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## AUTHORS

Leizel Williams-Bruinders  
Anton de Wit

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Leizel Williams-Bruinders (South Africa), Anton de Wit (South Africa)

## Connecting sense of place and climate change: adaptation amongst the vulnerable poor in Port Elizabeth, South Africa

### Abstract

This paper investigates the relationship between climate change adaptation and sense of place on people's decision regarding relocation, using Soweto on Sea, and Veeplaas as case studies. Using indicators derived from sense of place theories, an attempt is made to explain the building blocks of sense of place. These indicators, namely place attachment, place identity and place dependence, help explain the connection people have with home, as well as their interactions in- and within their community. Being a community at risk of flooding, because of its precarious location on the Chatty river floodplain, adaptation measures of relocation were introduced. Alternative housing was provided by the state as part of its social housing program. A strong interplay of indicators was observed, and the research findings indicate that sense of place largely influences this decision making process of relocation as a climate change adaptation measure.

**Keywords:** sense of place, climate change adaptation, relocation.

**JEL Classification:** Q54.

### Introduction

Climate change adaptation and the role that sense of place plays in decision making regarding relocation, will be presented in this study. This paper is organized as follows. Firstly it contextualizes how climate change and sense of place are relevant to the case study examined. The second section provides a review of the sense of place and climate change literature in an attempt to support the argument that illustrates the extent to which people are willing to relocate as a measure of adaptation to climate change effects. The final section involves a discussion on the findings of the study undertaken. It will attempt to elucidate the interplay of peoples' sense of place with the decision to relocate based on rising flood levels. The paper attempts to explain certain relationships that exist in the complex dynamic regarding the decision for relocation.

Climate change is a global problem which has a profound impact on the sense of place, just as climate change adaptation has a direct implication on sense of place (O'Brien, 2009). Sense of place contributes significantly to people's decisions regarding relocation and thus fundamental benefits in incorporating a sense of place study in climate change adaptation, will allow for greater understanding and leads to improved ways, of protecting people in areas of risk.

The meaning, and the association of value to a place, has come to focus on two settlement areas named Soweto on Sea and Veeplaas, in Port Elizabeth, South Africa. These areas are informal settle-

ments which are located along the banks of the Chatty River within Port Elizabeth, South Africa.

These informal settlements fall within the 1:50 year flood line, thus the residents of the informal settlement were exposed to occasional flooding of the river. Because the settlement areas are located in a flood prone area, with Veeplaas situated in the very centre, the municipality cannot provide services to these two neighborhoods, and thus alternative areas of settlement have been established by the local authorities (Solomon and Viljoen, 2003).

### 1. Sense of place

Sense of place is a theoretical concept which has a significant intrinsic value to people's ideas and more importantly, the connection they develop with a place. This unquantifiable connection one makes with a place has had significant impact on the decisions that one makes on where a person settles and the rationale behind the establishment of a connection to a particular place. This connection to place has been able to influence the degree of success of climate change adaptation, as people's connection to a place is outweighing the potential risk which they are exposed to (Smaldone et al., 2006; Adger et al., 2005).

Sense of place can be described as spatial interactions, which are fuelled by cost, distance, time and the level of services and opportunities one is exposed to (Massey, 1994). In order to understand place, one has to understand the meaning of space in place. These two concepts have been described by Hubbard and Kitchin (2011) as twin terms that provide the building blocks in an intellectual enterprise that stretches back throughout history in an attempt to make sense of the world. Space is considered as a mappable canvas which is filled by human activities, thus it can be understood that spatial interactions which are laden with meaning and value, occur in space (Hubbard and Kitchin, 2011).

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Leizel Williams-Bruinders, Lecturer, Geography Division of the Department of Geosciences, Nelson Mandela Metropolitan University, Port Elizabeth, South Africa.

Anton de Wit, Lecturer, Geography Division of Department of Geosciences, Nelson Mandela Metropolitan University, Port Elizabeth, South Africa.

**1.1. Place attachment.** Place attachment describes a bond between people and a place, and that place is able to meet a person's functional need. Place attachment is described by Hernandez et al. (2007) as a study of feelings people have towards places in their lives. A key factor in the place attachment theory is that, the relationship constructed between people and places requires a degree of closeness with that place (Shamsuddin and Ujang, 2008). Thus place attachment cannot apply to a place one doesn't make frequent visits to. Functions and attributes of a place are things that increase the strength of attachment to a place (Shamsuddin and Ujang, 2008). Place attachment is defined as:

*"... the effective link that people establish with specific settings, where they tend to remain and where they feel comfortable and safe"* (Hernandez et al., 2007, p. 2).

A person's attachment to a place differs among different people, as this bond can be established with a vast area, or only a house. Factors such as length of stay and interactions which take place in that area, contribute largely to the theory of place attachment and have a direct implication on a person's sense of place. A degree of interconnection exists between place attachment and place identity, as these two theories have been viewed as taking very similar roots. Studies conducted on place attachment and place identity have shown a noticeable difference established, that place attachment is linked to the length of stay and place identity is linked to the interaction which takes place in that space (Hernandez et al., 2007). A study conducted by Ujang (2012) distinguishes place identity as a product of place attachment. People's attachment to a place is influenced by length of stay and interactions which take place in that area. Ujang (2012) reports that a change in social interaction changes people's perception of that place resulting in a negative impact on the connection people establish with a place. A study conducted by Hernandez et al. (2007), tried to establish if there was a difference in the degree of connection between people who have constructed their attachment to a place through lengthy stay in an area, and connection to a place developed by interactions. Length of stay resulted in a higher degree of connection than connections which were developed through interactions which took place in that area. The relationship between place attachment and place identity cannot be considered as separate entities, as the one leads to the other. Place attachment describes the relationship between a person and a place as largely created by length of stay, but place identity proved the means which help explain the relationship between person and place. Place identity describes the interactions

which are not measurable, and are described by Lengen and Kistermann (2012), as relationships which are created through cognition.

**1.2. Place identity.** Place identity is constructed by important activities which take place in and around an individual. These two points of influence of home and the surrounding geographic influences, maintain a person's identity. Thus a person's identity is largely influenced by past and present experiences, which influence their attitudes, values, preferences and memory (Lengen and Kistermann, 2012).

The person-place bond is one which is influenced by a magnitude of factors, and on a theoretical level, place attachment and place identity have largely been considered key theoretical views which constitute one's understanding of sense of place. Kyle et al. (2004) described this person-place bond as two dimensional bonds, where place attachment is considered a combination of self and the physical environment. The physical environment has the ability of influencing one's ideals, beliefs and preferences, and place identity enables one to construct and affirm one's identity by being able to practice their beliefs if they choose to.

**1.3. Place dependence.** Place dependence is the final key in understanding spatial interactions. Place dependence describes the strength of connection a person has with a particular place over other options which may be available to a person (Jorgensen et al., 2001). This third element in spatial interactions is very important in light of the Soweto on Sea (SOS) and Veeplaas (VP) communities in Port Elizabeth. The place dependence theory is well suited, together with place attachment and place identity, in trying to understand and explain the decisions where residents of the two communities have decided to remain in an area which exposes them to possible harm (Jorgensen et al., 2001). The place dependence theory assesses the strength of association a person or community may have with a place. When an individual makes a decision to remain in a particular place, that place was the best option in comparison with the alternatives which were available to that person or group.

Earlier research conducted on sense of place came to the same conclusion, that a hierarchical structure existed and influenced people's choices and how this influenced their emotional association with geographic aggregation of place. In looking at sense of place theories, two theorists' views stand out, Lynch (1960) and Canter (1983). Lynch linked imagination with physical cues. Physical cues act as aids in interpreting specific landmarks and thus what is observed influences what we imagine, for example, a beach will give thoughts of sunny days laden with beach activities like surfing, family out-

ings etc. Canter (1983) looked at the interactions from a person to his/her surroundings, as a person will understand their environment which they are in, and thus that understanding will enable people to work within the parameters of that environment to achieve their goals and so a value would be placed on that place based on one's purpose of achieving their goals. These goals vary from person to person.

## 2. Examining peoples sense of place

Sense of place is viewed as being an immeasurable phenomenon, as one's connection to place is driven by a range of influences which extend from an individual level to community and regional scale. In examining the role sense of place plays in the relocation measures as a result of climate change, required an approach which would provide a means of understanding place and its meaning to people, at an individual and community level. Concepts of place attachment, place identity and place dependence are very important concepts in the analysis of sense of place. The three concepts of place provided a means of assessing people's attachment to their homes and the role their physical environment played in influencing people's decision in regards to relocation.

**2.1. Examining place attachment.** The person-place bond under the concept of place attachment is influenced by length of stay, thus the longer a person lives in a specific location the stronger the relationship between the person with their home (Hernandez et al., 2007; and Ujang, 2012). SOS and VP communities are older communities, with some residents living here for more than twenty years.

**2.2. Examining place identity.** A person's identity is influenced by the interactions which take place in space. The interactions influence an individual's identity in the sense that the interactions play a part in individuals, values, beliefs, norms and preferences. The length of stay is not the same and thus interactions within the two communities may help in explaining the relationship which exists between the residents of the two communities and their home.

**2.3. Examining place dependence.** Place dependence looks at the reasoning behind the selection of a specific place over other places, the strengths of that place and its ability to attract people. SOS and VP can be characterized as a poor community. The community has very limited infrastructure and services which they receive from the municipality, and thus place dependence will provide the reasons why the residents of the two communities remain in the area despite the possible risk which they are exposed to.

## 3. Climate change and sense of place

The impact of climate change has and is having a significant impact on the planet and this requires

significant adaptation to changes occurring in our physical and ecological environments (Adger, 2004). Climate change adaptation has been prioritized to ensure that people are not exposed to possible risks. The relationship which exists between person and home has introduced an emotional connection between an individual, or group of people, with their home. This emotive connection has an influence on the adaptive capacity at an individual, group and regional scale. Further investigation of the emotive bond between person and home has been assessed so as to ensure, as well as understand the different complexities which have the potential of influencing climate change adaptation.

The various theoretical viewpoints on place are hinged on individual experiences and these experiences drive theory. Our understanding of place as described by Massey (1994) as one which is non-essential, thus the meaning of place has seen significant changes throughout man's history. Convery et al. (2012) describe the meaning we attach to place as one which is structured and follows two paths, with the first resembling Massey's (1994) view of all aspects which form part of interactions and local distinctiveness, and secondly how we use and experience place. It is from the latter point that, conceptual subsets such as place attachment and place dependence develop.

Because the meaning attached on place is not stagnant, one has to question the relationship between sense of place, and change induced by climate and the subsequent adaptation which follows.

Climate change is an occurring phenomenon as climate change impacts and responses are observed in the ecological and physical environments (Adger, 2005). Change in climate requires significant change in the manner in which we live and thus adaptation to these changes are key. Adaptation to climate change has implications on different spatial scales (Adger, 2005).

Climate change adaptation is seen as a necessary and urgent response and thus sufficient understanding of the barriers and constraints which hinder successful adaptation is important, as the removal of these obstacles will allow for proper and successful adaptation (O'Brian, 2009). Climate change is described by Adger (2005) as an ecological, social or economic adjustment to a climatic stimulus in an attempt to stop, pre-empt, change or alleviate an impact.

The process of adaptation can be considered a holistic process as climate change has large impact which affects all aspects of life. A link has been established by O'Brian (2009) between adaptation and obstacles posed by people's sense of place and the potential loss of people's identity. People's

sense of community and the link or meaning attached to a place has the potential to hinder the processes of adaptation (O'Brian, 2009). This view implies that people's values have the potential to become a barrier to climate change adaptation and this is also highlighted in Magada's (2000) study of settlement selection in Africa. These views have introduced a new element to the study of climate change adaptation, as adaptation to climate change may affect areas of value to people and the community, for example the Soweto on Sea and Veeplaas communities in Port Elizabeth.

The relationship between climate change adaptation and value or meaning to a place is a relationship which is in continuous motion, as the value and the meaning of value do change over time, thus it can be understood that an accepted adaptation process may not be applicable at a different time (O'Brian, 2009). Value and meaning place greater importance on the internal implications of a place and the possible failure or success of adaptation to climate change.

Massey's view of the meaning of space is one which has numerous starting points but has one end. As mentioned earlier value and meaning change over time and this brings the association of temporality to spacialization, a term used to describe the meaning attached to space. The temporal and spatial relationship is one which is central to spacialization, as temporality is dependent on space (Massey, 2005). Space is described as being a discrete multiplicity as change in a space is ordered, and with temporality the meaning of space and our association with space is not stagnant, thus it can be understood that spacialization changes over time.

#### 4. Study aim

The impact of climate change has posed a risk on the informal settlements of Soweto on Sea and Veeplaas. These areas fall within the 1:50 year flood line, prompting the relocation of the residents. The Nelson Mandela Metropolitan municipality is prohibited from providing services to areas which are at risk, as in this case, a flood risk area.

Although alternative safe housing under the Zanemvula project was established to ensure the relocation of residents, not all of them welcomed the idea, and as a result, some members did not move out, while others who had relocated there, have since returned to the flood risk area despite the lack of service provision. Zanemvula is a mass low-cost housing development, located a further nine kilometres away from the current location of SOS and VP. It is on the periphery of Port Elizabeth, away from many potential sources of employment and offers very little social services (Williams-Bruinders, 2013).

In an attempt to investigate what the role of people's sense of place has on the decisions regarding relocation in regards to climate change adaptation, this research examines the physical connection people have made with the Soweto on Sea and Veeplaas settlements. It seeks to identify the reasons why some of the residents have refused to move out of the flood plain and why other residents have returned to the area. And lastly, it investigates the implications of sense of place on climate change adaptation.

#### 5. Sense of place and climate change adaptation amongst the vulnerable poor in Port Elizabeth

Sense of place is largely influenced by the interplay of various relationships which exist between and amongst communities. Length of stay, social interactions and pull factors collectively describe sense of place. The balance of these three sides of sense of place influences the degree of connection which exists in a community, and thus, each community's sense of place will be unique to that particular region. In understanding the role sense of place has on people's decisions regarding relocation, factors which are unique to that area were assessed. Employment, number of members in a single household and access to services are factors which had to be introduced to the three aspects of sense of place so as to find the reasons behind why some residents have decided to remain on the floodplain, and why other residents have opted to return to the floodplain after relocating to Zanemvula.

Length of stay has created a relationship between residents and home, based on attachment, and thus a sense of place. Stability is characterized by slow movement within the community, which brings the residents together, as residents identify with one another and that identity is associated with their home. Despite challenges which the community faces in the form of infrequent flooding and the lack of services, the floodplain still remains a primary location for a home. Pull factors such as, easier access to schools, clinics, police stations and public transport have played a significant part in influencing residents living on the floodplain.

From the resident's perspective, relocation should have been considered as a last resort. They maintain that other avenues which could have reduced the risk residents are exposed to, could have been explored. The lack in the transfer of information on the consequences of flooding (and residing on a floodplain) between the municipality and residents located on the floodplain has resulted in the lack of acknowledging the seriousness of the flooding, rather, residents view this flooding as something which can be overcome.

**5.1. Examining the physical connection people have made with Soweto on Sea and Veeplaas settlement.**

Connection to home was assessed using the three main theories which have been used in sense of place inquiry, namely; place attachment, place identity and place dependence. The theories define three distinct ways in which a connection between people and a place can develop. The use of basic indicators to assess theories was used and was implemented using face to face interviews. Length of stay, number of times people have moved around within their community and the number of years they have had the same neighbor, would provide the means of assessing the building blocks which make up their connection to their home.

As alluded to before in this work, sense of place is a construct of interactions which are explained using either place attachment, place identity or place dependence. The physical connection people have made with SOS and VP is one which is not uniform across the communities. Particular theories dominate amongst residents located at different parts of the community. The SOS and VP communities are old, but it is also important to note that not all members of the two communities have been in the area for long periods of time, thus their construction of the connection they have with their home will be different. The community is split into distinct areas which go unnoticed to outsiders, as the lower end of the community which falls directly on the floodplain is younger than the areas which are on the higher parts of the community. The term ‘younger’ describes the residents which make up the community rather than the age of the settlement.

The settlement areas closest to the centre of the floodplain are known as “Ndlovu” (translated from isiXhosa meaning – *pushed their way in*), as explained by a respondent, is a settlement area where the youngest members of the community live. The first people to be relocated, hail from the floodplain and the area immediately adjacent to it.

Connection to home has had a significant impact on climate change adaptation, as various interconnections which exist between place and people, and amongst people within a community have a direct influence on the success or failure of climate change adaptation measures.

*5.1.1. Place attachment on the floodplain.* Place attachment defines the person-place bond which is influenced by length of stay (Hernandez et al., 2007; and Ujang, 2012). The SOS and VP communities are old, with a significant number of people being part of their respective communities for more than ten years. Table 1 illustrates this by providing a breakdown of the number of years households have been in their com-

munities, with the oldest resident interviewed, having been part of VP for close to 34 years.

A strong sense of stability and rootedness exists in the two communities, as movement within the community is very slow, with residents having had the same neighbor for the majority of their stay in their respective communities. A significantly detailed history of the growth of the communities and its intertwines with human history sheds light on the person-place bond. Accounts of how the community has changed, from a mixed race settlement to a densely populated single race community. One respondent moved to VP in his late teens, met his wife and started his family. His account of events which have and are taking place in his community go beyond a place he lives in, but are perceived as attacks on people’s families and their homes.

To some extent climate change adaptation and sense of place are in conflict, as the community’s connection to home is strong enough to push aside possible risks which local residents might be exposed to. Challenges of lack of information, transparency and the length of time which have passed since the commencement of relocation has placed significant doubt in local residents on the validity of climate change risks which residents are exposed to.

Table 1. Number of years households have lived in Soweto on Sea and Veeplaas

Number of years living in VP/SOS	Veeplaas (%)	Soweto on Sea (%)
5 years	0	0
10 years	30	0
15 years	0	0
20 years	40	30
25 years	10	10
30 years	0	50
35 years	20	10

Length of stay has created a bond between the residents and the floodplain, but to an extent, this has also created a strong bond between the residents themselves. The communities are themselves mature in age, and the older residents in the area have a greater bond as they have seen and experienced changes which have taken place in their communities. The degree of stability, and a strong bond to home, has had an impact on their path dependency. Veeplaas and Soweto on Sea are not viewed as just a place, but a community with an identity, an identity which residents feel they are a part of.

*5.1.2. Place identity on the floodplains.* Sense of community is very strong amongst residents of VP and SOS. It highlights the number of times a person has moved within community, instead of relocating elsewhere. This enquiry was very important, as it

allows for one to have an assessment of the degree or strength that a community has on its individuals.

Community in this sense describes connections which have been formed through individual interactions which take place within a specific community. As mentioned earlier, length of stay does have a direct link to an individual's sense of place, and with prolonged stay in a place; relationships are established between individuals within an area through social interactions. A strong intangible relationship exists amongst individuals within the two communities, as social standing, shared challenges and a collective plight for habitat assistance have created greater connections amongst individuals within their communities, and this has resulted in a small but significant group of residents on the floodplain refusing to relocate.

The climate change adaptation tool adopted, relocation of households located on the floodplain, has seen significant obstacles, with some residents refusing to relocate and others returning back to the floodplain after having left. The relocation process has created a sense of, "us" against "them". "Us" being the residents located on the floodplain and "them" being the local authorities, the Nelson Mandela Metropolitan municipality.

As mentioned, the municipality is unable to provide services to a community located below the 1:50 year flood line. Some areas of the two communities which fall above the flood line have access to all the services which are provided, from formal housing, to water and electricity.

Both areas (serviced and non-serviced) are in close proximity to one another. This close proximity together with the lack in educating affected residents of flood risks, have created an environment where the sense of place, is more important than, adapting to climate change.

*5.1.3. Place dependence.* Place dependency theory looks at the reasoning behind one's selection of a place over other places. Veeplaas and Soweto on Sea have been able to attract a small, but significant number of residents to remain on the floodplain, despite the area receiving limited municipal services. Relocation to Zanemvula for some is seen as placing greater challenges on their day-to-day life. A small but significant number of VP and SOS residents located on the risk area have refused to relocate and thus have chosen to remain on the floodplain. Access to social services has been the difference between remaining on the floodplain, versus relocation to Zanemvula. Closer access to health clinics, to public transport, schools and police stations have played a significant role in ensuring that the floodplain remains more attractive,

as compared to Zanemvula some nine kilometres away, and lacking in many of these amenities. Sense of community will be eroded, as people from varying places have been moved to Chatty. The relocation process will dismantle communities as the community of VP and SOS will not be moved as a whole, but will be mixed with people from different areas.

Major pull factors such as the proximity to schools and healthcare clinics, easy access to public transport, and the relatively nearby situation to a light industrial area as a potential source of income, is what attracts and keeps 65% of the residents who are located on the floodplain. Social influences which are unique to a community, in which a high degree of social interaction exists, also contribute to ensuring that residents remain on the floodplain.

When comparing the floodplain to the resettlement area at Zanemvula, these were the main concerns expressed by residents:

**Access to public transport.** Public transport connection in the two neighborhoods is different as there is no direct public transport from Zanemvula to the main commercial nodes in town. Residents in Zanemvula have to take two taxis to reach town where as VP and SOS residents on the floodplain take one taxi, hence costing became an issue.

**Schools.** Access to school is also seen as a challenge, as the recipient area doesn't have enough schools to accommodate children of school going age. School children have remained in schools which are in the VP and SOS communities thus relocation to Zanemvula will introduce a new cost, of public transport for school children.

**Clinics and police stations.** There is easier access to healthcare clinics and police stations in VP and SOS as compared to the Zanemvula neighborhood, where these provisions are already strained.

**Social influences.** Social influences are the small connections people have with their home and the relationships which have been formed through interactions. The households located on the floodplain are old and thus more than one generation of a single family live here. Respondents vary in their reason for staying, these range from staying close to/not leaving their family members, and to others having social/religious duties towards their peers.

It is evident from these results that sense of place does indeed have an impact on the residents' decision to relocate to a resettlement area as an adaptive measure to climate change. The interplay that exists between, and within communities, as well as the length of stay greatly influences this decision.

## Conclusion

People's sense of place plays a big role in climate change adaptation. Climate change adaptation is dependent on people acknowledging that the hazards to which they are exposed on the floodplains and allowing change to occur so that they can have an improved quality of life.

In Soweto-on-Sea and Veeplaas, a unique view into climate change adaptation has seen a split in residents' response to this measure. Some residents have chosen to stay on the hazardous floodplains, while those that had left for the resettlement site at Zanemvula, had chosen to move back to the site, despite it being un-serviced and on potentially precariously hazardous land.

To a degree the sense of place has influenced their response to relocation, and this is evident amongst the people who have lived here for a very long time. The process of relocation should have improved their standard of living through the provision of better quality dwellings as homes. Yet ironically, the resultant reluctance to stay in the resettlement area stems from the economic disadvantages imposed on the resettled residents at Zanemvula, with it being located so far as away. This, along with the primary issue of disconnectedness to an established community of strong bonds and affiliations, reiterates that the sense of place does indeed have a significant impact on people's choice to relocate as a way of adapting to the effects of rising flood levels due to climate change.

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