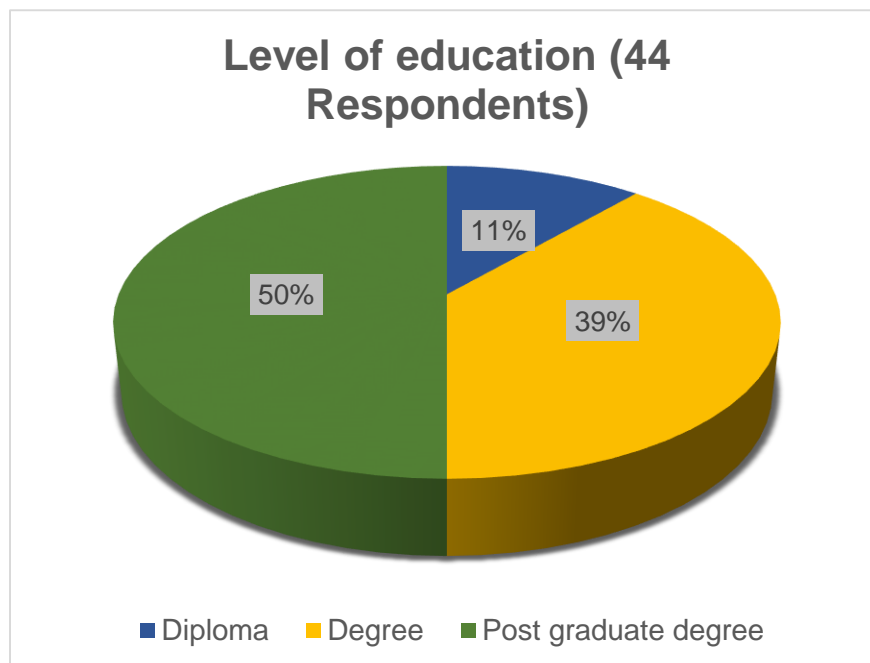


**Figure 5-1: The working fields of respective respondents**

Source: Own construction (2018).

Figure 5-1 indicates the different fields of work that each of the respondents indicated; Real estate agents were 8 (19%), Real estate and property developers 7 (16%), Researchers 7 (16%), Town and Urban planners 17 (40%) and some identified a non-specified field and is indicated as other 4 (9%). These experts were purposefully selected based on relevant professions that relate with the nature of the study in order to obtain insight into proficiency (awareness and knowledge) in terms of NbS and place-branding and to what scale of importance the factors are regarded. The views of each expert stakeholders could, therefore, be regarded as legitimate and proof valuable to the study.

The second part of the respondent profiles indicated the level of education of the respondents. Education is a clear indicator that a participant could have insight and knowledge regarding the subject and contribute to the feasibility of the research.



**Figure 5-2: The level of education of the respondents**

Source: Own construction (2018).

A total of 44 respondents indicated their level of education as illustrated by Figure 5-2. Of the 44 respondents, 22 (50%) indicated that they are on a postgraduate level, 17 (39%) have degrees and 5 (11%) specified that they have a diploma. The profile thus shows that the respondents are expert stakeholders which could contribute to the trustworthiness of the results of the survey conducted. Accordingly, the results pertaining to the contextual questions are presented.

## 5.5 Findings of descriptive statistics

The next part of the questionnaire entailed 6 broad themes that were divided accordingly; Economic, Culture, Image, Governance, Nature and Social. Each category consisted of set out questions obtained from the green place-branding index (see Table 4-7). The questions were asked from both a leisure and business perspective, thus evaluating NbS for business purposes or from a social and personal perspective. Subsequently, the respondents had to rate their opinion on a Likert scale consisting of 5 points to indicate the level of agreement with each of the statements, with 1 being “not important” and 5 being “very important” (Burns & Bush, 2014).

In order to indicate that some factors were regarded as more important, they were prioritised and ranked accordingly by the average rating they received. Each of the themes is distinctive with its factors being ranked in regards to what the respondents indicated. The respondents had to rate from an NbS perspective. Table 5-1 displays the number of respondents that answered the questions, the minimum and maximum ratings the questions received, the mean and standard deviation of each individual question, that was divided in application to the broad themes.

**Table 5-1: Descriptive statistics from a business and leisure perspective**

		Question	N	Min.	Max.	Mean	Std. Deviation
Economic	Leisure	Living costs - affordability	45	2	5	4,09	0,821
		Economic opportunities	45	2	5	3,91	0,701
		A price index of the place - property value	45	1	5	3,71	0,815
		Salary scale	45	1	5	3,69	0,925
		Business development and condition	44	2	5	3,41	0,726
		Professional networks	45	1	5	3,09	1,294
	Business	A price index of the place - property value	45	3	5	4,60	0,720
		Economic opportunities	45	3	5	4,51	0,695
		Professional networks	45	2	5	4,44	0,785
		Business development and condition	44	3	5	4,32	0,800
		Salary scale	45	3	5	4,18	0,716
		Living costs - affordability	45	2	5	4,04	1,043
Cultural	Leisure	Community centres	45	2	5	3,69	0,821
		Cultural development	45	2	5	3,64	0,908
		Cultural events in the area	45	1	5	3,58	0,965
		Subcultures present	44	1	5	3,50	0,928
		Diversity in culture	45	1	5	3,40	0,915

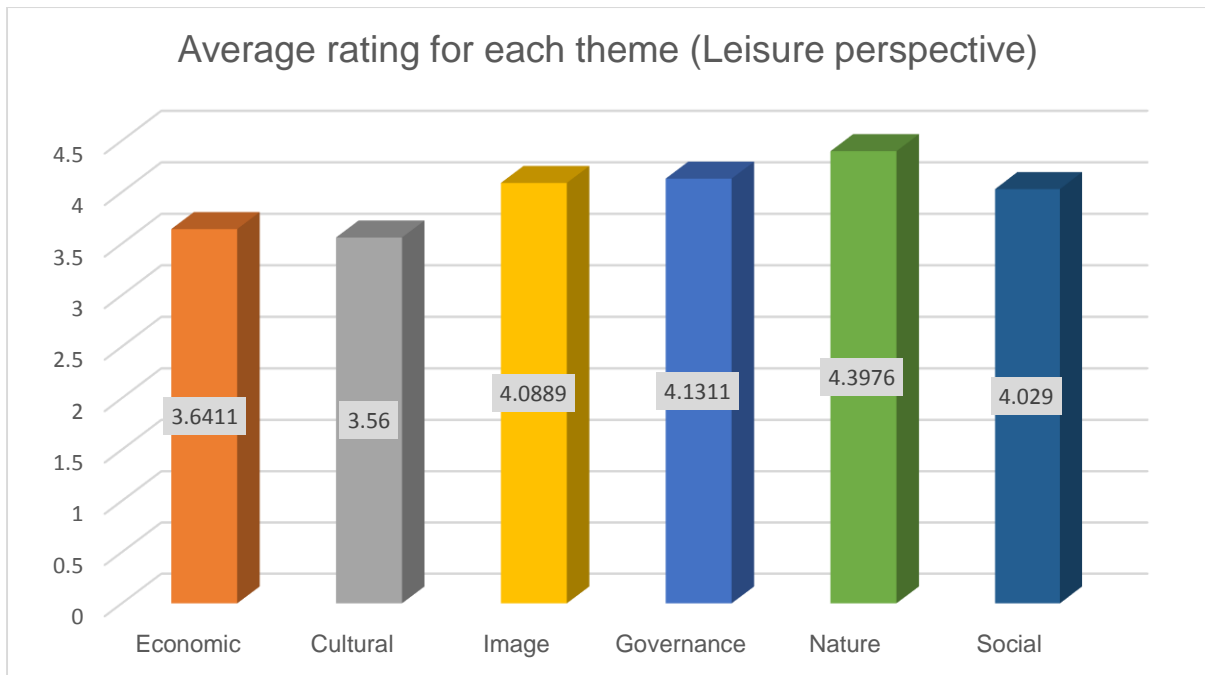
	Business	Cultural events in the area	45	1	5	3,47	0,919
		Subcultures present	45	1	5	3,24	1,004
		Diversity in culture	45	1	5	3,20	1,160
		Cultural development	45	2	5	3,20	0,726
		Community centres	45	1	5	3,16	1,021
Image	Leisure	Reputation and distinctive identity - brand	45	3	5	4,38	0,576
		Appeal in relation to other branded places	45	2	5	4,18	0,684
		Promotion of the place	45	1	5	4,16	0,796
		Intentions to work or live at the place	45	1	5	3,96	0,737
		International status - global knowledge	45	2	5	3,78	0,823
	Business	Reputation and distinctive identity - brand	45	3	5	4,60	0,539
		Promotion of the place	45	2	5	4,36	0,883
		International status - global knowledge	45	2	5	4,27	0,837
		Intentions to work or live at the place	44	2	5	4,23	0,961
		Appeal in relation to other branded places	45	2	5	4,18	1,072
Governance	Leisure	Basic needs - water, sanitation, electricity etc.	45	2	5	4,36	0,883
		Transportation network - maintenance	44	3	5	4,32	0,708
		Infrastructure quality and standards	43	2	5	4,16	0,998
		Basic services present - education, healthcare etc.	45	2	5	4,11	0,935
		Technological advances	45	2	5	3,67	0,929
	Business	Basic needs - water, sanitation, electricity etc.	45	2	5	4,84	0,520
		Transportation network - maintenance	45	3	5	4,76	0,484
		Technological advances	45	3	5	4,71	0,506
		Infrastructure quality and standards	45	3	5	4,71	0,506
		Basic services present - education, healthcare etc.	45	2	5	4,71	0,589
Nature	Leisure	Levels of pollution - cleanliness	44	3	5	4,66	0,526
		Access to natural phenomena	45	1	5	4,53	0,726
		Tranquillity	45	3	5	4,49	0,626
		Conservation	45	3	5	4,42	0,657
		Recreation	45	2	5	4,31	0,848
		Green areas - number and size	44	3	5	4,27	0,544
		Green areas - number and size	45	3	5	4,24	0,743
		Outdoor activities	45	2	5	4,24	0,908
	Business	Levels of pollution - cleanliness	45	3	5	4,24	0,802
		Environment representing the brand of the area	45	1	5	3,89	1,071
		Conservation	45	1	5	3,89	1,265
		Tranquillity	45	2	5	3,80	0,869
		Green areas - number and size	45	1	5	3,60	1,232
Access to natural phenomena	45	1	5	3,58	0,965		

		Recreation	44	2	5	3,20	0,954
		Outdoor activities	45	1	5	3,20	0,968
Social	Leisure	Tourism satisfaction	45	2	5	4,33	0,853
		Recreational - social	44	3	5	4,16	0,745
		Recreational facilities and amenities	44	3	5	4,11	0,689
		Attractiveness/pleasantness for social activities	45	2	5	4,02	0,812
		Social activities present	45	2	5	4,00	0,798
		Communication	45	1	5	3,96	0,737
		Social inclusion and value	45	2	5	3,84	0,767
		Community participation and stakeholder involvement	45	1	5	3,82	0,777
		Communication	45	3	5	4,58	0,621
	Business	Tourism satisfaction	45	1	5	3,96	1,086
		Community participation and stakeholder involvement	45	1	5	3,91	1,062
		Social inclusion and value	45	2	5	3,71	0,968
		Social activities present	44	1	5	3,57	0,974
		Attractiveness/pleasantness for social activities	45	1	5	3,47	1,120
		Recreational facilities and amenities	45	2	5	3,42	0,965
Recreational - social		44	2	5	3,18	0,843	

Source: Own construction (2018).

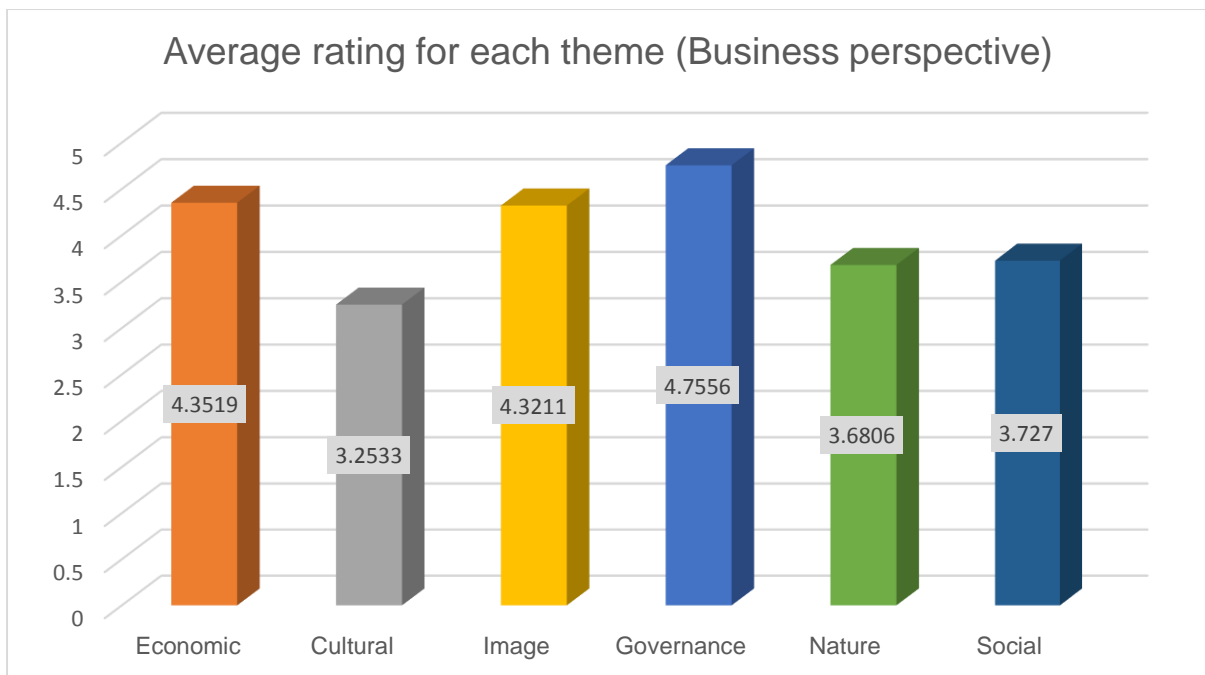
In Table 5-1 it is clear that some factors within each broader theme are regarded as more important than the others. The factors also differ between the business and leisure perspectives.

Figure 5-3 and Figure 5-4 illustrates both the leisure perspective and business perspective respectively. The average descriptive statistical values of each factor are indicated by the figures, illustrating the average rating each theme obtained.



**Figure 5-3: The average rating for each theme from a leisure perspective**

Source: Own construction (2018).



**Figure 5-4: The average rating for each theme from a business perspective**

Source: Own construction (2018).

The figures indicate the average ratings each of the broader themes received. Both the leisure and business perspectives were considered and display a relevant comparison. The most important themes from a leisure perspective were Nature, Governance and Image (see figure 5-3). From a business perspective, the most important themes are Governance, Economic, and Image (Figure 5-4). The themes that received the least important ratings from a leisure perspective were Social, Economic and Cultural (Figure 5-3). Social, Nature and Cultural were rated as the least important from a business perspective (Figure 5-4).

## 5.6 Evaluating the reliability of the results

Reliability could be defined as the degree to which a scale has the ability to replicate the same or similar measurement results when repeated (Babin and Zikmund, 2016). The results obtained differ in opinions of the various respondents. In order to verify the legitimacy of the results, the reliability of each of the categorical factors has to be compared. Cronbach's alpha is a measure of internal consistency, which specifies how closely related a set of items are as a group (Babin and Zikmund, 2016). It is considered to be a measure of scale reliability or internal consistency with the extent to whether individual questions of a construct are correlated. Table 5-2 indicates each of the factors and what value it has in terms of Cronbach's Alpha. A value > 0.5 indicates that the factor could be regarded as reliable and generally accepted with caution (Pallant, 2013).

**Table 5-2: Evaluating the reliability of the results**

Factor	Cronbach's Alpha	Cronbach's alpha value if the item is deleted
Economic - Leisure	0.487	0.527 (A price index of the place - property value)
Economic - Business	0.748	N/A
Cultural - Leisure	0.845	N/A
Cultural - Business	0.868	N/A
Image - Leisure	0.669	N/A
Image - Business	0.878	N/A
Governance - Leisure	0.866	N/A
Governance - Business	0.476	0.531 (Technological advances)
Nature - Leisure	0.751	N/A
Nature - Business	0.887	N/A
Social - Leisure	0.791	N/A
Social - Business	0.854	N/A

Source: Own construction (2018).



From Table 5-2 it is evident that the majority of the factors have good internal consistency based on the values. Based on the alpha value if an item is deleted, it was indicated that if some items are deleted the internal consistency is improved and all factors could be considered as reliable (Pallant, 2013).

The majority of respondents indicated their profession as Town planners. To comprehensively compare the general opinion of Town planners to that of the other working fields further tests were done with the effect size indicating how the factors from both town planners and the other fields compare. It indicates practical significant differences between the mean as well as the effect size. The smaller the effect size, the closer related the results of each preceding factor are:  $\approx 0.2$  Small, No practically significant difference  $\approx 0.5$  Medium, Practically visible difference  $\approx 0.8$  Large, Practically significant difference.

**Table 5-3: Comparing Town Planners with the other fields of work**

Factor	Working field	N	Mean	Effect size
Economic - Leisure	Town / Urban Planner	17	3.5912	0.17
	All others	26	3.7000	
Economic - Leisure	Town / Urban Planner	17	4.2059	0.41
	All others	26	4.4487	
Cultural - Leisure	Town / Urban Planner	17	3.2941	0.54
	All others	26	3.6923	
Cultural - Business	Town / Urban Planner	17	2.9059	0.68
	All others	26	3.4923	
Image - Leisure	Town / Urban Planner	17	4.1529	0.06
	All others	26	4.1231	
Image - Business	Town / Urban Planner	17	4.2500	0.12
	All others	26	4.3462	
Governance - Leisure	Town / Urban Planner	17	4.1059	0.00
	All others	26	4.1038	
Governance - Business	Town / Urban Planner	17	4.6912	0.20
	All others	26	4.7788	

Nature - Leisure	Town / Urban Planner	17	4.3466	0.08
	All others	26	4.3846	
Nature - Business	Town / Urban Planner	17	3.6250	0.06
	All others	26	3.6827	
Social - Leisure	Town / Urban Planner	17	3.8676	0.42
	All others	26	4.1126	
Social - Business	Town / Urban Planner	17	3.5021	0.43
	All others	26	3.8242	

Source: Own construction (2018).

Table 5-3 indicates the view of the town planners compared to that of the rest of the respondents. The biggest effect sizes were that of Economics from a leisure perspective, Culture from both a business and leisure perspective and Social from both leisure and business perspectives. Levene's test was used to assess the equality of variances for a variable, calculated for two or more groups (equality of variances) (Nordstokke & Zumbo, 2010:401-430). The T-test done is to indicate if there is a statistically significant difference between the means (equality of means). The equal variances that were not assumed were used. In the event that the p-value < 0.05, there is a statistically significant difference between the means as indicated by Table 5-4.

**Table 5-4: Independent samples test**

Factor	Levene's Test		T-Test				
	F	Sig.	t	df	Sig. - 2-tailed (P-value)	Mean Difference	Std. Error Difference
Economic - Leisure	4.320	0.044	-0.593	27.293	0.558	-0.10882	0.18351
Economic - Business	3.099	0.086	-1.525	40.289	0.135	-0.24284	0.15929
Cultural - Leisure	0,459	0,502	-1,799	31,660	0,082	-0,39819	0,22132

Cultural - Business	1,541	0,222	- 2,348	28,807	0,026	-0,58643	0,24979
Image - Leisure	1,129	0,294	0,214	29,080	0,832	0,02986	0,13957
Image - Business	3,270	0,078	- 0,441	40,213	0,662	-0,09615	0,21824
Governance Leisure	- 0,005	0,943	0,009	32,716	0,993	0,00204	0,23476
Governance Business	- 3,156	0,083	- 0,740	23,865	0,466	-0,08767	0,11844
Nature - Leisure	0,512	0,478	- 0,276	30,956	0,785	-0,03798	0,13771
Nature - Business	0,758	0,389	- 0,221	29,305	0,827	-0,05769	0,26097
Social - Leisure	3,411	0,072	- 1,514	26,004	0,142	-0,24499	0,16187
Social - Business	0,255	0,616	- 1,488	28,819	0,148	-0,32207	0,21645

Source: Own construction (2018).

Only Culture from a business perspective indicated as  $< 0.05$ , all the other factors were above this number. The Mann–Whitney U test was performed for this study, as it is a nonparametric test which does not require the assumption of normal distributions (Pallant, 2013). It compares the medians instead of the means, equally likely that a randomly selected value from one sample will be less than or greater than a randomly selected value from a second sample (Pallant, 2013). The Asymp. Sig. (2-tailed) indicates the statistical significance of differences, if the p-value  $< 0.05$  there is a statistically significant difference. The effect size indicates the practical significance of differences if the value is  $\approx 0.1$  Small, No practically significant difference  $\approx 0.3$  Medium, Practically visible difference  $\approx 0.5$  Large, Practically significant difference.

**Table 5-5: Test statistics**

Factor	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed) (p-value)	Effect size
Economic - Leisure	205,000	358,000	-0,402	0,687	0,061
Economic - Business	144,500	297,500	-1,914	0,056	0,292
Cultural - Leisure	144,500	297,500	-1,911	0,056	0,291
Cultural - Business	146,000	299,000	-1,874	0,061	0,286
Image - Leisure	208,500	559,500	-0,316	0,752	0,048
Image - Business	179,000	332,000	-1,060	0,289	0,162
Governance - Leisure	219,500	570,500	-0,038	0,970	0,006
Governance - Business	209,500	362,500	-0,313	0,754	0,048
Nature - Leisure	213,500	366,500	-0,188	0,851	0,029
Nature - Business	216,000	369,000	-0,125	0,901	0,019
Social - Leisure	153,000	306,000	-1,706	0,088	0,260
Social - Business	155,500	308,500	-1,632	0,103	0,249

Source: Own construction (2018).

As seen in Table 5-5 some effect sizes indicated as Medium, which means there is a practical visible difference in effect. Some of the effect sizes indicated as small with no difference.

## 5.7 Conclusion

Chapter 5 reflected on the view the various purposefully selected professionals had on the importance of the green place-branding index from an NbS-sustainable perspective. This was

done through an extensive investigation by using questionnaires. The results revealed that there is a potential need to increase the knowledge surrounding the importance of some of the place-branding factors. As such, there was a refinement of the green place-branding index as the results of the empirical investigation changed it. The mean of each broad theme indicated that some factors are to be considered as more important than others. Some factors should be approached from either a business or leisure perspective, as they differ in the rating of importance. The practical significance of some factors indicates that they could be considered viable when implementing the green place-branding index.

The results obtained from the investigation will be used as guidelines in implementing the index within a realistic context. The significance of all the factors of the index was revealed. There are some instances where all the views of the professionals on the factors were not aligned. These findings will as such be further considered and discussed in the following chapter that draws conclusions grounded on the empirical and literature investigations, which creates a link between theory and practice.

## **CHAPTER 6: CONCLUSION**

### **6.1 Points of departure**

Chapter 6 draws conclusions in relation to the set research objectives (refer to Chapter 1). This was informed by the theoretical literature investigation and empirical investigations that were done in the distinguishing previous chapters.

### **6.2 Research conclusions**

Previous chapters focused on the content of how NbS should be regarded when branding places. The research of this dissertation aimed to reach specific objectives and address research questions as set out in Chapter 1. This chapter provides collective information as it unfolded throughout the research. The objectives below reiterate and is followed by the exploratory results that were achieved through the research and a linkage is drawn between them.

#### **6.2.1 Conclusion: NbS can provide opportunities to global environment related issues**

Based on the research conducted in previous chapters, NbS could be described as:

Nature-based Solutions are measures and procedures put in place to solve socio-environmental challenges. It is the sustainable use of nature or challenges supported by nature, which simultaneously provides benefits for social, economic, and environmental needs to help build resilience for human wellbeing. The efficient management of natural resources and natural capital are key when implementing NbS in practice (Refer to Chapter 2).

The primary principle behind the concept is to enhance nature to levels that help and sustain human development on all grounds. Trade-offs can exist when these solutions based on nature are implemented, but with more positive outcomes than negative. This research established that NbS is an umbrella concept, with various ideas and notions that surround and relate to the concept of NbS.

The purpose of the investigation regarding the subject was to determine the nature of NbS and how the concept emerged and is used within the different fields.

Centred around the literature obtained, the innovative opportunities NbS could provide include: Globally, there are an unbalanced use and distribution of resources. This inequality causes various social, economic, environmental and cultural issues. As discussed in previous chapters, the UN has an agenda set out to resolve these issues using the benefits nature and

components that nature could provide. Hence, NbS come to play as an essential future tool to use in the insurance of pliable human development.

### **6.2.2. Conclusion: Place-branding is playing an increasingly important role in broader spatial planning approaches**

The research identified the notions surrounding places and also that of branding them. The relevant factors were explored from a spatial planning perspective and indicated accordingly:

A place could be described as a location, where the geographical area provides the setting for social relations and interactions. It is a locale, where relations are created in an informal and institutional manner which leads to a 'sense of place', that is the structural feelings or emotions that connect the people to the place.

Branding is a production process where the attempt is made to distinguish a product or idea from those of the competitors by managing the procedure. It is when something has a distinct and unique identity while being relevant and competitive. It gives its exclusive distinctiveness and provides a way to recognise it according to certain characteristics or traits.

Place-branding is based on place consumers and what they experience in a specific place. It could be described as a process of producing value amid a geographical area or locale and an individual. An image is fashioned in the mind of the consumer regarding the economic, social and historical features of a specific place and is branded accordingly, this influences the behaviour of the consumer.

### **6.2.3. Conclusion: There is a definite interface between place-branding and NbS**

In an attempt to create a green place-branding index and linking it to NbS the following could be concluded:

A green place-branding index was effectively created, considering pertinent frameworks, indexes and literature surrounding the subject of branding cities and places. The index has 6 broader themes that could be classified in accordance with unique characteristics they comprise of. Each of the 6 themes has various factors that align with each other. It could be concluded that the index is viable and relevant to brand places, as it was developed and grounded from legitimate sources and relevant theory.

The index was then used to conduct an empirical investigation and how the factors rank in terms of importance when considering them from an NbS perspective. Relevant participants acted as respondents in the empirical study and their opinions produced an all-inclusive

conclusion to what ends place-branding factors are considered as important. Subsequently, the link NbS have with place-branding could be validly pointed out and statistically expressed.

#### 6.2.4. Conclusion: The contribution of NbS as place-branding factor differs between leisure and business perspectives

When the green place-branding index is applied in reality, a clear indication of which factors should be regarded as the most important is needed. Table 6-1 displays a summary of the scale of importance of the identified factors and conclusions on how it relates to NbS from a leisure and business perspective:

**Table 6-1: The rating perspectives and the relation it has to NbS**

		Average Rating	Conclusion and how it relates to NbS
Economic	Leisure	3,65	Literature indicated that nature could have economic value. NbS could improve, sustain and influence the economic value of an area. It could also increase the sustainable economic growth of a set-out economy and the intricate assessment it comprises of. The research indicates that NbS is regarded as more important from a business perspective, rather than a leisure.
	Business	4,35	
Cultural	Leisure	3,56	Cultural connections to a place and how it brands it influences the social setting of the area. Culture shapes community identity, thus, are regarded as essential in the place brand process and issues related to this could be solved with natural solutions. The availability and potential for culture to develop and spread while thriving within the place and whether there are sub-cultures present. The research indicated that culture from a leisure perspective is slightly regarded as more important, as such the NbS that could shape culture when issues are solved.
	Business	3,254	
Image	Leisure	4,092	According to the literature investigation of the research, the image of a place gives it its identity and unique characteristics. The empirical investigation indicates that the image of a place is regarded more important from a business perspective. Linking theory with practice, natural solutions could be used to shape the identity of a place and
	Business	4,328	



			create a general opinion and brand of a city as a 'green' branding motive.
Governance	Leisure	4,124	Governance rated as the most important factor of all the broad themes. The business perspective towards governance is high and should as such be regarded as vital. The way a government implement basic needs and service provision could be successful when utilising nature as a tool. NbS could according to theory solve various challenges faced and provide solutions to municipal problems.
	Business	4,746	
Nature	Leisure	4,395	Nature is regarded as more important from a leisure perspective. For human well-being and thriving communities, nature is an essential key to the sustainability of this. Nature could be directly tied to NbS and this makes it clear that literature and the empirical evidence could be connected and aligns in the branding of place as 'green' and related terms should, therefore, be implemented when branding a place accordingly.
	Business	3,675	
Social	Leisure	4,03	Literature indicated that the social factors of when branding a place influence how the community connects with each other and on what levels it happens. The empirical investigation indicates that social from a leisure perspective is regarded as more important. NbS links with the community in a manner that developing trade-offs as to reach a more quality level of social status. Natural solutions provide a way to brand a place that could enhance and influence the social stance of a place.
	Business	3,725	

Source: Own construction (2018).

Table 6-1 identified the place-branding factors that are considered as important from significant perspectives and how it links with NbS

### 6.2.5. Conclusion: The developed index as a valuable spatial planning tool

The developed green place-branding index was considered within an empirical investigation, and it could be concluded that it is viable as the statistical interpretation indicates. This assumption could be made, because various place and city branding indexes, frameworks and relevant theory were considered when a synthesis attempt was made. The respondents had to have certain criteria standards with education being one of the groundings of the study.

Also, various fields of work were considered in the empirical study. The index can be applied in most places, as it considers the various fields that could be related to places as geographical entities. The links drawn between the factors within the index and a realistic case study would link theory with practice. Applying the index within a realistic context is attempted in Chapter 7, with relevant recommendations made. The link between NbS and place-branding is drawn as a comprehensive indication of relevant place-branding factors and the nature they interconnect in with each other. The importance of each factor is a virtuous saleable factor to consider when branding a place.

The proposed green place-branding index adds value to the place-branding process by:

1. Considering broad branding themes, each with relevant, categorical factors.
2. Proposes the level of importance of each factor when branding.
3. Takes into account the different perspectives from which the branding process should be approached (Business and leisure)

### **6.3 The feasible implementation of the index and value it ads**

A feasible development requires sustainable input and careful consideration of the applicable trade-offs present. Future and current developments and the phases required to maintain them are key to ensuring the well-being of both people and nature, as indicated by the literature (Chapter 2). Successfully implementing and utilising the index could provide a way to brand a place, while considering the natural solutions in the context that is able to solve complex problems. The established green place-branding index adds value to the process of spatial planning and provides a sustainable tool to use when implementing the index. This provides communal information on the subject as it was considered throughout the research. Implementing the index to extents of relevance within the context of the spatial planning process provides value to the place-branding concept and how it interrelates with pertinent terms. Nature could provide various solutions and benefits to achieve the ultimate goal of humanity – the wellbeing of all people.

### **6.4 Conclusion**

The research has made an important contribution towards the comprehension of NbS and how it relates to place-branding in terms of spatial planning. Based on the literature investigation and empirical studies the research questions were answered. The conclusions regarding the study were thoroughly discussed and proved that the research objectives were

met. The research aims to solve the research questions as stated in chapter one and is discussed in the context of relevance to the subject. Conclusions were drawn, with reference to relevant information based on the subject. This research concluded a green place-branding index where NbS are considered and the importance of it appointed. The views of professionals in the field were considered and indicated in context with the study.

Recommendations were made grounded on these conclusions and synthesised suggestions on how the green place-branding index should be implemented are hence presented in Chapter 7.

## **CHAPTER 7: RECOMMENDATIONS**

### **7.1 Points of departure**

This chapter presents the research recommendations and proposal that is including a green place-branding index as part of broader spatial planning approaches. The chapter includes recommendations based on the research aims and objectives, followed by a description of the implementation of the proposed index. For purposes of illustration, the proposed index is discussed in this chapter in the context of a hypothetical place and development initiatives relating to NbS as sustainable solutions to complex issues.

### **7.2 Recommendation: NbS should be contextualized in local context**

The literature indicated that there are various notions surrounding the subject of NbS. There are various definitions and ideas that link to NbS but not necessarily set out definitions within context. The subject could broadly be defined, but lack specific descriptions within contextualization. Enhancing the understanding of the subject could increase the implementation quality and value of it. There are various related terms connected to the subject of NbS, but a clear distinction between them could mean more definite values. The research is not sufficient to make generalisations regarding the comprehension of the general population, but professionals that were approached in the questionnaire indicated a clear understanding.

Therefore, it is recommended that the general public is taught about NbS and how it could resolve complex issues. People should also be made aware of how their actions impact the environment and what they could do to harmonise their connection with nature and ensure a sustainable future for the wellbeing of both humans and nature. Nature provides various benefits that could be harnessed to improve the well-being of all humanity and living organisms on earth as it was established in the literature study (Chapter 2). Planners of future developments should consider NbS as a key aspect of the spatial plan. The viable consideration of NbS for place-branding could enhance sustainable aspects of spatial planning.

### **7.3 Recommendation: Place-branding should emphasize spatial planning approaches**

It could be concluded from the literature investigation that there are various opinions regarding the subject of branding and in particular place-branding. It is recommended that a clear and viable indication of what factors place-branding consists of should be set out. A clear comprehension of the term and what it relates to is discussed in the previous chapter. Place-

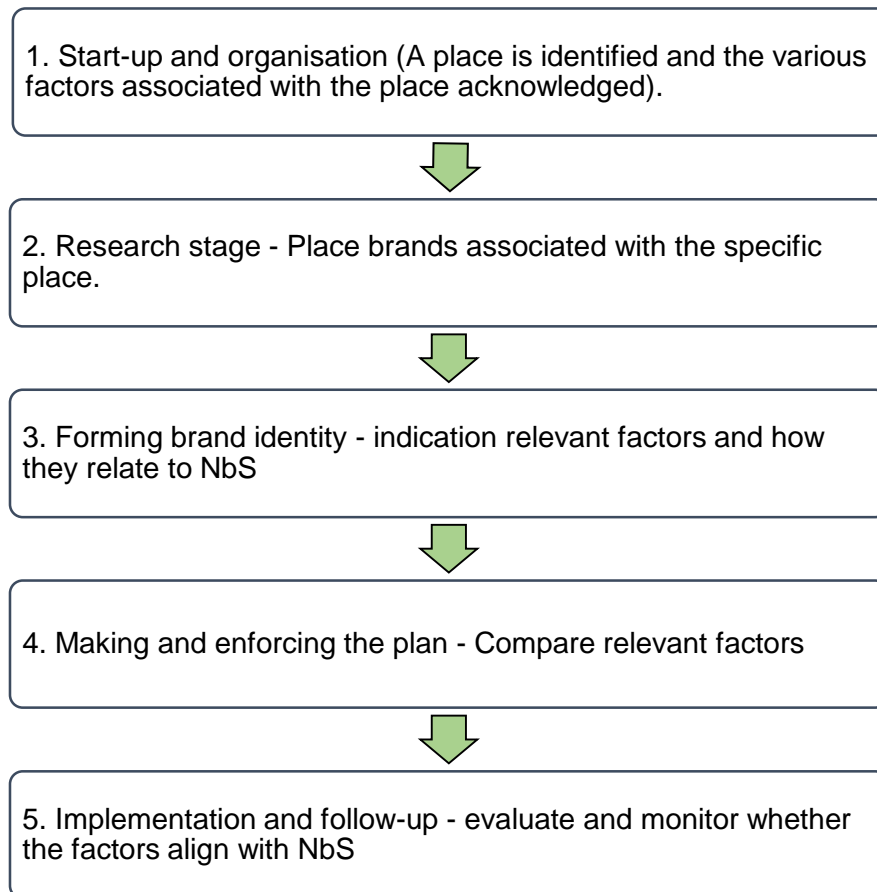
branding shapes the understanding and ground theory of some aspects of spatial planning, as it is an important feature when developing places.

The research proposed a green index that should be used when branding places. The place should be compared to the index in the relevance of the importance of each factor, as indicated by the empirical study. Places are complex and have many factors to consider when attempting to include a sustainable approach. The index could guide and assist current and preceding developments in the spatial planning process.

#### **7.4 Recommendation: Implementation of the Green Place-branding index**

Kavaratzis (2008) set out four stages of the place-branding process (see Chapter 3). The process is based on the communications and actions to successfully brand a place. The stages interlink with each other and within this, the connection to NbS has been pointed out in previous chapters. To utilise and integrate these stages Moilanen & Rainisto (2008) suggested a place-branding process that entails five phases (see Figure 2-4).

This set out process will be followed and discussed accordingly in the application of the index in the hypothetical scenario. The implementation of the developed green place-branding index, considering NbS with the five phases are illustrated by Figure 7-1:



**Figure 7-1: Place-branding process and stages**

Source: Own construction (2018) adapted from Moilanen and Rainisto (2008) and Kavaratzis.

to relevant factors as presented in the following Table. Each of the factors is discussed accordingly and a recommendation is made on how to implement the green place-branding index.

The application of the proposed green place-branding index consequently serves as a checklist to identify current gaps in theory linking with practice, in line with place-branding objectives. The idea is to brand a place using the index and the steps as discussed in Figure 7-1. Table 7-1 subsequently illustrates the recommendation in order to viably implement the green place-branding index on the hypothetical 'place'.

**Table 7-1: Recommendations on implementing the green place-branding index**

	<b>The factor of the place</b>	<b>Viable implementation and NbS recommendation</b>	<b>Link to study</b>
<b>Economic</b>	Living costs - affordability	<p>The demand for living in a place is the main factor that influences the living costs. Nature produces an increase in tranquillity, which increases the demand to live in the area. Places with many economic opportunities could be connected to solutions and prospects directly created or linked to nature. Value of places increases with the living quality, nature increases the wellbeing of people and as such the quality of life, and property value. The salary scale of an area is directly dependant on what classes of professions are in the area. Higher class professions mean higher salaries. NbS calls for an integration of various professions to implement and sustain it. Businesses are grounded in the financial market; the flow of economic opportunities impacts the economic value of a place. As discussed, economic opportunities could be linked to nature. Professional networking forms the base of the economic course. NbS requires professionals and skilled individuals to implement, plan and sustain the idea. As such, NbS could increase or decrease the course of professional networking in the place.</p>	<p>Regulated economic scale (2.2) Economic benefits (3.4), price index (Table 3-5), living costs (Table 3-4) Social factors influencing place-branding (Table 4-2 – 4-4)</p>
	Economic opportunities		
	A price index of the place - property value		
	Salary scale		
	Business development and condition		
	Professional networks		
<b>Cultural</b>	Community centres	<p>Community centres brand a place as viable in terms of the participation of the public. The cultural development of an area shapes the way the branding of a place commences. History of culture correlates with the developmental phases it has. NbS could serve as protecting natural heritage sites. For example, the provision and protection of the access the relevant communities have to nature and natural sites. The presence of cultural events and subcultures also influences to what extent the place is branded and diversifies the culture. When attempting to signify, comprehend and brand the aspects of a place, local cultures and the enhancement of community identities via the implementation of natural solutions are key</p>	<p>Cultural values (Table 3-3) Cultural standards (Table 4-6) Antecedents of Place-branding (Table 4-5)</p>
	Cultural development		
	Cultural events in the area		
	Subcultures present		
	Diversity in culture		

Image	Reputation and distinctive identity - brand	A place or city is known for the distinctiveness, unique features and accomplishments it has achieved. The brand a place could potentially have consists of external and internal influences and the global knowledge of how it could as such be perceived. NbS provide various factors that influence the 'green image' of a place. Structuring nature to directly correlate with the image of a place influences how it compares to other places and their distinct factors. For example, a city with areas demarked for non-motorised transport, creates an image of low pollution and walkability, as there are more areas where nature could provide as beneficial to the transportation sustainability in terms of a safe and clean area. This could directly influence the reasons why people intend to stay or work in the proximity of this place. Promotion of the place could automatically happen as features manifest into an 'image'. Spatially planning for this image using NbS creates a certain knowledge other places or cities have of the place.	Knowledge and status of the place (Table 4-2) Place promotion (Table 4-5) Identity created (2.3) Basic factors of city brand evaluation (Table 4-4)
	Appeal in relation to other branded places		
	Promotion of the place		
	Intentions to work or live at the place		
	International status - global knowledge		
Governance	Basic needs - water, sanitation, electricity etc.	The manner in which a government solve basic need issues and service provision could be impacted if nature is used as a tool. NbS could solve various challenges faced and provide solutions to provisional problems. The branding of a place as sustainable to live in requires a sufficient supply of basic needs. Transportation and infrastructure quality requirements necessitate constant maintenance and improvement. Nature could be used as a tool to implement the relevant infrastructure and used as a component when the spatial plan is set. It could provide solutions that increase and eases the approach. Basic services and technological advances brand a place as feasible and sustainable for the future. Natural requirements, for example, water provision could be managed with the practical management of natural water sources. Basic services brand a place as a virtuous quality of life, and together with natural provisions, it will lead to good governance.	Role of the government (Table 4-3) in Urban Governance and Planning (Table 4-2)
	Transportation network - maintenance		
	Infrastructure quality and standards		
	Basic services present - education, healthcare etc.		
	Technological advances		
Natu	Levels of pollution - cleanliness	NbS could directly solve issues related to pollution. Nature could be connected to NbS and this provides a clear path to literature and the	Environmental impacts and



	Access to natural phenomena	empirical evidence could thus be connected and aligns in the branding of place as 'green'. Related terms should, therefore, be implemented when branding a place accordingly. The natural solutions factor increases the branding of a place as 'green'. A place that has access to natural phenomena stimulates the branding as a soothing sense of place. NbS like parks increases this stance. This directly correlates with the tranquillity of the place and as such increases the sense of place. Place-branding in terms of nature sets focus on the conservation of the area and plays out as an NbS. The number and size of green areas in a place could influence the way it is perceived and could stimulate recreation and outdoor activities.	influences of NbS (Table 3-4) Conservation ethics (3.2. Utilising nature's elements (2.4.2). Case studies (Table 4-1). Factors to consider when branding (Table 4-3; 4-4; 4-6)
	Tranquillity		
	Conservation		
	Recreation		
	Green areas - number and size		
	Green areas - number and size		
	Outdoor activities		
Social	Tourism satisfaction	NbS could provide an increased or decreased attractiveness or pleasantness of the specific area it is developed. It could socially brand the place by setting a value for tourism activities and amenities contributing to the social viability. The recreational activities present stimulates the socio-economic aspects of the place and could hence be branded accordingly. The social branding of a place is also influenced by the attractiveness and pleasantness for social activities to take place. Communication between spheres of government improves the community's participation and communication standards. Stakeholders get involved and a successful place could be branding, considering NbS and the importance of each contributing factor.	Social challenges addressed by NbS (3.2) social values as principles (Table 3-3) Social benefits (Table 3-4) Social sustainability (3.7) Participation (2.4.1) Recreation/leisure (Table 4-6) Factors to consider when branding (Table 4-5; 4-6)
	Recreational - social		
	Recreational facilities and amenities		
	Attractiveness/pleasantness for social activities		
	Social activities present		
	Communication		
	Social inclusion and value		
Community participation and stakeholder involvement			

Source: Own construction (2018).

## **7.5 Recommendation to address issues in an NbS context**

The purpose of Chapter 2 and Chapter 4 was to identify how NbS is seen in the professional communities, how it is implemented and comprehended. It was established that there is a basic knowledge of the term, but more so to related terms and how they interrelate. It is recommended that social issues should be addressed using NbS, as it would be sustainable to the most extent and beneficial to most environmental relations. It is also recommended that NbS should be treated with care and further research that defines the term. Full established comprehension and education surrounding the subject would be constructive. Future developments and planning from a spatial planning perspective ought to correlate with the features NbS provide, and could, therefore, provide a sustainable imminent future for humanity.

### **7.5.1 Recommendation: Refine proposed index with future research to enhance the consideration of NbS for place-branding**

The investigation revealed that there are gaps in literature in terms of both place-branding and NbS. It is recommended that research is done to improve the theoretical foundation of both terms. The historical linkages between the various concepts that evolved and shape how we perceive nature and the solutions it provides. Further research on the alignment between the different policies on all spheres would prove to clarify the comprehension of the terms. A larger sample that includes more fields of work and has a bigger scope would provide a more holistic approach. Future research could include implications of current and relevant planning reforms from a law and environmental perspective. The effectiveness of how municipalities and governments could be investigated, as it is one of the fundamental role-players in the spatial planning process.

## **7.6 Conclusion**

The aim of the research was to:

*“Determine and evaluate nature-based solutions for place-branding from a spatial planning perspective. An attempt will be made to identify key nature-based solutions that could be considered as roleplaying factors in terms of branding places in cohesion with spatial planning. An index with the key identified nature-based solutions will be set up as a recommendation on how the branding of places ought to commence.”*

The application of the proposed index was illustrated in the hypothetical case study presented above. This proposed index can be applied and adapted to similar cases and contexts. From a spatial planning perspective, key factors that relate to nature-based solutions could contribute to the branding of specific places. Refining the gaps identified in the research on place branding could sustain the rudiments towards planning sustainable places, considering nature-based solutions as the point of departure for creating an identity and spatial brand.

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# ANNEXURE A

## Place-branding Questionnaire

This questionnaire aims to capture your perception of place-branding and how it links with Nature-based Solutions (NbS). The results of this survey will assist in the development of a place-branding index to inform future urban planning approaches to enhance NbS as part of broader place-branding initiatives. This questionnaire is developed according to the Ethics guidelines of the subject group Urban and Regional Planning of the North-West University.

### 1. Screening Questions

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#### 1.1 What field do you work in?

Check all that apply.

- Engineering
- Real estate agent
- Real estate development
- Researcher
- Town/Urban planning
- Other: \_\_\_\_\_

#### 1.2 What is your highest level of education? Check all that apply.

- Matric / Grade 12
- Diploma
- Degree
- Post graduate degree

### Definitions in context with the study

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Place-branding: Communicating the image of a specific place to a relevant audience who perceives it according to certain characteristics.

Nature-based Solutions (NbS): Solutions derived and supported by nature to societal challenges, simultaneously providing for benefits in terms of social, environmental and economic factors.

### 2. Questionnaire

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From an NbS sustainability perspective; what do you consider the most viable and imperative aspects of a place? Please rank the following factors according to importance, with 1 being “not important” and 5 being “very important”. Each question is duplicated, please indicate your opinion from a leisure as well as a business perspective.

## 2.1 Economic factors

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3. Economic opportunities (leisure perspective) Mark only one oval.

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. Economic opportunities (business perspective) Mark only one oval.

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. A price index of the place - property value (leisure perspective) Mark only one oval.

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. A price index of the place - property value (business perspective) Mark only one oval.

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. Living costs - affordability (leisure perspective) Mark only one oval.

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**8. Living costs - affordability (business perspective) Mark only one oval.**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**9. Business development and condition (leisure perspective) Mark only one oval.**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**10. Business development and condition (business perspective) Mark only one oval.**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**11. Professional networks (leisure perspective) Mark only one oval.**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**12. Professional networks (business perspective) Mark only one oval.**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**13. Salary scale (leisure perspective) Mark only one oval.**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**14. Salary scale (business perspective) Mark only one oval.**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## 2.2 Cultural factors

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15. Cultural development (leisure perspective) Mark only one oval.

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

16. Cultural development (business perspective) Mark only one oval.

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

17. Cultural events in the area (leisure perspective) Mark only one oval.

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

18. Cultural events in the area (business perspective) Mark only one oval.

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

19. Community centers (leisure perspective) Mark only one oval.

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

20. Community centers (business perspective) Mark only one oval.

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

21. Diversity in culture (leisure perspective) Mark only one oval.

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

22. Diversity in culture (business perspective) Mark only one oval.

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

23. Subcultures present (leisure perspective) Mark only one oval.

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

24. Subcultures present (business perspective) Mark only one oval.

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### 2.3 Image

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25. International status - global knowledge (leisure perspective) Mark only one oval.

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

26. International status - global knowledge (business perspective) Mark only one oval.

1	2	3	4	5
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**27. Promotion of the place (leisure perspective) Mark only one oval.**

**1      2      3      4      5**

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**28. Promotion of the place (business perspective) Mark only one oval.**

**1      2      3      4      5**

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**29. Reputation and distinctive identity - brand (leisure perspective) Mark only one oval.**

**1      2      3      4      5**

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**30. Reputation and distinctive identity - brand (business perspective) Mark only one oval.**

**1      2      3      4      5**

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**31. Appeal in relation to other branded places (leisure perspective) Mark only one oval.**

**1      2      3      4      5**

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**32. Appeal in relation to other branded places (business perspective) Mark only one oval.**

**1      2      3      4      5**

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**33. Intentions to work or live at the place (leisure perspective) Mark only one oval.**

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**34. Intentions to work or live at the place (business perspective) Mark only one oval.**

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## 2.4 Governance

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**35. Basic needs - water, sanitation, electricity etc. (leisure perspective) Mark only one oval.**

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**36. Basic needs - water, sanitation, electricity etc. (business perspective) Mark only one oval.**

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**37. Basic services present - education, healthcare etc. (leisure perspective) Mark only one oval.**

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**38. Basic services present - education, healthcare etc. (business perspective) Mark only one oval.**

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**39. Transportation network - maintenance (leisure perspective) Mark only one oval.**

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**40. Transportation network - maintenance (business perspective) Mark only one oval.**

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



**41. Technological advances (leisure perspective) Mark only one oval.**

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**42. Technological advances (business perspective) Mark only one oval.**

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**43. Infrastructure quality and standards (leisure perspective) Mark only one oval.**

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**44. Infrastructure quality and standards (business perspective) Mark only one oval.**

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## 2.5 Nature

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**45. Access to natural phenomena (leisure perspective) Mark only one oval.**

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**46. Access to natural phenomena (business perspective) Mark only one oval.**

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

47. Environment representing the brand of the area (leisure perspective) Mark only one oval.

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

48. Environment representing the brand of the area (business perspective) Mark only one oval.

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

49. Green areas - number and size (leisure perspective) Mark only one oval.

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

50. Green areas - number and size (business perspective) Mark only one oval.

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

51. Levels of pollution - cleanliness (leisure perspective) Mark only one oval.

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

52. Levels of pollution - cleanliness (business perspective) Mark only one oval.

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**53. Tranquillity (leisure perspective) Mark only one oval.**

1      2      3      4      5

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**54. Tranquillity (business perspective) Mark only one oval.**

1      2      3      4      5

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**55. Recreation (leisure perspective) Mark only one oval.**

1      2      3      4      5

---

**56. Recreation (business perspective) Mark only one oval.**

1      2      3      4      5

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**57. Outdoor activities (leisure perspective) Mark only one oval.**

1      2      3      4      5

---

**58. Outdoor activities (business perspective) Mark only one oval.**

1      2      3      4      5

---

**59. Conservation (leisure perspective) Mark only one oval.**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**60. Conservation (business perspective) Mark only one oval.**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**2.6 Social**

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**61. Communication (leisure perspective) Mark only one oval.**

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**62. Communication (business perspective) Mark only one oval.**

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**63. Social activities present (leisure perspective) Mark only one oval.**

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**64. Social activities present (business perspective) Mark only one oval.**

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**65. Attractiveness/pleasantness for social activities (leisure perspective) Mark only one oval.**

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**66. Attractiveness/pleasantness for social activities (business perspective) Mark only one oval.**

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**67. Community participation and stakeholder involvement (leisure perspective) Mark only one oval.**

1      2      3      4      5

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**68. Community participation and stakeholder involvement (business perspective) Mark only one oval.**

1      2      3      4      5

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**69. Social inclusion and value (leisure perspective) Mark only one oval.**

1      2      3      4      5

---

---

**70. Social inclusion and value (business perspective) Mark only one oval.**

1      2      3      4      5

---

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**71. Recreational facilities and amenities (leisure perspective) Mark only one oval.**

1      2      3      4      5

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**72. Recreational facilities and amenities (business perspective) Mark only one oval.**

1      2      3      4      5

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**73. Recreational - social (leisure perspective) Mark only one oval.**

1      2      3      4      5

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**74. Recreational - social (business perspective) Mark only one oval.**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**75. Tourism satisfaction (leisure perspective) Mark only one oval.**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**76. Tourism satisfaction (business perspective) Mark only one oval.**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**End of questionnaire**

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**Thank you for your participation.**

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## ANNEXURE B

### Frequency Tables

#### Working field

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	8	17.8	18.6	18.6
	2	7	15.6	16.3	34.9
	3	7	15.6	16.3	51.2
	4	17	37.8	39.5	90.7
	5	4	8.9	9.3	100.0
	Total	43	95.6	100.0	
Missing	System	2	4.4		
Total		45	100.0		

#### Level of education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	5	11.1	11.4	11.4
	3	17	37.8	38.6	50.0
	4	22	48.9	50.0	100.0
	Total	44	97.8	100.0	
Missing	System	1	2.2		
Total		45	100.0		

#### Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
EC_Leisure_Avg	45	2.40	4.60	3.6411	0.54494
EC_Business_Avg	45	3.33	5.00	4.3519	0.53798
Cultural_Leisure_Avg	45	2.20	4.80	3.5600	0.71427
Cultural_Business_Avg	45	1.20	5.00	3.2533	0.79017
Image_Leisure_Avg	45	2.60	5.00	4.0889	0.47779



Image_Business_Avg	45	2.80	5.00	4.3211	0.72367
Governance_Leisure_Avg	45	2.80	5.00	4.1311	0.72733
Governance_Business_Avg	45	3.50	5.00	4.7556	0.33915
Nature_Leisure_Avg	45	3.50	5.00	4.3976	0.43464
Nature_Business_Avg	45	2.00	5.00	3.6806	0.77997
Scocial_Leisure_Avg	45	3.00	5.00	4.0290	0.49806
Scocial_Business_Avg	45	1.88	5.00	3.7270	0.68042
Valid N (listwise)	45				

### Mann-Whitney Test

		Ranks		
WorkingField_recode		N	Mean Rank	Sum of Ranks
EC_Leisure_Avg	Town / Urban Planner	17	21.06	358.00
	All others	26	22.62	588.00
	Total	43		
EC_Business_Avg	Town / Urban Planner	17	17.50	297.50
	All others	26	24.94	648.50
	Total	43		
Cultural_Leisure_Avg	Town / Urban Planner	17	17.50	297.50
	All others	26	24.94	648.50
	Total	43		
Cultural_Business_Avg	Town / Urban Planner	17	17.59	299.00
	All others	26	24.88	647.00
	Total	43		
Image_Leisure_Avg	Town / Urban Planner	17	22.74	386.50
	All others	26	21.52	559.50
	Total	43		

Image_Business_Avg	Town / Urban Planner	17	19.53	332.00
	All others	26	23.62	614.00
	Total	43		
Governance_Leisure_Avg	Town / Urban Planner	17	22.09	375.50
	All others	26	21.94	570.50
	Total	43		
Governance_Business_Avg	Town / Urban Planner	17	21.32	362.50
	All others	26	22.44	583.50
	Total	43		
Nature_Leisure_Avg	Town / Urban Planner	17	21.56	366.50
	All others	26	22.29	579.50
	Total	43		
Nature_Business_Avg	Town / Urban Planner	17	21.71	369.00
	All others	26	22.19	577.00
	Total	43		
Scocial_Leisure_Avg	Town / Urban Planner	17	18.00	306.00
	All others	26	24.62	640.00
	Total	43		
Scocial_Business_Avg	Town / Urban Planner	17	18.15	308.50
	All others	26	24.52	637.50
	Total	43		

## T-Test

### Independent Samples Test

Levene's  
Test for  
Equality of  
Variances

t-test for Equality of Means

	F	Sig.	t	df	Sig. (2- taile d)	Mean Differen ce	Std. Error Differenc e	95% Confidence Interval of the Difference	
								Lower	Upper
EC_Leisure_Avg	0.07	0.932	-1.313	42	0.196	-0.16445	-0.54778	0.11596	
			-1.313	41.839	0.196	-0.16445	-0.54782	0.11600	
EC_Business_Avg	1.474	0.232	-0.817	42	0.419	-0.15771	-0.44706	0.18949	
			-0.817	40.782	0.419	-0.15771	-0.44734	0.18977	
Cultural_Leisure_Avg	1.423	0.240	-0.338	42	0.737	-0.21546	-0.50754	0.36209	
			-0.338	40.573	0.737	-0.21546	-0.50799	0.36254	
Cultural_Business_Avg	0.244	0.624	-0.339	42	0.737	-0.24158	-0.56934	0.40570	
			-0.339	41.218	0.737	-0.24158	-0.56961	0.40598	
Image_Leisure_Avg	1.316	0.258	-0.682	42	0.499	-0.14655	-0.39574	0.19574	
			-0.682	40.066	0.499	-0.14655	-0.39617	0.19617	
Image_Business_Avg	1.010	0.321	-0.768	42	0.447	-0.21008	-0.58532	0.26259	
			-0.768	40.806	0.447	-0.21008	-0.58569	0.26296	

Governance_Leisure_Avg	0.004	0.947	-0.190	42	0.850	-0.04091	0.21545	-0.47571	0.39389
			-0.190	41.989	0.850	-0.04091	0.21545	-0.47571	0.39389
Governance_Business_Avg	0.722	0.400	-0.882	42	0.383	-0.09091	0.10302	-0.29881	0.11700
			-0.882	37.632	0.383	-0.09091	0.10302	-0.29953	0.11771
Nature_Leisure_Avg	0.734	0.396	-0.080	42	0.937	-0.01055	0.13185	-0.27664	0.25553
			-0.080	41.567	0.937	-0.01055	0.13185	-0.27672	0.25561
Nature_Business_Avg	0.234	0.631	-0.391	42	0.698	-0.09091	0.23231	-0.55973	0.37791
			-0.391	41.652	0.698	-0.09091	0.23231	-0.55985	0.37803
Social_Leisure_Avg	1.950	0.170	-0.143	42	0.887	-0.02192	0.15366	-0.33202	0.28818
			-0.143	40.095	0.887	-0.02192	0.15366	-0.33245	0.28862
Social_Business_Avg	1.506	0.227	-1.008	42	0.319	-0.20536	0.20367	-0.61638	0.20567
			-1.008	36.678	0.320	-0.20536	0.20367	-0.61816	0.20744