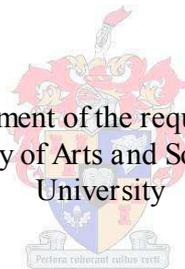


WIND ENERGY LANDSCAPES, PLACE ATTACHMENT AND TOURISM IN THE ROUTE 27/WEST COAST REGION OF SOUTH AFRICA

by
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ABSTRACT

The West Coast Region (WCR) of the Western Cape Province in South Africa is earmarked for at least 13 windfarm developments. These proposed developments represent an investment in and a movement towards cleaner and alternative ways of energy generation. All developments that will alter the environment or landscape are usually received with some sort of opposition. The aim of this study was to determine whether or not the presence of wind turbines in the form of wind farms will have any affect on the sense of place of insiders of (residents) and outsiders (visitors) to the West Coast Region, the insiders' attachment to their natural landscapes and the outsiders' experiences of the region. In the context of multiple issues arising from a very complex discourse around the possible effects that the proposed windfarms are perceived to have in the WCR, this study approached the research topic from three perspectives of inquiry: (1) windfarms and people's place attachment; (2) windfarms and landscape aesthetic and function interference; and (3) windfarms and its effect on tourism. The study area includes 15 towns of three subregions of the WCR, namely the Swartland, West Coast Peninsula and Bergrivier subregions.

The research objectives are seven fold, namely (1) to establish a solid base and understanding of the concepts and constructs related to wind energy, landscape aesthetics and place attachment; (2) to review appropriate case studies reported in the international literature and apply relevant methodologies in this study; (3) investigate theories, types and models of public decision making to explore the degree to which these could be applied to windfarm support or objection in the WCR; (4) to critique current policies in windfarm establishment and discover whether and how these shape social objection to or support for windfarm development in the WCR; (5) to establish the perceptions and attitudes relating to wind turbines of three groups of actors (tourism industry, tourists and residents) in the WCR by conducting questionnaire surveys in 15 West Coast towns and villages and interpret these views in relation to the impacts of wind turbines on the local landscape; (6) to determine the insiders' place attachments to the WCR, whether the presence of wind turbines will affect these attachments and whether their attachments influence decisions to support or oppose the proposed windfarm developments; and (7) to assess the extent to which the presence of wind turbines will affect the tourism value of the region. Primary data was further strengthened by semi-structured interviews, informal conversations and observation at public participation and specialized group meetings. Data was analysed using SPSS, Excel and ArcGIS.

The findings indicate that respondents are concerned with issues related to the sustainability of the natural environment and that the residents of the WCR possess a strong sense of attachment to the region, but no clear indication was found that their place attachment serve as a reason for their opposition to the proposed windfarm developments. Although the support for windfarm development decreases from a national to a regional level and to the local level of in or close to the towns in which respondents reside, their opposition to windfarm development in the region cannot only be regarded as simple not-in-my-backyard (NIMBY) attitudes. Seventy-five per cent of the respondents regard the physical landscape of the WCR as very special, but would still support the development of windfarms in the region indicating that the respondents do not believe the construction of wind turbines in the WCR landscapes will influence the special character of landscapes negatively. There is no indication presently that the tourism industry would be affected negatively by windfarm development in the region as both residents and visitors do not believe that windfarms deter tourists from visiting certain areas and more than 90% of visitors indicated they would return to the WCR after a number of windfarms have been developed. It is recommended that a post-development impact study be conducted to determine the attitudes toward windfarm development in the WCR following the deployment of wind turbines.

Keywords and phrases: wind energy landscapes, place attachment, NIMBY, landscape interference, land use diversification, windfarms and tourism

OPSOMMING

Die Weskus-streek in die Wes-Kaap provinsie van Suid-Afrika word geormerk vir ten minste 13 windplaas ontwikkelinge. Hierdie voorgestelde ontwikkelinge verteenwoordig 'n belegging in en 'n beweging na skoner en alternatiewe maniere van energieopwekking. Alle ontwikkelinge wat die omgewing of landskap sal verander word gewoonlik ontvang deur 'n mate van teenkantiing. Die doel van hierdie studie was om te bepaal of die teenwoordigheid van windturbines in die vorm van windplase enige invloed op die plekbewustheid van inwoners van en besoekers aan die Weskus-streek, hulle gehegtheid aan die streek se natuurlike landskappe en besoekers se ervarings van die streek sal uitoefen. Binne die konteks van verskeie kwessies met hul oorsprong vanuit 'n baie komplekse diskoers rondom die moontlike effekte wat vermeen word die voorgestelde windplase op die Weskus-streek sal hê, benader hierdie studie die navorsingsonderwerp vanuit drie navraagsperspektiewe: (1) windplase en mense se plekgehegtheid; (2) windplase en landskap estetiese en funksie steuring; en (3) windplase en die effek daarvan op toerisme. Die studie area sluit 15 dorpe uit drie substreke van die Weskus-streek in, naamlik die Swartland, Weskus Skiereiland en Bergrivier substreke.

Die navorsingsdoelwitte is sewevoudig, naamlik (1) om 'n konseptuele basis en verstaan van konsepte en konstruksie geassosieer met windenergie-opwekking, landskap estetika en plekgehegtheid te kweek; (2) om toepaslike gevallestudies te hersien en sommige relevante metodologie vir die studie aan te wend; (3) om teorieë, tipes en modelle van publieke besluitneming te ondersoek ten einde te bepaal tot watter graad dit aangewend kan word tot windplaasondersteuning of teenkantiing in die Weskus-streek; (4) om kritiek te lewer op huidige beleide van windplaasontwikkeling en te ontdek tot watter mate en hoe dit sosiale teenkantiing of ondersteuning van windplaasontwikkeling in die Weskus-streek vorm; (5) om die persepsies en houdings van drie groepe deelnemers (die toerisme industrie, toeriste en inwoners) in die Weskus-streek te bepaal deur vraelysopnames in 15 Weskus dorpe te doen en hierdie sienings in verhouding met die impakte van windturbines op die plaaslike landskap te interpreer; (6) om die inwoners se plekgehegtheid tot die Weskus-streek te bepaal en of die teenwoordigheid van wind turbines hierdie gehegtheid sal affekteer en of hul gehegtheid besluitneming rakende die ondersteuning vir, of teenkantiing teen, windplaasontwikkeling beïnvloed; en (7) om te bepaal tot watter mate die teenwoordigheid van windturbines die toerisme waarde van die streek sal affekteer. Primêre data is verder versterk deur semi-

gestruktureerde onderhoude, informele gesprekke en waarneming by publieke deelname sessies en gespesialiseerde groepsvergaderings. Data is ontleed deur middel van SPSS, Excel en ArcGIS.

Daar is bevind dat respondente besorg is oor kwessies rondom die volhoubaarheid van die natuurlike omgewing en dat die inwoners van die Weskus-streek 'n sterk gehegtheid aan die streek het, maar geen definitiewe aanduiding is gevind dat hulle gehegtheid aan die streek as 'n behoorlike rede vir hul teenstand teen die voorgestelde windplase aangevoer kan word nie. Alhoewel ondersteuning vir windplase afneem vanaf nasionaal na streeksvlak en die plaaslike vlak van binne of naby die dorp waar respondente woon, kan teenkating teen die ontwikkeling van windplase in die streek nie slegs eenvoudig as 'n nie-in-my-agterplaas houding (NIMAP) beskou word nie. Vyf-en-sewentig persent van die respondente ag die fisiese landskap van die Weskus-streek as baie spesiaal, maar ondersteun steeds windplaasontwikkeling in die streek wat aandui dat die respondente nie van mening is dat die oprigting van windturbines in die Weskus-streek landskappe die spesiale karakter van hierdie landskappe negatief sal beïnvloed nie. Daar is tans geen aanduiding dat die toerismebedryf negatief deur windplaasontwikkeling beïnvloed sal word nie aangesien beide inwoners en besoekers aangedui het dat hul nie van mening is dat windplase toeriste sal verhinder om sekere areas te besoek nie. Negentig persent van besoekers het aangedui dat hul steeds sal terugkeer na die Weskus-streek ná die ontwikkeling van 'n aantal windplase. Dit word aanbeveel dat 'n ná-ontwikkeling impakstudie onderneem word om die houdings jeens windplaasontwikkeling in die Weskus-streek ná oprigting van die turbines te ondersoek.

Slutelwoorde en -frases: windenergielandskappe, plekgehegtheid, NIMAP, landskapsteuring, grondgebruikdiversifikasie, windplase en toerisme

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CONTENTS

AUTHOR’S DECLARATION.....	ii
ABSTRACT.....	iii
OPSOMMING.....	v
ACKNOWLEDGEMENTS.....	vii
CONTENTS.....	viii
TABLES.....	xi
FIGURES.....	xii
ACRONYMS AND ABBREVIATIONS.....	xv
CHAPTER 1: INTRODUCTION.....	1
1.1 PROBLEM FORMULATION.....	2
1.1.1 The real-world problem: alternative energy source in South Africa.....	2
1.1.2 Research problem.....	4
1.2 AIM AND OBJECTIVES.....	5
1.3 STUDY AREA.....	6
1.3.1 The Swartland subregion.....	9
1.3.2 The West Coast Peninsula subregion.....	11
1.3.3 The Bergrivier subregion.....	16
1.4 RESEARCH DESIGN.....	18
1.5 METHODOLOGY AND METHODS.....	20
1.5.1 Literature review.....	22
1.5.2 Semi-structured interviews.....	23
1.5.3 Informal conversations.....	23
1.5.4 Observation.....	24
1.5.5 Questionnaire survey.....	25
1.5.6 Limitations of the methodology and methods.....	32
1.6 GEOGRAPHICAL CONTEXT.....	34
1.7 THESIS STRUCTURE.....	35
CHAPTER 2: WINDFARMS AS ALTERNATIVE FORM OF ENERGY PRODUCTION: SOCIAL DIMENSIONS.....	37
2.1 WIND TURBINES AS GENERATORS OF ALTERNATIVE ENERGY.....	38

2.1.1	Benefits of wind energy.....	39
2.1.2	Liabilities of wind energy.....	40
2.2	THE THREE PERSPECTIVES OF INQUIRY OF THE WINDFARM DEBATE....	42
2.2.1	Windfarms and people's place attachment.....	44
2.2.2	Windfarms and landscape aesthetics and function interference.....	48
	2.2.2.1 Visual intrusion of wind turbines.....	49
	2.2.2.2 Land use diversification.....	52
2.2.4	Windfarms and its effect on tourism	55
2.3	PUBLIC ATTITUDES TO WIND ENERGY.....	57
2.3.1	The process of meaning making.....	58
2.3.2	Attitude-behaviour relations.....	59
2.3.3	Types, models and theories of decision making.....	59
2.3.4	Support for and objection to windfarms: international experiences.....	62
 CHAPTER 3: WINDFARM ESTABLISHMENT, POLICY LEGISLATION AND PROCESS.....		65
3.1	POLICY AND PLANNING REQUIREMENTS FOR WINDFARM DEVELOPMENT IN SOUTH AFRICA.....	66
3.2	PUBLIC PARTICIPATION PROCESS.....	70
3.3	SUCCESSFUL VERSUS UNSUCCESSFUL POLICY MAKING.....	71
3.4	THE PROPOSED WINDFARM PROJECTS.....	74
 CHAPTER 4: RESULTS AND DISCUSSION.....		80
4.1	RESPONDENTS' ENERGY-RELATED ENVIRONMENTAL KNOWLEDGE AND AWARENESS.....	80
	4.1.1 Sustainability issues.....	80
	4.1.2 General energy resource and windfarm knowledge.....	82
	4.1.3 Acceptance levels of windfarms.....	87
4.2	PLACE ATTACHMENT OF RESIDENTS OF THE WCR.....	90
4.3	LANDSCAPES OF THE WCR.....	100
	4.3.1 Visual intrusion by windfarms.....	103
	4.3.2 Windfarms and land use diversification.....	104
	4.3.3 Windfarms and landscape values of the WCR.....	105
4.4	TOURISM IN THE WCR.....	111

4.4.1	Effects of tourism on the WCR.....	112
4.4.2	Visitors' familiarity with the WCR.....	116
4.4.3	Windfarms and tourism in the WCR.....	118
4.5	THE EFFECTS OF POLICY AND PLANNING ON THE PUBLIC.....	119
4.6	OPPOSING VIEWS: WHERE AND WHERE NOT SHOULD WINDFARMS BE LOCATED?	122
CHAPTER 5: CONCLUSION AND RECOMMENDATIONS.....		126
5.1	SUMMARY AND SYNTHESIS OF THE MAIN FINDINGS OF SOCIAL ACCEPTANCE ISSUES WITH PROPOSED WINDFARMS IN THE WCR.....	126
5.1.1	Place attachment of residents of the WCR.....	127
5.1.2	Windfarms and landscape interference in the WCR.....	128
5.1.3	Windfarms and tourism in the WCR.....	128
5.2	REVISITING THE OBJECTIVES.....	129
5.3	LIMITATIONS OF THE STUDY.....	131
5.4	RECOMMENDATIONS AND CONCLUSION.....	133
REFERENCES.....		135
PERSONAL COMMUNICATIONS.....		148
APPENDICES		
APPENDIX A: FRAMEWORKS FOR CLASSIFYING RESEARCH.....		149
APPENDIX B: SEMI-STRUCTURED INTERVIEW CHECKLIST.....		150
APPENDIX C: ENGLISH QUESTIONNAIRE FOR RESIDENTS.....		151
APPENDIX D: AFRIKAANS QUESTIONNAIRE FOR RESIDENTS.....		166
APPENDIX E: ENGLISH QUESTIONNAIRE FOR VISITORS.....		181
APPENDIX F: AFRIKAANS QUESTIONNAIRE FOR VISITORS.....		196
APPENDIX G: GRID FORMAT OF MAPS FOR PGIS ONLINE VERSION OF QUESTIONNAIRES.....		211

TABLES

Table 1.1 Firestone’s classification of quantitative and qualitative research.....	21
Table 1.2 Questionnaire distribution and response rates.....	29
Table 2.1 Four types of objections to windfarms.....	47
Table 2.2 Paradigms of landscape aesthetics	50
Table 2.3 Criteria for visual impact assessments.....	50
Table 2.4 Types of decision making.....	60
Table 2.5 Arguments for and against wind energy from an international perspective.....	64
Table 3.1 Proposed windfarms in the West Coast region.....	75
Table 3.2 Issues regarding windfarm developments: West Coast Peninsula subregion	78
Table 3.3 Concerns regarding windfarm developments: Swartland subregion	79
Table 3.4 Concerns regarding windfarm development: Bergrivier subregion	79
Table 4.1 Realism index (according to weighted ratings) for environmental or energy- resource issues according to WCR respondents (100 = very real).....	82
Table 4.2 Respondents’ weighted ratings of the advantages of wind energy (100 = very important).....	84
Table 4.3 Respondents’ weighted ratings of the disadvantages of wind energy (100 = very disturbing).....	86
Table 4.4 Reasons why resident respondents enjoy living in their town of residence.....	93
Table 4.5 Residents’ reasons for identifying special places.....	95
Table 4.6 Reasons given by resident respondents for supporting and opposing windfarm developments in the West Coast region.....	98
Table 4.7 Benefits of tourism to regional local communities.....	111

FIGURES

Figure 1.1 Subregions of the West Coast region.....	7
Figure 1.2 Study area within the West Coast region.....	8
Figure 1.3 Major attractions of the study area.....	8
Figure 1.4 Wheat fields in the Swartland subregion.....	9
Figure 1.5 Wine-production landscapes in the Swartland subregion.....	10
Figure 1.6 A portion of Yzerfontein’s 16-mile sandy beach.....	11
Figure 1.7 Wildflower landscapes of the West Coast Peninsula.....	12
Figure 1.8 The whitewashed buildings of Jacobsbaai.....	13
Figure 1.9 The main street of Vredenburg with the Dutch Reformed Church in the background.....	14
Figure 1.10 Traditional fishing boats at Paternoster.....	15
Figure 1.11 The view of St Helena Bay over the bay from Britannia Bay.....	15
Figure 1.12 Port Owen Marina.....	17
Figure 1.13 Research design for investigating windfarm effects on place attachment, landscapes and tourism.....	19
Figure 1.14 The biographical details of respondents in the survey.....	30
Figure 2.1 Basic structure of wind turbines.	38
Figure 2.2 The three perspectives of inquiry of the study.....	42
Figure 2.3 Triangle of social acceptance of renewable energy innovations.....	43
Figure 2.4 The tripartite model of place attachment	45
Figure 2.5 Wind turbines interfering with the view of Mt. San Jacinto at the southern end of the San Gorgonio Pass, Palm Springs	49
Figure 2.6 Windfarm on agricultural land in Lestrade, France.....	52
Figure 2.7 The land use/climate change/energy nexus	53
Figure 2.8 U-shaped level of acceptance of wind energy developments over time.....	57
Figure 2.9 Three models for the analysis of decision-making processes.....	61
Figure 3.1 The wind energy development process.....	66
Figure 3.2 The South African wind energy planning and regulatory framework.....	67
Figure 3.3 The environmental impact assessment process in South Africa.....	69
Figure 3.4 Location of proposed windfarms in the West Coast region.....	77
Figure 4.1 Actions taken by WCR respondents to reduce environmental impacts	81
Figure 4.2 Respondents’ knowledge of what a windfarm is.....	83

Figure 4.3 Residents' support for windfarm development	88
Figure 4.4 Visitors' support for windfarm development.....	88
Figure 4.5 Support for windfarm development in the WCR by respondents' concerned about the sustainability of the natural environment	89
Figure 4.6 Residents' knowledge of the West Coast region.....	90
Figure 4.7 Residents' attachment to the West Coast region.....	92
Figure 4.8 Location of places regarded as special by residents.....	94
Figure 4.9 Picturesque landscape in the West Coast region.....	100
Figure 4.10 Nature of the physical landscape of the West Coast region	101
Figure 4.11 Most appealing characteristics of the WCR physical landscape according to respondents (100 = most appealing).....	102
Figure 4.12 Support for windfarm development by respondents who rate use of land occupied by windfarms for farming as an important advantage.....	104
Figure 4.13 Support for windfarm development by respondents who rate the physical landscape as very special.....	106
Figure 4.14 Scenic value of landscapes in the West Coast region: (a) Distribution of dots placed by respondents; (b) Hot Spot analysis results.....	107
Figure 4.15 Biological diversity of landscapes in the West Coast region: (a) Distribution of dots placed by respondents; (b) Hot Spot analysis results.....	108
Figure 4.16 Economic value of landscapes in the West Coast region: (a) Distribution of dots placed by respondents; (b) Hot Spot analysis results.....	109
Figure 4.17 Recreational value of landscapes in the West Coast region: (a) Distribution of dots placed by respondents; (b) Hot Spot analysis results.....	110
Figure 4.18 How tourism has affected the West Coast region	113
Figure 4.19 Reasons why visitor respondents enjoy visiting the West Coast region	114
Figure 4.20 Visitor's view of top features of the WCR (100 = rated top feature by all respondents).....	114
Figure 4.21 Special places in the West Coast region according to visitors.....	115
Figure 4.22 Towns in the West Coast region visited before by visitors	116
Figure 4.23 Visitors' knowledge of the West Coast region	117
Figure 4.24 Windfarms as deterrents to tourists visiting the West Coast region	118
Figure 4.25 Percentage of tourists who would still visit West Coast region after the development of a number of windfarms.....	119
Figure 4.26 Spectrum of levels of influence on the public	120

Figure 4.27 Places where windfarms should not be located according to respondents	122
Figure 4.28 Places where windfarms should be located according to respondents	124

ACRONYMS AND ABBREVIATIONS

AfriWEA	African Wind Energy Association
BID('s)	background information document(s)
CCNR	Cape Columbine Nature Reserve
DEA	Department of Environmental Affairs
DEA&DP	Department of Environmental Affairs & Development Planning
EIA	environmental impact assessment
EMP	environmental management programme
ERM	Environmental Resources Management
EWEA	European Wind Energy Association
GIS	geographic information systems
GW	gigawatt
I&APs	interested and affected parties
IPPP	Independent Power Producer Programme
IRP	integrated resource plan
KM	kilometres
MW	megawatt
NERSA	National Energy Regulator of South Africa
NIMBY	not-in-my-backyard
PGIS	participatory geographic information systems
SBTO	Saldanha Bay Tourism Organisation
SDF	spatial development framework
SEES	sustainable environmental energy strategy
SEI	Sustainable Energy Ireland
SIA	social impact assessment
SPSS	Statistical Package for Social Sciences
VAC	visual absorption capacity
WCNP	West Coast National Park
WCR	West Coast region

CHAPTER 1: INTRODUCTION

True “humanistic geographers sought to restore people to the heart of geographical enquiry, arguing that a ‘truly human geography’ required an understanding of the psychological, emotional and existential attachments that individuals had towards particular spaces, places and landscapes” (Dwyer & Limb 2001:3). The development of onshore wind energy is environmentally and socially controversial with concerns stemming largely from the transformation of natural landscapes into landscapes of power (Pasqualetti 2000). Besides the influence on natural landscapes, it is believed that windfarms also influence the attachment of people to a certain place and that they affect the tourism industry adversely. The West Coast region (WCR) of South Africa is currently being targeted by wind energy developers because of the region’s proven sustainable wind resource. The region is renowned for its simple, undeveloped and mostly natural landscapes leading to grave concerns, from a residential perspective, about the effects of the proposed windfarm developments.

In the twenty-first century we are facing an energy problem relating to the “provision of a sustainable and non-polluting energy supply to meet all of our domestic, commercial and industrial energy needs, which is a long-term challenge for society” (Evans 2008: 8). Across the globe, countries are turning to alternative renewable energy resources¹ to aid in the supply of electricity and replace conventional non-renewable energy resources². “The intersection of two global risks – climate change and energy insecurity – sees environment and energy policy and interests intertwined at the top of political agendas around the world simultaneously” (Dunlop 2009: 265). Increasing concerns related to the impacts of predicted global climate change have jump-started a transition from non-renewable to renewable energy sources, the latter being generally more environmentally friendly.

¹ “Renewable energy sources are primarily those which are inexhaustible in nature, and which are ultimately derived from the radiant energy of the sun reaching the earth” (Evans 2008: 81), and which have the ability to “replenish themselves” (Chambers 2004: 1).

² “Non-renewable energy is derived from a finite source – for example, there is only a limited amount of coal, oil and uranium in the earth which can be converted into forms of energy” (McDaid 2009: 202).

Wind energy is one of the main renewable alternatives which has been tapped to a large extent, with a growth of more than 600% in total installed wind power capacity worldwide from 1997 to 2004 (World Wind Energy Association 2008). Wind energy is currently the world's fastest growing renewable energy source on a percentage basis with an installed generating capacity growing, on average, by 22% or more annually. Wind turbine technology is technically more advanced compared to a number of other renewable energy technologies and in many cases it is the most profitable economically (Devine-Wright 2005).

By June 2011, 86 countries were using wind energy as an alternative source for electricity generation, with China the world leader in installed capacity (World Wind Energy Association 2011). Research has shown that there is significant potential for wind energy development in South Africa, more specifically in the Western Cape Province (Diab 1995; Lombard 2010). The current earmarking of the WCR for windfarm development is causing controversy given that wind energy development allegedly impacts on, among others, the aesthetic value of a landscape, the place attachment of residents and the degree to which windfarms act as deterrents for tourists to visit such areas. These issues underlie the research reported in this thesis.

This chapter sets the scene and discusses the research process followed. The real-world and research problems are formulated and the aim and objectives are set out. The study area is demarcated, the methodology is explained, the research design is presented and the thesis structure is outlined.

1.1 PROBLEM FORMULATION

This study originates from a real-world problem which leads to a research problem about which a number of research questions need to be answered. These problems and questions are elucidated in the following two subsections.

1.1.1 The real-world problem: alternative energy source in South Africa

Currently, only 1.5% of South Africa's mainstream electricity generation constitutes renewables

(Cary 2012). Eskom (formerly the Electricity Supply Commission or Escom) has been responsible for electricity supply in South Africa since 1923 and now supplies about 95% of the electricity consumed within the country's borders (Eskom 2011). According to Eskom's 2011 annual report, the net generating capacity is approximately 41.2 gigawatts (GW) of which South Africans used approximately 37 GW during 2011, leaving a 10% reserve margin. Good practice requires that the reserve margin should be at least 15%. Clearly, the country is in desperate need of extra or preferably alternative electricity generation. The country's Department of Energy (DoE) released an integrated resource plan (IRP) in 2010 which aims to add 42.6 GW (100% of current capacity) of electricity to the country's capacity by 2030. Of this, 42% (17.8 GW) will be allocated to renewable sources including solar photovoltaic (8.4 GW), concentrated solar power (1 GW) and wind (8.4 GW) (South Africa 2011). In the unlikely event that South Africans were to use electricity at the current consumption rate, by 2030, 74% of the electricity used could be supplied by renewables and 35% specifically by wind power.

The generation of more electricity from renewable sources, such as wind, is a prerequisite for the sustainable development of South Africa as a country and Africa as a continent. There are, however, some implications of such developments that call for consideration. Full implementation of the IRP could entail the establishment of approximately 2800³ wind turbines across South Africa by 2030. Development at this scale will undoubtedly provoke strong opposition. The development of windfarms has thus inspired comments such as it "transforms natural landscapes into landscapes of power" (Pasqualleti 2000: 3). Whether windfarm structures have positive or negative impacts on the aesthetic value of landscapes is a matter of opinion and the effects are also influenced by the nature of the surroundings. Opinions on wind turbines are inherently subjective to varying degrees with sociological factors playing an important role in determining the extent of public opinion (Eltham, Harrison & Simon 2008).

³ This figure is based on the generalization of each turbine producing around 3 megawatts (MW) of electricity. In the early stages of wind energy development, a turbine could not deliver more than 1 MW at its peak, but recent advances in turbine design technology has led to increased capacities of up to 4 MW. The specific turbine design used depends on the site characteristics and budget of a specific windfarm.

Consequently, the real-world problem underlying this study is the need for alternative energy in South Africa and the associated issues of social acceptance which arise from the development of windfarms.

1.1.2 Research problem

The research commenced in October 2010. It is a continuation of the honours research project which dealt with the Western Cape's physical and climatic attributes for hosting windfarms (Lombard 2010). Based on wind speed, slope, land cover and the availability of substations in the province, the study concluded that the province has significant potential for windfarm development (Lombard 2010). Yet, it was evident that although the physical conditions for windfarm siting were appropriate, it does not guarantee that the local community of a targeted area will support the development. This uncertainty set the challenge to examine the attitudes of residents and visitors toward proposed windfarm developments in the WCR.

The WCR is known for its tranquility and unspoilt natural beauty. Recent proposals for establishing a number of windfarms in this idyllic environment have raised concern. The values people associate with places and landscapes and the personal bonds they form with them constitute their attachment to these places (Brown & Raymond 2007). Place attachment plays an important role in how people perceive any type of development, consequently any changes in the landscape will affect people's attachment to the landscape itself. Many people have positive attitudes toward wind energy in general, but when the windfarm developments threaten to occur close to their place of residence, they tend to object. This is the so-called NIMBY (not-in-my-backyard) attitude (Wizelius 2007). NIMBY responses are 'place-protective' actions which can be direct consequences of the place attachment and identity associated with an area (Devine-Wright 2009). Part of the research problem is to assess the extent to which residents of the WCR feel attached to the region and if their attachments contribute to NIMBY attitudes toward proposed windfarms.

The WCR is also a popular tourist destination so that some residents of the region with an enterprising spirit are not only outraged at the prospect of the natural landscape being disturbed

by the installation of wind turbines, but that the windfarms will be detrimental to their region's tourism industry. They are fearful that wind turbines in tourist-attracting landscapes will deter tourists from visiting such areas. On the other hand, a windfarm may also be perceived as being complementary to an existing tourism product portfolio, especially for those interested in the 'green path' types of development which are regarded to be more environmentally friendly. Windfarm development can also provide opportunities for communities to foster awareness of and provide education about clean energy, as well as furnish the landscape with new architectural and heritage values (Countryside Energy Co-operative Inc. 2010). This study investigates the opinions of insiders (residents) of and outsiders (visitors) to the WCR regarding the proposed windfarm developments⁴.

The study addresses the following four questions:

- What is the degree of place attachment of insiders in the WCR?
- In what ways do insiders' place attachments influence their opinions about the windfarm developments?
- Do the residents have NIMBY (not-in-my-backyard) attitudes?
- What are the insiders' and outsiders' views about the possible impacts of windfarm developments on tourism in the WCR?

The overall aim and objectives of the study are discussed in the next section.

1.2 AIM AND OBJECTIVES

The overarching aim is to determine whether or not the presence of wind turbines in the form of windfarms will have any affect on the sense of place of insiders (residents) of and outsiders (visitors) to the WCR, the insiders' attachment to their natural landscapes and the outsiders' experiences of the region.

⁴ "Insider/outsider refers to the boundary marking an inside from an outside, a boundary that is seen to circumscribe identity, social position and belonging and as such marks those who do not belong and hence are excluded" (Mohammad 2001: 101).

The research objectives are to:

1. Establish a solid base and understanding of the concepts and constructs related to wind energy, landscape aesthetics and place attachment.
2. Review appropriate case studies reported in the international literature and apply relevant methodologies in this study.
3. Investigate theories, types and models of public decision making to explore the degree to which these could be applied to windfarm support or objection in the WCR.
4. Critique current policies in windfarm establishment and discover whether and how these shape social objection to or support for windfarm development in the WCR.
5. Establish the perceptions and attitudes relating to wind turbines of three groups of actors (tourism industry, tourists and residents) in the WCR by conducting questionnaire surveys in 15 West Coast towns and villages and interpret these views in relation to the impacts of wind turbines on the local landscape.
6. Determine the insiders' place attachments to the WCR, whether the presence of wind turbines will affect these attachments and whether their attachments influence decisions to support or oppose the proposed windfarm developments.
7. Assess the extent to which the presence of wind turbines will affect the tourism value of the region.

In the following section the study area is introduced followed by the methodology and specific methods applied which aim to clarify how the chosen methods are used to answer the research questions and achieve the objectives in Section 1.4.

1.3 STUDY AREA

The study area is part of the WCR in the Western Cape province. The whole WCR consists of six subregions of which this study involves parts of the Swartland- and Bergvliet subregions and the whole West Coast Peninsula subregion portrayed in Figure 1.1 and Figure 1.2. Note that references to the WCR in this report all imply the extent of the study area described in this section, unless stated otherwise.

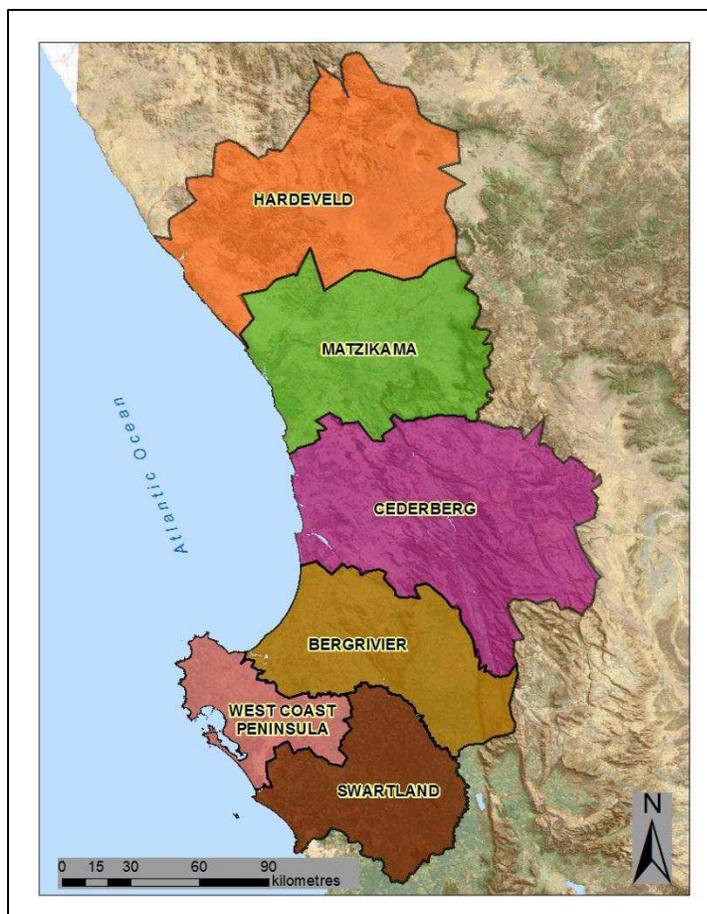


Figure 1.1 Subregions of the West Coast region

The 15 towns of the WCR involved in the study are associated with Route 27 also known as a tourism route which runs through the Swartland-, West Coast Peninsula- and Bergrivier subregions. The WCR is renowned for its “stunning coastlines, extraordinary flora, charming characters and culture, excellent cuisine and a vast range of activities for young and old” (Simpson 2010 DVD text). Figure 1.3 shows the major attractions of the study area which will be discussed in context of the 15 towns. Du Toit’s (2012: 13) thumbnail sketch of the West Coast encapsulates its special character:

The atmosphere of the West Coast, with its sweeping bays, unspoilt nature and wildlife is open and fresh, and it is exactly the place to break away to – as many artists and pensioners do – if you want to be far away, yet just around the corner from busy Cape Town and the modern city conveniences that this seaport and its surroundings offer.

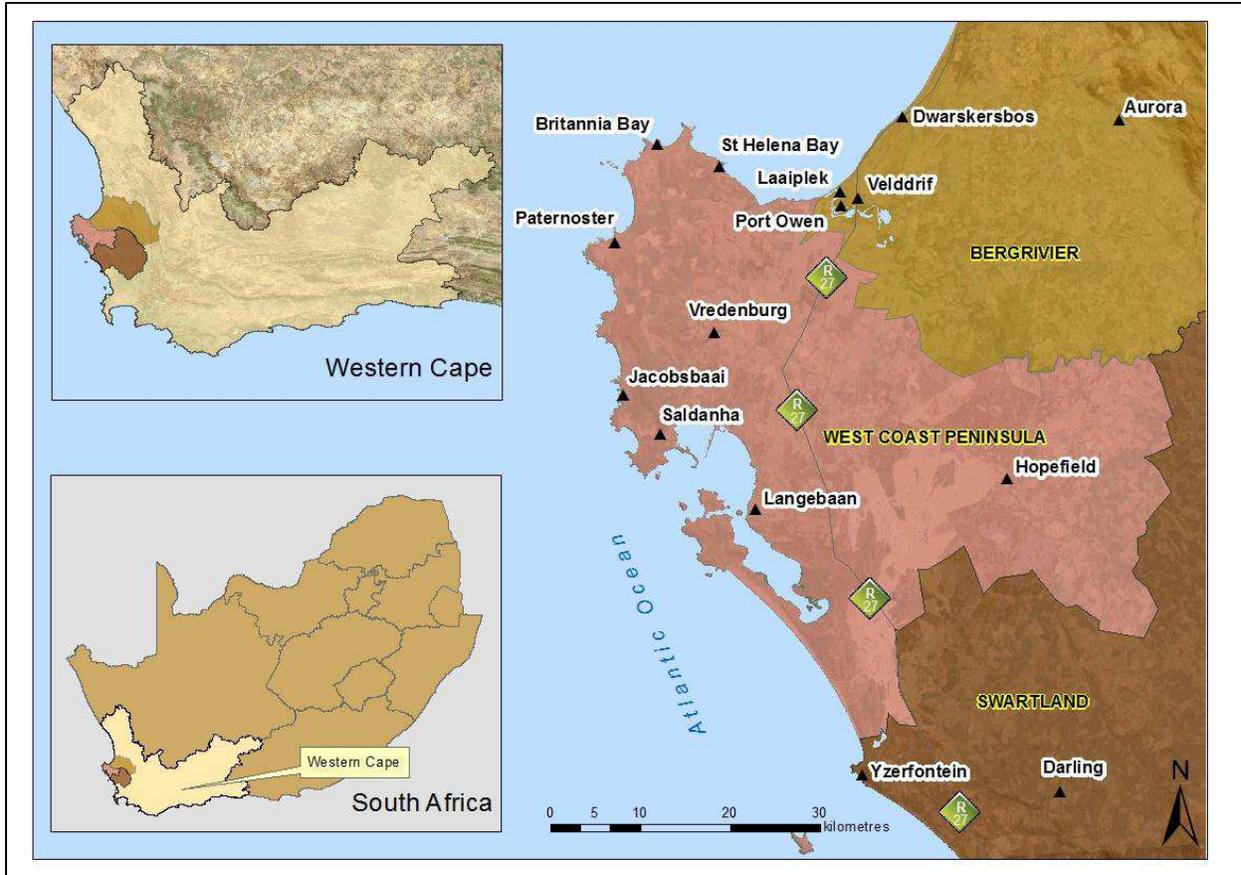
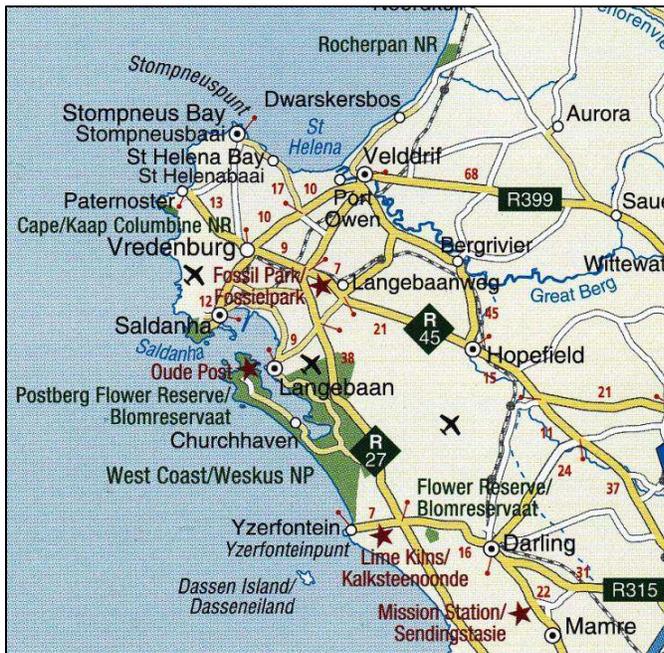


Figure 1.2 Study area within the West Coast region



Source: Adapted from Hopkins et al. (2010)

Figure 1.3 Major attractions of the study area

The three subregions under the spotlight in this study boast special contrasting landscape features ranging from beautiful and often deserted coastlines along the West Coast Peninsula and Bergrivier subregions to that of wavy wine- and wheat farms in the Swartland subregion appealing to local residents and tourists visiting the area. This study area was selected because it is the focal point of 13 proposals for windfarms incorporating a total of about 700 wind turbines. Four of the eight currently operating wind turbines in South Africa are already sited close to Darling. Each of the subregions and their associated towns are discussed in more detail in the next three subsections.

1.3.1 The Swartland subregion

This subregion, bordering the Cape Town metropolitan area, is the breadbasket of the Western Cape. Located 85 kilometres (km) from Cape Town, the Swartland is the gateway to the West Coast. The landscape of the Swartland subregion is characterized by open fields used mainly for wheat farming, wine-, rooibos- and olive production (see Figures 1.4 and 1.5). The colours of the landscape change from emerald green in winter to a goldish yellow in summer and the textures also change accordingly from freshly ploughed symmetric rows in autumn to neat rows of straw bales after the harvest with sheep grazing elegantly on the stubble fields (Hopkins et al. 2010).



Source: Hopkins et al. (2010: 26)

Figure 1.4 Wheat fields in the Swartland subregion



Source: Hopkins et al. (2010: 27)

Figure 1.5 Wine-production landscapes in the Swartland subregion

The name Swartland derives from the dark appearance of the indigenous and threatened vegetation of the area, the Renosterveld (Hopkins et al. 2010). The towns of this subregion included in the study are Darling and Yzerfontein because of their association with Route 27. Darling is known for its wines, olives, dairy farming and orchid nursery. The acclaimed South African satirist Pieter-Dirk Uys, also known by his alter ego Evita Bezuidenhout, settled in Darling in 1995 where he established Evita se Perron, a museum, restaurant and theatre where visitors can enjoy his renowned cabaret shows.

Darling is a historic, artistic and cultural town, also known as the wildflower jewel of the West Coast. The Darling Wildflower Show, held annually since 1917, showcases the floral richness and diversity of the area. According to Meyer (2011) of the Darling Wildflower Society, more than 1200 species of flowering plants are found in the West Coast flower region, of which 80 are endemic to the West Coast. The Darling Wine Route has four cellars for wine tasting and cellar-door purchases. The Darling district is also home to one of the three biggest butter producers in the Western Cape (Stevens 2011).

The seaside village of Yzerfontein is known for its 16-mile (26 kilometres) beach (Figure 1.6), the longest uninterrupted sandy beach on the South African coastline. Yzerfontein is characterized as a fisherman's haven with many ski-boats using the harbour for snoek and West



Source: Author (2011)

Figure 1.6 A portion of Yzerfontein's 16-mile sandy beach

Coast lobster catching in the sea. Approximately 60% of all the linefish caught on the West Coast are landed here (Smart Holidays 2010/11a). Donaldson et al.'s (2012) study of the growth potential of non-metropolitan municipalities of the Western Cape found that both Darling and Yzerfontein are towns with high-quality physical environments. The potential of the towns in the other two subregions will also be discussed within the context of Donaldson et al.'s (2012) study.

1.3.2 West Coast Peninsula subregion

The West Coast Peninsula subregion is renowned for its diverse mixture of nature, culture, tranquility, adventure and cuisine. It is a popular (sunshine 90% of the year) tourist destination in South Africa, especially during the summer months with average summer temperatures of 22°C to 30°C and winter temperatures from 15°C to 22°C (Cape West Coast Peninsula 2012). The natural landscape of the West Coast Peninsula is distinguished by the white, sandy, undisturbed beaches of the coastal area and the open inland plains covered with multicoloured blankets of wild flowers during spring (Figure 1.7).

The West Coast Peninsula houses the West Coast National Park (WCNP), the coastal boundary of which is the forenamed 16-mile beach. The WCNP is an ecotourism paradise where, among other wildlife, more than 300 bird species are found. The Fossil Park is also located in the West



Source: Hopkins et al. (2010: 18)

Figure 1.7 Wildflower landscapes of the West Coast Peninsula

Coast Peninsula where fossils of African bears, sabre-toothed cats, short-necked giraffes and other extinct animals can be observed. According to Mr Dave Osborn (2011 pers com) of the Saldanha Bay Tourism Organisation (SBTO), tourism is the second-largest revenue generator in the subregion, making it imperative that windfarm development in this region takes the importance and future of the tourism industry into account. The towns of the West Coast Peninsula included in this study are Langebaan, Saldanha, Jacobsbaai, Vredenburg, Hopefield, Paternoster and St Helena Bay and Britannia Bay.

Langebaan is located along the shore of one of South Africa's impressive natural wonders, the Langebaan Lagoon. It is a tidal saltwater lagoon nourished by the sea where a variety of water sports are practised. Langebaan Lagoon also "furnishes its own special kind of wildflower display, with the edge of the lagoon always richly blanketed in salt-marsh succulents" (Steyn 1987: 296). Many seafood and other restaurants cater to the cuisine preferences of tourists. The local golf course is a golf tourist attraction presenting the opportunity to tee off with beautiful views of the Atlantic Ocean in the background. Langebaan is classified as an ideal all-year-round tourist resort (Osborn 2011, pers com).

Saldanha Bay is South Africa's largest natural bay. Water sports are enjoyed in the bay by tourists and locals alike. The economy of Saldanha depends on fishing, mussel and seafood processing, the steel industry and the iron ore export harbour. Saldanha is the academic centre of

the West Coast with its South African Military Academy, and SAS Saldanha naval training base as well as an airforce training centre nearby at Langebaanweg.

Jacobsbaai is often referred to as ‘Namaqualand by the sea’ due to the breathtaking beauty of the wild flowers that bloom in the vicinity in spring. It is a picturesque and individual hamlet on a rugged, rocky coastline with small, in-between sandy bays. Compared to some other West Coast villages Jacobsbaai is young, being founded in the early 1800s and until the mid-1990s it had only a few buildings. The hamlet has since grown, but the community strives to preserve the iconic whitewashed West Coast building style shown in Figure 1.8. Jacobsbaai is a destination for visitors seeking the tranquility of a small seaside resort.



Source: Author (2011)

Figure 1.8 The whitewashed buildings of Jacobsbaai

Vredenburg, the commercial and administrative hub of the WCR, is a town with a relaxed blend of business and pleasure that belies its stormy history as Vredenburg originated from a dispute over a spring of fresh drinking water. It was first called Twisfontein (Quarrel Spring) and later Prosesfontein (Lawsuit Spring). Only when the Dutch Reformed Church (Figure 1.9) was established in 1875 close to the spring was it renamed Vredenburg, meaning peaceful town (Stevens 2011). The town is surrounded by fynbos vegetation, wheat fields, dairy farms and sheep farms making it a destination not only for business tourists, but also for those seeking the modern amenities the adjacent hinterland offers in a tranquil natural environment.



Source: Author (2011)

Figure 1.9 The main street of Vredenburg with the Dutch Reformed Church in the background

Hopefield is the ‘lucky-packet’ village of the West Coast. Here one unexpectedly finds a community prospering in unity. It is the oldest town in the West Coast and known as the wheat, dairy, cattle, game and sheep farming centre on the banks of the Sout River. Hopefield has a year-round natural fynbos display of over 500 different species and the town hosts the Hopefield Fynbos Show in August. The rich diversity of fynbos in the area supports the production of top-quality honey. It is also known for its fossil deposits that are displayed at the Fossil Park. Hopefield is a historic town which does not offer tourists as much as other towns of the West Coast Peninsula, but it still has potential.

Paternoster is a charming historic fishing village where everyday life is closely connected to the sea and its resources. Fishermen go out to sea in their colourful traditional wooden boats called bakkies (Figure 1.10) to catch snoek, West Coast lobster and other fish, and on their return to shore they sell their catches to fish traders and tourists. Paternoster has been painted as a tourist paradise with miles of white, sandy beaches, romantic sunsets, some of the best seafood on the West Coast, carpets of spring flowers and the allure of Cape Columbine Nature Reserve’s (CCNR) unspoilt scenic beauty.



Source: Author (2011)

Figure 1.10 Traditional fishing boats at Paternoster

The resort of Tietiesbaai is located in the CCNR which also houses the last manned lighthouse in South Africa. Paternoster is a very popular tourist destination on the West Coast, especially over Easter weekends.

The town St Helena Bay was founded by the explorer Vasco da Gama in 1497 (Stevens 2011). It is the only town on the West Coast where one can observe the sunrise over the deep blue ocean. It is known for “its serenity, beautiful backdrop of hills allowing for stunning views of the bay and sandy white beaches” (Smart Holidays 2010/11b: 31) (Figure 1.11).



Source: Author (2011)

Figure 1.11 The view of St Helena Bay over the bay from Britannia Bay

The 31-km St Helena Bay coastline boasts 18 bays (including Britannia Bay) and three working harbours. Fed by the nutrient-rich Benguela current, the sea is one of the world's prime fishing areas with the main harbour at Sandy Point where shipbuilders and fishermen go about their daily activities. St Helena Bay is also a prime spot for bird watching, being the southernmost point of the migratory route from Europe.

According to Donaldson et al.'s (2012) study all of the West Coast Peninsula towns are classified as towns with high physical environment capacities. The West Coast Peninsula also represents the Saldanha Bay District Municipal area which is classified as having a high development potential. This subregion is therefore regarded as one that can be developed further.

1.3.3 The Bergrivier subregion

This subregion lies farthest north of the three. Agriculture is the main economic sector of the subregion and principally involves livestock, grain and fruit farming. The Bergrivier subregion is named after one of the major rivers (Great Berg River) of the Western Cape which sources in the mountains between Franschoek and Stellenbosch and mouths into the Atlantic Ocean at Velddrif. The river provides opportunities for birdwatchers, fishermen and boating enthusiasts. The subregion towns Velddrif, Laaiplek, Port Owen, Dwarskersbos and Aurora are included in this study.

About 70 of the 183 bird species recorded in the Bergrivier subregion occur in the Velddrif area. The Rocherpan Nature Reserve lies north of the town. The annual Berg River Canoe Marathon finishes at Velddrif. Laaiplek is a fishing harbour with its famous Bokkomlaan where one can see the wind-drying of fish, purchase the products and taste this traditional delicacy of the Velddrif area. The name Laaiplek (Loading place) refers to the point where boats were once loaded and unloaded. Port Owen is a popular deep-water residential marina complex located between Velddrif and Laaiplek (Figure 1.12). Port Owen occupies a former wetland area, now developed into a small village along a number of canals providing boats access to the Great Berg River and the sea (Stevens 2011).



Source: Wide Blue (2012)

Figure 1.12 Port Owen Marina

Dwarskersbos is a popular holiday destination with pristine beaches and exceptional camping facilities on the seafront. The village of Aurora lies alongside the Piketberg mountains where it is known for its Sandveld houses and favourable conditions for stargazing at night. During daytime, natural fynbos can be observed far and wide. Aurora is a village for those seeking tranquility and outdoor enthusiasts can enjoy numerous mountain biking routes, 4x4 routes, hiking and mountain climbing as well as San art in a cave in the mountains. The towns of the Bergrivier subregion are classified as having medium physical environments with the subregion residing in the overall in the medium category for development potential (Donaldson et al. 2012).

From a landscape perspective, the 15 towns and villages are characterized by beaches for towns along the peninsula, whereas farther inland the outstanding features are fields of natural fynbos, wild flowers and agricultural production. The cultural heritage, wildlife, building styles and produce associated with the area contribute to a unique sense of place. The relaxed ambience of the WCR ensures a peaceful life or stay for residents and visitors. The towns and hamlets provide opportunities for country living. All 15 places have an abundance of accommodation facilities from camping and backpacking to five-star luxury. From a tourism point of view, the region has a wide variety of attractions and facilities to fulfil a wide range of tourist preferences. Regarding an overall development potential perspective, the Swartland subregion is classified with low development potential, the Bergrivier subregion medium development potential and the West Coast Peninsula is the only subregion according to Donaldson et al. (2012) which possesses a high development potential.

Given the above familiarization with the nature and tourism offerings of these West Coast subregions, it is fitting to move to the design of the research (Section 1.4) and the research methodology and methods applied (Section 1.5).

1.4 RESEARCH DESIGN

According to Kumar (1999: 74) a research design is “a plan or structure and strategy of investigation so conceived as to obtain answers to research questions and problems.” It is not the same as the research methodology as Mouton (2001) explains in the example of building a house where one first needs a blueprint or plan of what one intends to do before one moves to the actual construction process (methodology and methods). The research design of the study is discussed before the methodology and methods section to clearly distinguish between the plan of the study and the process of data collection. The research design is empirical which involves “making a set of observations of a number of phenomena and then using these observations to construct relationships among them” (Lane 2003: 269). Observations were made in this study regarding place attachment, landscape interference and tourism and the connection between these three components and proposed windfarm developments. The study focuses on the perceptions of residents and visitors before the development of windfarms. Figure 1.13 illustrates the basic research design for the WCR study.

Research or study designs can also be classified according to the number of contacts, the reference period (time frame in which a study is exploring a phenomenon, situation, event or problem) and the nature of the investigation (Kumar 1999). Based on the number of contacts with the target group of this study, it is classified as a cross-sectional study design which is “aimed at finding out the prevalence of a phenomenon, situation, problem, attitude or issue, by taking a cross-section of the population” (Kumar 1999: 81). The WCR study focuses on the attitudes and perceptions of a cross-section of residents and visitors about proposed windfarm developments. The reference period of this study is prospective, meaning that it studies the attitudes of people on an outcome in the future, eg. the development of windfarms.

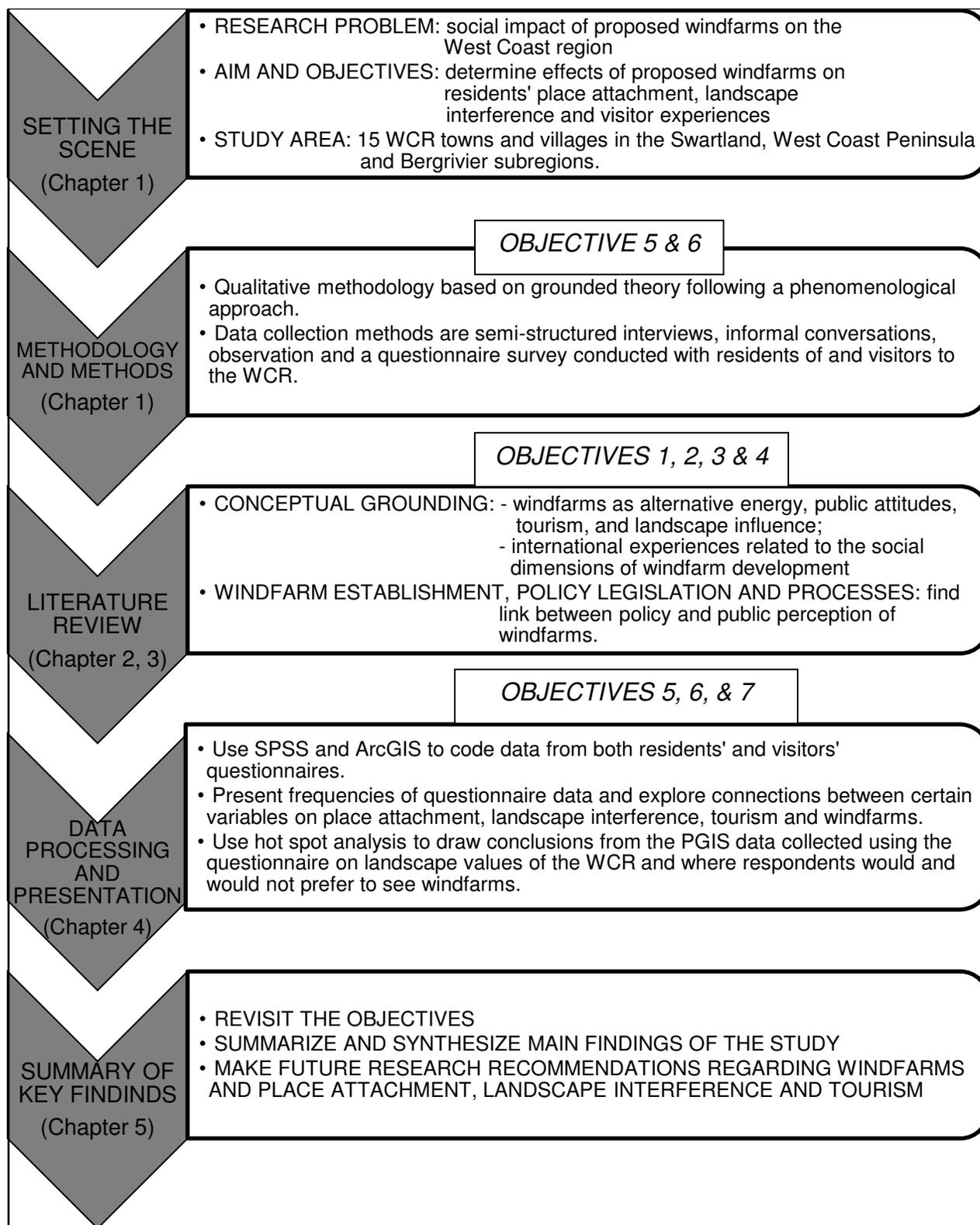


Figure 1.13 Research design for investigating windfarm effects on place attachment, landscapes and tourism in the West Coast region

According to Mouton (2001) (Figures A.1 and A.2, Appendix A) empirical studies, mainly relying on the collection of primary data, can incorporate two types of data, namely numerical data and textual data. This study collected both textual and numerical data through surveying using a questionnaire and textual data was gathered from informal discussions, interviews and observation.

1.5 METHODOLOGY AND METHODS

The study is based on the principles of grounded theory which is “a theory that is discovered or generated from data rather than being abstract and tentative” (Bailey 1994: 52). According to Bailey (1994: 52), grounded theory is developed by:

- (1) entering the fieldwork phase without a hypothesis;
- (2) describing what happens; and
- (3) formulating explanations as to why it happens on the basis of observation.

This study essentially followed a qualitative methodological approach, but the data collection included the collection of some quantitative data. Newman & Benz (1998) conclude that qualitative and quantitative approaches represent different ends of a continuum and should therefore not be viewed as polar opposites so that a study using a qualitative framework may also incorporate quantitative methods. Table 1.1 shows Firestone’s (1987) classification of quantitative versus qualitative research based on four dimensions, namely assumptions, purpose, research role and approach. These are used to explain the methodology of this study.

This study is based on a number of socially constructed assumptions from the perceptions of residents and visitors to proposed windfarms which puts it within the phenomenological paradigm aiming to “illuminate the specific, to identify phenomena through how they are perceived by the actors in a situation” (Lester 1999: 1). The study is concerned with the place attachment of residents and visitor experiences of the WCR which are both social phenomena not easily quantifiable. The researcher had to participate in the lives of the respondents to collect evidence to pursue the aim and objectives of the study. The researcher was actively involved in

the research process and became immersed in the windfarm debate to establish a role of qualitative researcher.

Table 1.1 Firestone's classification of quantitative and qualitative research

Dimension	Quantitative	Qualitative
Assumptions	Follow a positivist approach assuming there are social facts with an objective reality apart from the belief of individuals.	Holds that reality is socially constructed through individual or collective definitions of the situation.
Purpose	Seeks to explain the causes of changes in social facts, primarily through objective measurement and quantitative analysis.	Concerned with understanding the social phenomenon from the actors' perspectives through participation in the life of those actors.
Research role	Ideal quantitative researcher is detached to avoid bias.	Qualitative researcher becomes immersed in the phenomenon of interest.
Approach	Typically employs experimental or correlational designs to reduce error, bias and other noise that keep one from clearly perceiving social facts.	Prototypical qualitative study is the ethnography which helps the reader understand the definitions of those studied.

Source: Adapted from Firestone (1987)

The approach included ethnographic methods incorporating a descriptive type of research which "relies on observation as a means of collecting data" (Walliman 2005: 115). A descriptive study is not connected to any formal hypothesis and is by nature exploratory study as is this one (Bailey 1994). According to Firestone's framework, the methodology of this study can be classified as qualitative.

A qualitative research approach was chosen because "qualitative research can make visible and unpick the mechanisms which link particular variables, by looking at the explanations, or accounts, provided by those involved" (Barbour 2009: 11). Dwyer & Limb (2001: 1) conclude

that “qualitative methodologies, which explore the feelings, understandings and knowledge of others through interviews, discussions or participant observation, are increasingly used by geographers to explore some of the complexities of everyday life in order to gain a deeper insight into the processes shaping our social worlds.” This study aims to gain a deeper insight into the social dimension of windfarm developments through a range of methods discussed in Subsections 1.5.1 to 1.5.6.

1.5.1 Literature review

The study commenced with a thorough investigation of the international discourse on the social dimension of windfarm development to achieve objectives one and three, namely to establish a solid base and understanding of the concepts and constructs related to wind energy, landscape aesthetics and place attachment, and to investigate theories, types and models of public decision making to explore the degree to which these could be applied to windfarm support or objection in the WCR. Objective two was to review appropriate case studies reported in the international literature and apply relevant methodologies in this study. Two specific case studies contributed directly to the compilation of the questionnaire, namely Brown & Raymond’s (2006) report on the spatial attributes for conservation and tourism planning in the Otways region of Victoria, Australia, and the online report on a study by Sustainable Energy Ireland (2003) on the attitudes toward the development of windfarms in Ireland.

The social impact assessments (SIAs) of proposed WCR windfarms were studied, but because only 10 of the 13 proposed windfarms had reached the SIA stage, only these were used as information sources. The SIAs are a source of secondary information because they record the public’s comments on proposed windfarms. The SIA-derived outcomes will be compared with the findings of this study to determine if any resemblances and differences in the reasons for support and opposition for windfarm development exist.

Because this study cannot rely on one method, a triangulation⁵ of ethnographic methods was used to deal with the problem investigated and the specified aim and objectives. These methods

⁵ Triangulation is the use of multiple data sources and/or research methods to strengthen one’s results by improving the reliability of the data and making the study more rigorous (Clifford & Valentine 2003; Crang & Cook 2007).

are semi-structured interviews, informal conversations, observation and surveying using a questionnaire.

1.5.2 Semi-structured interviews

Semi-structured interviews were conducted with seven residents, four of whom are key role players or stakeholders in the tourism industry, to elicit information the researcher recorded in field notes. Formal interviews with set questions were not conducted, but instead a checklist was used (see Appendix B). This method of interviewing is justified by Silverman (2000) and Cresswell (2003) who conclude that by dismissing the normal rules of interviewing, deeper and more complex issues can be discovered by allowing the interview to take its own course with interjections only to focus the interview on the subject at hand. Such an approach can draw out information not preconceived by the researcher. This was indeed the case as certain unanticipated issues regarding the windfarm developments became evident during the interviews.

1.5.3 Informal conversations

Informal conversations are significant in a phenomenological paradigm which gathers 'deep' information from the perspective of participants by providing important contextual material and aiding the learning process of the researcher in a specific social environment. Throughout the data collection process the researcher also had informal conversations with residents and visitors to the WCR. A significant issue which became evident through these informal conversations was the lack of trust between the public and the developers and policy makers of the proposed windfarms. This drew attention to the need to examine the policy frameworks for these proposed windfarm developments. In some instances, the researcher had an informal conversation with a respondent before giving him/her a questionnaire for completion. In some cases small groups of two to three people participated in an informal conversation with the researcher before they each filled in a questionnaire. It is noteworthy that some respondents recorded different opinions in the questionnaires than those expressed in the group discussions. It appears that some respondents are averse to letting their friends know that they are not opposed to the development

of the windfarms, but given the confidentiality of the questionnaire they express their true opinions.

1.5.4 Observation

Observation is as a “purposeful, systematic and selective way of watching and listening to an interaction or phenomenon as it takes place” (Kumar 1999: 105). Two types of observation were done in the study, namely participant and non-participant observation. Participant observation was done during the semi-structured interviews; at an exhibition of an open day of the Saldanha Bay Tourism Organization (SBTO); at specialized group meetings; and at a meeting of the SBTO. The researcher attended the specialized group meetings of the West Coast Bird Club, the West Coast Chamber of Commerce and No-Windfarms-Paternoster on invitation because they all concerned the proposed windfarm developments. At these meetings participant observation was done while specialists in the windfarm development field gave their presentations. After the meetings informal conversations were held with attendants interested in the study. During the open day of the SBTO the researcher was given a stand where interested parties could complete the questionnaire and have informal discussions about the purpose of the study. The researcher presented preliminary results of the study to the SBTO members mid-year 2012 to give feedback and hold a question-and-answer session.

The researcher attended three public participation meetings held by windfarm developers. At these meetings the researcher acted as a non-participant observer. The reason was about maintaining independence and not being associated with any of the developers or environmental consultants. The researcher chose anonymity at the public participation meetings. Observations were recorded in fieldnotes.

1.5.5 Questionnaire survey

The questionnaire was the main research instrument to elicit information about the perceptions and attitudes of the residents of and visitors to the WCR concerning (1) their place attachment and knowledge of the region; (2) the possible influence of wind turbines on the natural landscape

and; (3) the anticipated influence of the proposed windfarms on the tourism industry. English and Afrikaans versions of the questionnaire were available to the residents (Appendixes C and D) and visitors (Appendixes E and F). A total of 410 questionnaires were distributed to 250 residents (insiders) and 160 visitors (outsiders) of the WCR in person or via post or by using a webpage, SurveyMonkey. The questionnaire for residents consists of 34 questions and the visitor questionnaire has 31 questions grouped into five sections in both questionnaires.

The first section of the instrument was designed to determine familiarity with, and in the case of the residents, attachment to the WCR. The nine questions for the residents and six for the visitors aimed to help answer the first two research questions, namely the degree of place attachment of insiders in the WCR and the ways the insiders' place attachment influences their opinions about the windfarm developments. They also relate to objective six which aims to determine the insiders' place attachment to the WCR and whether the presence of wind turbines will affect these attachments and whether these attachments influence decisions to support or oppose the proposed windfarm developments. Some of the questions about place attachment were borrowed from Brown & Raymond's (2006) case study.

Section two consists of 16 questions enquiring about environmental awareness, knowledge about renewable resources, advantages and disadvantages of wind energy and support for windfarm development at three levels, namely national, regional and locally in the vicinity of the town in which the respondent resides. In the visitor questionnaire this section also enquires if they would still visit the WCR after deployment of a number of windfarms. The third and fourth research questions are touched on here, namely do the residents have NIMBY attitudes and what are the insiders' and outsiders' views about the possible impacts of windfarm developments on tourism in the region? Objectives five and seven are incorporated in section two of the questionnaire which aims to establish the perceptions and attitudes relating to wind turbines of three groups of actors (tourism industry, tourists and residents) in the WCR and assess the extent to which the presence of wind turbines will affect the tourism value of the region. The questions on the awareness of renewable resources and the advantages of windfarms were adapted from the Sustainable Energy Ireland (2003) case study. The idea to use a series of photos in question B9 was also inspired by this case study.

The third section of the questionnaire addressed the assessment of landscape values associated with the WCR with four questions about the most appealing characteristics of the physical landscape of the WCR from a respondent's perspective. Objectives five and six are pertinent here as the characteristics of the physical landscape may play significant roles in the place attachment of the residents and their views about the impact of wind turbines on the local landscape. Some of the landscape-related questions were borrowed from Brown & Raymond (2006), but they were adapted to the specific characteristics of the WCR's landscapes.

Section four consists of five questions about the personal and demographic details of the respondents deemed important as explanatory variables. This section was sited at the end of the questionnaire as this study is not explicitly concerned with individual trends, but this information is needed for the validation of the study. The final section of the questionnaire comprises a participatory geographic information systems (PGIS) mapping component. This component was borrowed entirely from the case study by Brown & Raymond (2006) and relates also to objective six which aims to determine the insiders' place attachments to the WCR, whether the presence of wind turbines will affect these attachments and whether their attachments influence decisions to support or oppose the proposed windfarm developments.

PGIS is a process whereby community members, that is people at grassroots level, become involved in the spatial planning of projects. It is seen by some as the "democratization of GIS" and "explores aspects of the control and ownership of geographical information" (Dunn 2007: 616). PGIS is also termed public participation geographic information systems (PPGIS) or community-integrated GIS. Respondents were asked to indicate their locational preferences on four different maps and provide reasons for their choices. Indications were required for (1) places regarded as 'special' (for whatever reason); (2) places with scenic, economic, biological or recreational value; (3) places where windfarms should not be located; and (4) places where windfarms could be located. The printed versions of the questionnaires were accompanied by maps and coloured sticker dots with which respondents could indicate locational preferences on the maps (Appendixes C to F), while the online version provided a map with a grid (Appendix G). The application of the PGIS process in this study is explained and justified later in Chapter 4.

The questionnaires were designed with the belief sampling model in mind. Here belief sampling holds that if people are asked isolated questions about wind energy, they quickly sample a few considerations and produce a superficial answer (Smith & Klick 2008). The questions were arranged in a specific order to enable a respondent to give somewhat informed answers about their opposition to, or support for, windfarms. So, the resident questionnaire's first section tests the attachment of residents to the WCR before asking for opinions on the proposed windfarm developments. The assumption is that residents who feel more attached to the region will oppose windfarm development because they believe it will influence the region negatively. The visitors were first tested on their knowledge of and familiarity with the WCR. Here the assumption is that regular visitors who know the region well might have stronger feelings about the influence of windfarms on the region than those visiting say for the second time. These assumptions are explored further in Chapter 4.

The main difference between the two questionnaires is that the residents' attachment to the region was interrogated, whereas the visitors' knowledge of and familiarity with the region was enquired after. The rest of the two questionnaires are similar so that comparisons between the two groups can be made in the analysis. The data extracted from the questionnaires was analyzed using SPSS and ArcGIS.

Population statistics for 2007 indicate that approximately 201 000 people reside in the three subregions studied (Western Cape Government Provincial Treasury 2011) making a statistically representative sample of respondents from all three subregions unfeasible due to time and financial constraints. Instead, a combination of non-probability sampling techniques⁶ was used which comprised convenience and snowball sampling. Convenience sampling, also called accidental sampling, was initially employed because respondents were identified by their availability and willingness to complete the questionnaire. The questionnaire survey commenced with the researcher's attendance of a public participation meeting where attendees were identified as prospective respondents. All members of the public were invited to the meetings,

⁶ Non-probability sampling does not allow the researcher to know the probability that a particular respondent will be selected as part of the sample and thus does not allow a generalization of survey data with a known degree of accuracy (Rea & Parker 2005).

so that people from different population groups and socio-economic levels attended. At the conclusion of the meeting prospective respondents were invited to take part in informal conversations.

The researcher went from door to door in different neighbourhoods of residential homes and businesses in the 15 towns and villages to invite people who were available and willing to complete the questionnaire. An announcement about the survey was also published in the local newspaper, the *Weslander*, to which all sections of the community have access in an attempt to make the survey more representative. The surveying of insiders and outsiders of the region has contributed to the inclusiveness of the research.

The first round of data collection relied on convenience sampling. When convenience sampling failed to secure an adequate number of respondents, a process of snowball sampling was employed. Snowball sampling involves “using one contact to help you recruit another contact, who in turn can put you in touch with someone else” (Valentine 1997: 116). Insider knowledge of residents to help identify potential respondents - family members, friends, colleagues and anyone willing to participate in the survey - was reverted. This was an effective sampling technique.

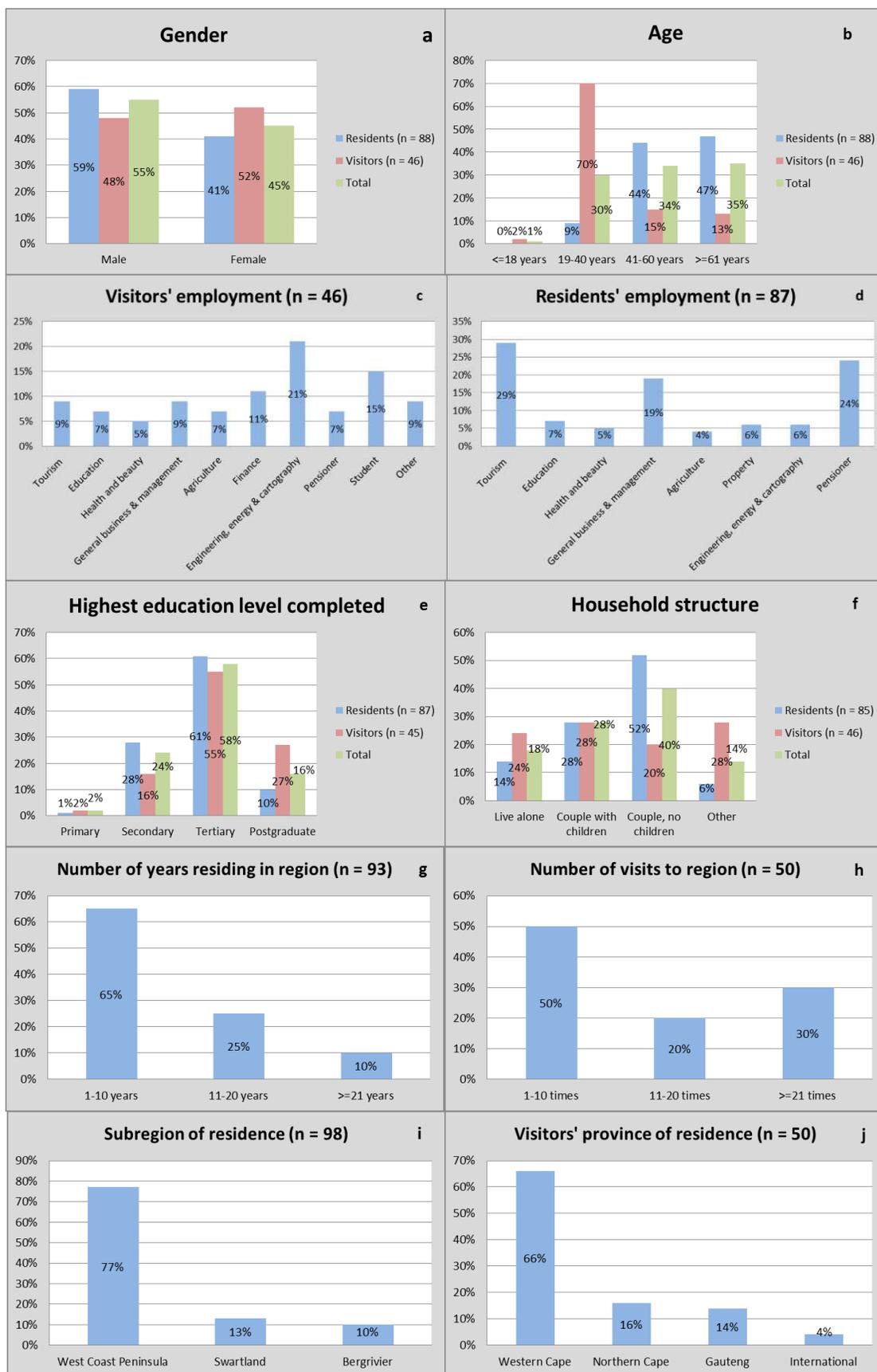
Table 1.2 indicates the number of questionnaires distributed among the two target groups as well as the various response rates.

Table 1.2 Questionnaire distribution and response rates

Respondent category	Number via hand distribution	Response rate for hand distribution	Number via Internet distribution	Response rates for Internet distribution	Total distributed	Total response rate
Residents (insiders)	150	55 (37%)	100	43 (43%)	250	98 (39%)
Visitors (outsiders)	50	15 (30%)	110	35 (32%)	160	50 (31%)
Totals	200	70 (35%)	210	78 (37%)	410	148 (36%)

The response rate of 36% for the 410 distributed questionnaires and the absence of a purposeful stratification of the sample limit generalizations from this study. The conclusions drawn are applicable to the respondents and should not be interpreted as representing the views of the population of the WCR. The respondents biographical details are profiled in Figure 1.14. According to the mid-year 2011 population figures of Statistics South Africa, 52% of the West Coast District's (all six subregions) inhabitants are female and 48% male (Western Cape Government Provincial Treasury 2011) which roughly accords with the gender distribution of the respondents in the study, namely 41% female and 59% male in Figure 1.14(a). Note that there is a slightly greater proportion of male respondents than female, whereas the West Coast Districts population figures indicate the opposite. The discrepancy might be attributed to more males being available and willing to complete the questionnaire as identified through the convenience and snowball sampling.

Figure 1.14(b) shows that ninety-one per cent of the responding residents were 41 or older, including nearly half (47%) 61 or older. The high proportion (47%) of the oldest resident respondents suggests retired people have more time available, for example to complete a questionnaire. Most (more than three out of four) resident respondents live in the West Coast Peninsula subregion where the coastal towns are popular retirement places. Whereas 72% of the West Coast District's population in 2007 were aged 15 and older (Western Cape Government Provincial Treasury 2011), 99% of the WCR sample of respondents were 19 and older. The reason for this is that older people were more willing to complete the questionnaire and no persons under 18 years were present at any of the public participation or specialized group meetings. This age group does not have the same interest and concerns regarding the proposed windfarms as those already working or retiring in the WCR. The major difference between the resident and visitors groups is their age distribution in that 70% of the respondents were in the 19-40 years cohort opposed to only 9% of the resident respondents. From the perspective of tourism planning for the region, the views of younger generations are important



Source: Questionnaire survey (2011)

Figure 1.14 The biographical details of respondents in the survey

Question D4 asked respondents to indicate their occupation of which the results are portrayed in Figure 1.14(c) and (d). The various occupations were converted into economic or employment sectors, namely tourism, education, health and beauty, general business and management, agriculture, finance, engineering, energy and cartography, property, students and pensioners. Most resident respondents (29%) are employed in the tourism industry, while engineering, energy and cartography represents the largest proportion (21%) of the visitors' employment. Residents employed in the tourism industry were encouraged to complete questionnaires because their views about the possible effects of windfarm developments on the tourism industry of the region were greatly sought after. Twenty-four per cent of the residents are pensioners, while 15% of the visitors are students corresponding with the age distribution trend.

The education levels attained by both groups of respondents are high with more than 70% each having a tertiary or higher qualification. An assumption is made here that respondents with a higher level of education would possess a higher level of knowledge on sustainability issues of the natural environment and energy resources. This is explored in Chapter 4.

The household structure of respondents (Figure 1.14(f)) shows that 52% of the resident respondents live as a couple with no children. This statistic can be attributed to the high number of resident respondents being retired with children who has already left the house. The visitor respondents' household structure is spread fairly even across the four categories being attributed to the relatively young age distribution and many of the visitors living in student houses with other students or similar living conditions. This question is deemed a failure by the researcher as the initial idea was to compare respondents living as a couple with children to the support for or opposition to windfarms. The assumption was that people with children would want to preserve the natural environment for their children to enjoy in the future and therefore support the sustainable development of windfarms. The researcher did not anticipate that so many of the respondents would be retired and the question should have been rephrased to simply ask the respondent whether he or she have children.

Question A1 asks residents to indicate the number of years they have been residing in the WCR. Figure 1.14(g) shows that 65% of residents have lived between one and ten years in this region,

whilst only 10% have lived in the WCR for more than 21 years. The assumption is that those residents who have resided in the WCR for a longer period of time would possess a higher level of knowledge about the region as will be explored in Chapter 4. The visitors were asked in question A2 to indicate how many times they have visited the WCR. Half of the visitor respondent group indicated they have visited the WCR between one and ten times, whereas 30% have visited the region 21 times and more.

The fact that eight of the 13 proposed windfarms are earmarked for the West Coast Peninsula probably accounts for the overwhelming (77%) representation of respondents from this subregion (Figure 1.14(i)). Most of the visitor respondents hailed from the Western Cape (77%), with Cape Town contributing 38%. With the WCR being only 85 km from Cape Town – and part of the pleasure periphery of Cape Town – it is not unexpected that most of the visitors reside there. The methodology and methods of this study were not free of limitations as will be discussed in the following section.

1.5.6 Limitations of the methodology and methods

Any ethnographic study has limitations, especially regarding the methods used. According to Kumar (1999) semi-structured interviews which do not list specific questions to be asked of respondents can introduce investigator bias. The researcher was fully aware of this limitation and therefore approached the semi-structured interviews with caution. The advantages of semi-structured interviews exceeded the limitations and therefore the use of this method was deemed appropriate. The problems with observation as a method of data collection include changes in behaviour by individuals or groups when they realize they are being observed; the possibility of observer bias; interpretations made from observations may vary from one observer to the next; and incomplete observation and/or recording may surface depending on the method of recording (Kumar 1999). The researcher did not experience any of these limitations as the situations to use participant as opposed to non-participant observation were chosen carefully. A narrative way of recording was used (field notes), the purpose of which was to supplement the primary data collected by the questionnaire survey.

The use of non-probability sampling “greatly limits the investigator’s ability to generalize his or her findings beyond the specific sample studied” (Bailey 1994: 93). The researcher is aware of this limitation and presents the results of the study in context of the response group only and not as a representation of the whole WCR population. Other limitations of a questionnaire survey which were taken into account are limited applications, a low response rate, self-selecting bias, lack of opportunity to clarify issues, the responses to one question may be influenced by responses to other questions, answers can be influenced by consultation with people, and a response cannot be supplemented with other information (Kumar 1999). With regards to limited application, one respondent was illiterate so that the questions were read to him to enable completion of the questionnaire. Although the 36% response rate was lower than what was hoped for, the responses give an indication of the issues under investigation. Self-selecting bias is the difference between answers by those who return a questionnaire and those that could be given by non-respondents. This limitation could not be accounted for as nobody should be forced to complete a questionnaire because coercion can inevitably lead to biased and unreliable answers.

Any lack of opportunity to clarify issues was mainly accounted for by the researcher distributing and collecting many questionnaires in person and the respondents in the mailed survey were contacted or emailed if their answers seemed confused or suspect. Clarification was more complicated with the Internet survey, but most of the respondents did provide contact details so that they could be assisted to clarify any uncertainties if necessary. Generally, poorly completed questionnaires were not an issue as the questionnaire was designed to be easily understandable. The questionnaire was designed for the response to certain questions to be influenced by the response to other questions through the belief-sampling model. Respondents were able to make informed decisions on whether to oppose or support windfarm development after being introduced to the pros and cons of windfarms. The researcher was not bothered by the possibility of respondents consulting with one another as the aim of the study is not to explore individual trends, but group responses from the associated target groups of insiders and outsiders of the WCR. Questions where a response needed to be supplemented with other information were accounted for by making use of open-ended questions.

With regards to ethics the Departmental ethical committee found that this study is not of an ethically sensitive nature. The most significant issue was to convince respondents to take part in the study and that this was an independent study not funded by any of the developers who might prejudice the study in an unfair way. In most instances the developers were unaware of the researcher so promoting the objectivity of the researcher. To better understand the meaning and potential contribution of this study to the field of geography, the topic is put in a geographical context in the following section.

1.6 GEOGRAPHICAL CONTEXT

Geography is the study of “where things/people are located on Earth’s surface and the reasons behind that location” (Rubenstein 2008: 2). The geographical placement or positioning of wind turbines is crucial to their optimal functioning. Windfarm siting scenarios can exist in which the physical conditions for windfarm location are favourable and appropriate, but the socio-economic conditions, from a human geographical perspective, are unfavourable and inappropriate. Where the latter conditions prevail, residents tend to act in a ‘place-protective’ manner to oppose any windfarm developments (Krohn & Damborg 1999; Wüstenhagen, Wolsink & Bürer 2007; Devine-Wright 2009). These residents possess a sense of attachment to their places of residence and they are apprehensive that windfarm developments will endanger their feelings of attachment.

The direct relationship between physical landscapes and the attachment of people to these landscapes links the siting of windfarms to human geographers with an inclination to qualitative approaches. Methods included in this study such as interviews, group discussions and observation are methods used by human geographers to “allow them to explore the meanings, emotions, intentions and values that make up our taken-for-granted lifeworlds” (Clifford & Valentine 2003: 4). As human geographers “sought to restore people to the heart of geographical inquiry” (Dwyer & Limb 2001: 3), this study gives priority to people and their bonds with the WCR from the perspectives of insiders and outsiders and how the establishment of a number of windfarms might disrupt their attachments firmly establishing it within the field of human geography.

1.7 THESIS STRUCTURE

Chapter 1 set the scene. It formulated the problem, aim and objectives, described the study area and the methodology and methods applied in the study, and positioned the study in the human geography subdiscipline.

Chapter 2 lays the conceptual foundation for the study in an extensive literature review. It examines windfarms and the reasons for harnessing wind energy as an alternative form of energy as well as the positive and negative aspects associated with wind energy. It also establishes public attitudes towards wind energy in general by examining the process of meaning making and how place attachment contributes to public attitudes towards wind energy. The chapter also evaluates decision-making models applicable for examining human perceptions of windfarms. The overlaps of windfarms with tourism as well as between windfarms and landscape change are discussed. It ends with the exploration of international case studies on the social dimension of windfarm development. The chapter provides the study's theoretical framework.

Chapter 3 extends the literature review by recounting the processes related to windfarm establishment and associated policy and legislation. This provides the background for understanding some of the concerns raised by respondents. The chapter concludes with a discussion of the proposed windfarms in the WCR and the associated concerns from the SIA processes conducted by the respective developers.

Chapter 4 focuses on the results and findings of the data analysis by reviewing resident and visitor responses to the questionnaires and the PGIS process. It overlays the results with current windfarm proposals to establish the areas where the highest concerns are raised against these projects. First the energy-related environmental knowledge and awareness of respondents are discussed and then the rest of the results are presented according to the three perspectives of inquiry of the study, namely place attachment of residents, windfarms and landscape interference and the effect of windfarms on tourism. This chapter also combines the results and findings collected from the both the resident and visitor groups in order to answer the research questions and meet the objectives of the study. It summarizes the primary information collected from the

semi-structured interviews, informal conversations and observation and compares the findings of the study to the secondary information collected from the SIAs.

Finally, **Chapter 5** concludes the study by revisiting the objectives and summarizing the key findings. Problems and constraints faced during study are discussed and recommendations on future studies are made.

CHAPTER 2: WINDFARMS AS ALTERNATIVE FORM OF ENERGY PRODUCTION: SOCIAL DIMENSIONS

Renewable energy is widely regarded as the pathway to sustainable global electricity supply as it can be used in the remotest areas without having to be linked to a national power grid. It makes electricity available and accessible as shown in the film *The 4th revolution: Energy autonomy* (Fechner 2010). The transformation from non-renewable to renewable energy resources and the latter's advantages are showcased in the film which presents the predominant two groups of 'titans' in the energy debate: the one group is fascinated by the idea of a world supplied by 100% renewable energy through advancement in technology; the opposing group is established rulers who are against any changes to the conventional energy supply (NaturalLifeNetwork.com 2010). Wind power enjoys strong public support due to its potential contribution to stable energy supplies and its role in the struggle against climate change (European Wind Energy Association 2010). Although social acceptance of wind energy projects is crucial to successful implementation, regrettably local support is not always as positive as it is on a global scale.

Before one can examine the social dimensions of windfarm development, it is necessary to establish what a windfarm is and what the pros and cons of windfarm development are. This chapter first discusses windfarms as alternative power sources and sets out the positive and negative aspects of wind energy. The three perspectives of inquiry of the study and social acceptance of windfarm development are then presented in an examination of the nature of public attitudes toward wind energy. A review of the international scholarship on the social dimension of windfarms introduces the debate on the support for and objection to windfarm developments. The discourse relates to meaning making, attitudinal-behavioral analysis, models, types and theories of decision-making associated with the windfarm development process. The chapter closes with a conceptual backgrounding of the three perspectives of inquiry supporting the study by detailing place attachment and the NIMBY notion, the influence of windfarms on landscape and land use change, and the perceived impacts of windfarms on tourism.

2.1 WIND TURBINES AS GENERATORS OF ALTERNATIVE ENERGY

Because all fossil fuels can be depleted, we must start turning toward renewable energy resources such as wind to meet our increasing energy needs. Wind contains the energy of motion termed kinetic energy (Lutgens & Tarbuck 2007) which can be converted into mechanical energy or electricity. Wind turbines are used to capture the kinetic energy of wind and convert it into electricity. A number of wind turbines grouped together in an area is called a windfarm. This study focuses on proposed windfarms and not on isolated turbines. Wind turbines have basic components as illustrated in Figure 2.1. These components are a rotor (to which blades are attached), blades (that capture the wind), a nacelle which contains the generator and a speed-control system, and a tower (Manwell, McGowan & Rogers 2002; Chambers 2004; Chen & Blaaberg 2009).



Adapted from: Spilsbury & Spilsbury (2009)

Figure 2.1 Basic structure of wind turbines

The height of wind turbine towers ranges from 150 to 300 metres and each blade is approximately 150 metres long. Consequently, these vast structures tend to convert natural landscapes into industrial landscapes which may have a non-aesthetic appearance. According to Omer (2008: 1810) wind energy is “non-depleting, site-dependent, non-polluting and a potential source of the alternative energy option.” Wind energy is regarded as a form of sustainable

development⁷ in the sense that it has almost no impact on the environment and can supply energy sustainably.

2.1.1 Benefits of wind energy

Wind energy has a number of positive aspects. Wind turbines can be installed on land parcels that can remain in use for farming and grazing (Chambers 2004; Spilsbury & Spilsbury 2009). Farmers can earn income from windfarms that is potentially higher than income earned from growing crops on a same-sized area (Waugh 2009). Although windfarms alter the scenic value of landscapes, turbines can be removed at any time, leaving few traces of destruction on the landscape. Windfarms can serve as tourist attractions if operated and managed effectively (Spilsbury & Spilsbury 2009). New job opportunities are created in the construction sector and for the maintenance of windfarms.

Wind energy generation is flexible and scalable. The flexible placement of turbines promotes distributed energy generation and this enables communities or individuals to generate their own electricity (Rodman & Meentemeyer 2005). Microgeneration⁸ of electricity from wind power allows for the distribution of electricity to remote rural areas with no access to national power grids due to distance constraints. This offers opportunities to areas in the developing world to generate electricity for economic production purposes and betterment of lives.

Wind energy's most significant advantages are its environmental friendliness and the fuel is free, although not always available. Wind power is a prized contributor to the sustainable development of the energy sector. Even so, wind energy has its downside to which the discussion now turns.

⁷ According to the United Nations sustainable development is “development that meets the needs of the present without comprising the ability of future generations to meet their own needs” (Rubenstein 2008: 495).

⁸ Microgeneration is the generation of electricity by renewable means for individuals or small groups of people (Spilsbury & Spilsbury 2009).

2.1.2 Liabilities of wind energy

The visual impacts of windfarms are undoubtedly the most controversial issue in windfarm development because wind turbines are accused of ruining the scenic value of landscapes (Pasqualetti 2000; 2001b). EWEA (2010) concludes:

Wind turbines are man-made vertical structures with rotating blades, and thus have the potential of attracting people's attention. Typically windfarms with several wind turbines spread on the territory may become dominant points on the landscape.

The accusation does not hold everywhere as windfarms are not necessarily built where landscapes have scenic value. Some features in the design and siting of windfarms have been identified to minimize their potential visual impact, namely designing windfarms according to the peculiarities of a site and with sensitivity to the surrounding landscape; installing similar types and sizes of turbines on a windfarm; locating windfarms at specified distances from dwellings; using light grey, white and beige colours on turbines according to landscape characteristics; three blades per turbine; all blades rotating in the same direction; installing a few large turbines rather than many smaller turbines; using underground cables; warning lights for low-altitude flight only on exposed towers; and turbine distribution in rows suit flat landscapes (Hecklau 2005; Stanton 2005; Brusa & Lanfranconi 2006).

The potential to generate electricity from wind is unevenly distributed over landscapes and the variability (seasonal characteristics and variation in wind speeds) of wind energy limits its effectiveness (Trainer 2007; Evans 2008; Waugh 2009). For wind energy to be a completely sustainable energy source other energy plants need to be built in a back-up system to compensate for the variability of wind energy. Wind energy also has a low energy density, that is the output amount of energy from this source is relatively low relative to the surface area used (Evans 2008). Contemporary technology in wind turbine construction enables the production of very large turbines with generating capacities equal to that of ten smaller turbines. The surface area occupied by each of these large wind turbines depends on the wind resource available.

The exploitation of wind energy also has occupational and operational hazards such as accidents associated with the production of wind energy equipment and transportation to sites, as well as on-site mishaps during construction of wind farms, noise pollution, endangerment of flying birds and bats, interference with land use, soil erosion, impaired radio and television reception, radar interference, shadow flicker and visual intrusion (Chambers 2004; Graßl et al. 2004; Rubenstein 2008; Waugh 2009; Tegou, Polatidis & Haralambopoulos 2010). Wind generation of electricity is expensive, but between 1983 and 2004 advances in technology cut the cost of wind power by more than 85%, so establishing it as a cost-competitive resource (Herbert et al. 2007; Lutgens & Tarbuck 2007).

Wildlife can be affected by windfarms in a number of ways: direct and indirect loss of habitat, collision with structures, turbine blades or power lines and electrocution from contact with live electrical wiring (Chambers 2004; Kuvlevsky et al. 2007). These dangers can be mitigated by conducting biological surveys in the planning stages of a windfarm and then effecting repellent measures (strobe lights or paint patterns) to reduce risks of high bird mortality (Pimentel et al. 2002). Windfarms pose risks mainly to birdlife, whereas coal power can endanger entire animal species through coal mining (destruction of habitats) and the gases produced by coal-powered plants (Morris 2006). Perhaps more birds are saved by wind power due to reductions of air pollution. There is consensus that whatever the actual risk to birds from turbines, it is far lower than risks from cars, predators and the power lines radiating from conventional energy sources (Spilsbury & Spilsbury 2009). It is advisable that windfarms should not be located in the habitats of endangered species nor in the flight paths of migratory birds.

Given the positive and negative aspects of windfarms that must be taken into account when studying their proposed establishment, the discussion now turns to the three perspectives of inquiry supporting the study, namely the place attachment of residents, windfarms and landscape interference, and the effect of windfarms on tourism.

2.2 THE THREE PERSPECTIVES OF INQUIRY OF THE WINDFARM DEBATE

Figure 2.2 illustrates the three perspectives of inquiry of this study. Appropriate literature was studied to establish the issues specifically pertaining to the direct and interactive relationships between windfarms, place attachment, landscapes and tourism.

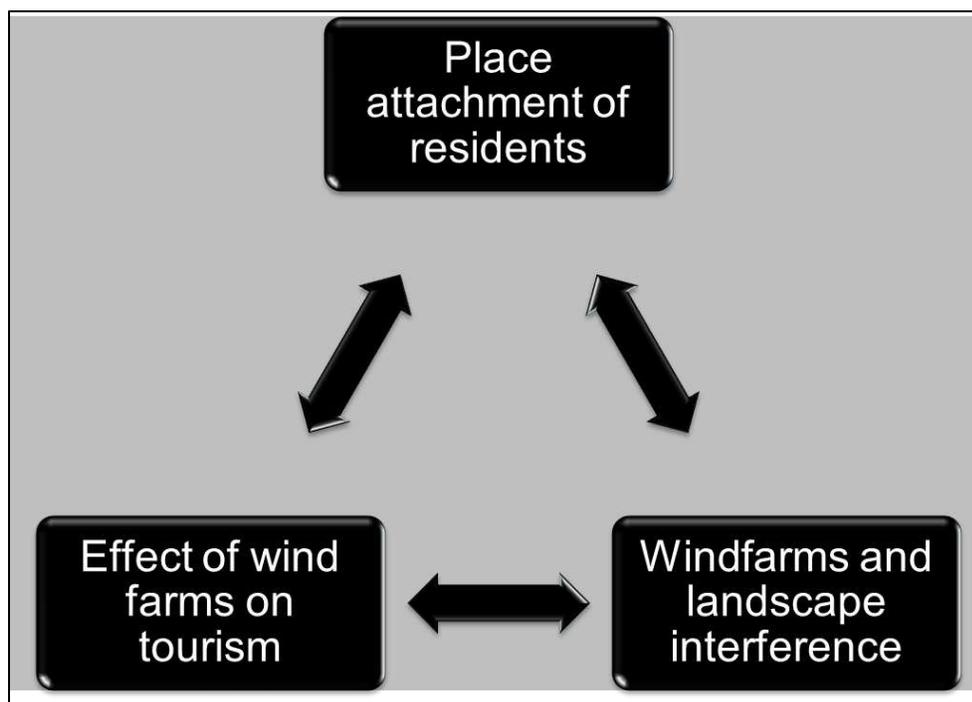
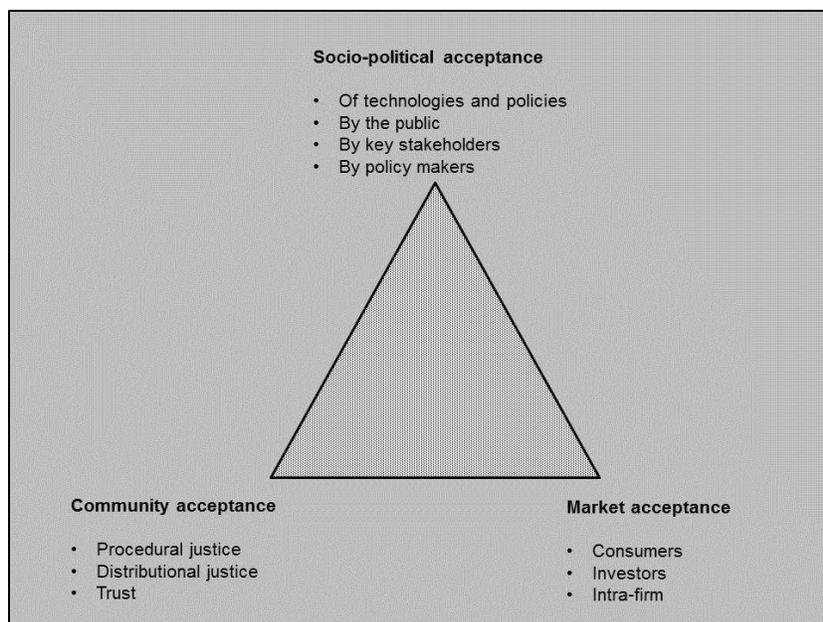


Figure 2.2 The three perspectives of inquiry of the study

All three perspectives relate to the social dimensions of windfarm development. The social aspects surrounding wind energy development must never be overlooked by the planners of such projects, as endorsed by Wolsink's (2007b: 1190) assertion that "the main problems related to successful siting policy concern spatial planning and public acceptance." According to Wüstenhagen, Wolsink & Bürer (2007) social acceptance of renewable energy projects can be classified into three dimensions, namely socio-political acceptance, community acceptance, and market acceptance as represented by Figure 2.3.



Source: Wüstenhagen, Wolsink & Bürer (2007: 2684)

Figure 2.3 Triangle of social acceptance of renewable energy innovations

This study is largely concerned with the socio-political and community acceptance of windfarm development and the related impacts. The socio-political dimension is influenced by the processes and policies involved in windfarm development as discussed in Chapter 3. Community acceptance “refers to the specific acceptance of siting decisions and renewable energy projects by local stakeholders, particularly residents and local authorities” (Wüstenhagen, Wolsink & Bürer 2007: 2685). The debate on NIMBYism unfolds in this dimension. Market acceptance is particularly concerned with smaller-scale renewables and refers to the process of market adoption of a specific renewable technology, a topic beyond the scope of this study.

A number of stakeholders are involved in windfarm projects, namely citizens, companies, non-governmental organizations (NGOs), government and the media (Mallon 2006). Companies are the windfarm developers who deploy the turbines, the manufacturers of the turbines, engineering companies involved in the construction of projects and all other companies, ranging from small to macro, involved in windfarm projects. NGOs include environmental or non-profit organizations such as Rotary clubs. Governments are involved in the economic, social and environmental aspects of the projects. The media play a significant role in supplying

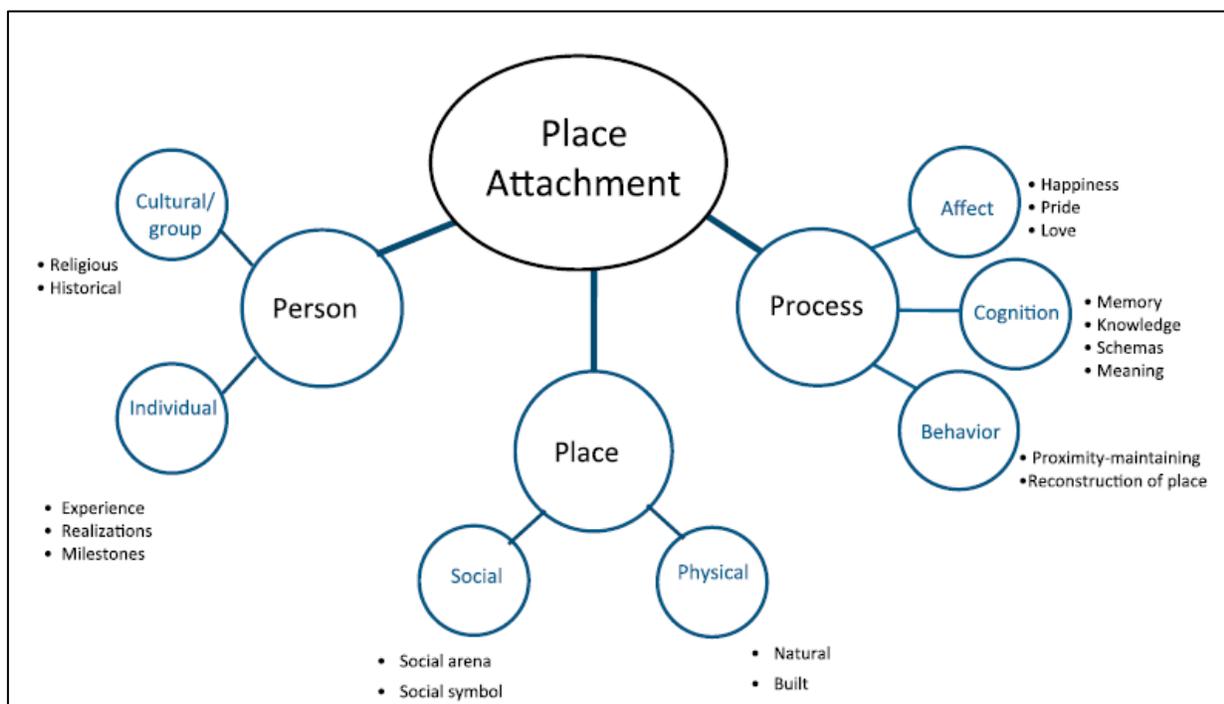
information and shaping people's ideas about windfarm projects. Developers also rely on the media to disseminate information about certain project meetings. This form of communication between stakeholders and developers can influence public attitudes towards wind energy innovation. The stakeholders under investigation in this study are the citizens or residents of the WCR as well as visitors to the region. The three perspectives of inquiry relating to the social dimensions of the proposed windfarm developments are each discussed in detail in the following sections.

2.2.1 Windfarms and people's place attachment

To become attached to a certain place, one has to first generate a sense for that specific place. Jorgensen & Stedman (2001: 233) characterize this sense of place as a "multidimensional construct comprising: (1) beliefs about the relationship between self and place; (2) feelings toward the place; and (3) the behavioral exclusivity of the place in relation to alternatives." Stokowski (2002: 369) defines a sense of place as "an individual's ability to develop feelings or attachment to particular settings based on a combination of use, attentiveness and emotion." The concept relates to the idea that the very same setting can have different meanings for different people. However, a place should not simply be seen as a geographic site, but also as "fluid, changeable, dynamic contexts of social interaction and memory" (Stowkoski 2002: 369). Therefore, a study that examines people's place attachment must not be limited to the geographical boundaries of an area or region as it must take into account that 'place' can be seen subconsciously by the subjects.

Place attachment is a complex phenomenon, defined by scholars⁹ in a variety of ways to explain constructs of human bonding with a place. In this study Scannell & Gifford's (2010) conceptualization of place attachment as a tripartite organizing framework involving the dimensions person, psychological process and place is appropriate as illustrated by the model in Figure 2.4.

⁹ These scholars include Vaske & Kobrin (2001), Stedman (2002), Buckland & Williams (2003), Williams & Vaske (2003), Kyle et al. (2004), Kyle, Mowen & Tarrant (2004), Brown & Raymond (2007) and Devine-Wright (2009).



Source: Scannell & Gifford (2010: 2)

Figure 2.4 The tripartite model of place attachment

Evidently, place attachment occurs at individual and group levels although many definitions of place attachment emphasize one more over the other despite the two often occurring concurrently. At an individual level place attachment involves personal connections with a place, whereas at a group level attachment may “comprise the symbolic meanings of a place that are shared among members” (Low 1992: 167).

The dimension of psychological process assumes Altman & Low’s (1992) conceptualization of place attachment as being based on three components, namely affect, cognition and behaviour (the latter also referred to as practice or conative action). Affect is the emotional (happiness, pride, love) attachments to a certain place, the cognitive component relates to specific memories, knowledge and meanings of certain place, and behaviour is the behaviours or activities executed within the spatial boundaries of that specific place or area (Altman & Low 1992). This helps one understand that place attachment is not only an emotional phenomenon, but the specific behaviours or activities undertaken within the spatial boundaries of a specific region may also

point to the attachment of residents to that region. Place attachment may thus be seen as both the process of attaching oneself to a place and the product of this process (Giuliani 2002).

The third dimension, the psychological process, relates to what exactly connects people to a specific place. This has been examined on two levels: social and physical place attachment. Physical place attachment is the direct bond with the physical or natural environment, for example a specific monument or building in a community may lead to a strong sense of physical place attachment. Some authors maintain that place attachment encompasses the subconcepts place identity and place dependence (Jorgensen & Stedman 2001; Kyle et al. 2004). This relates directly to the social level of the place dimension of place attachment. Prohansky (1978: 155) described place identity as “those dimensions of self that define the individual’s personal identity in relation to the physical environment by means of a complex pattern of conscious and unconscious ideals, preferences, feelings, values, goals and behavioral tendencies and skills relevant to this environment.” Jorgensen & Stedman (2001) submit that place dependence is the strength of the association of a person with a place, a condition which could lead to a negative connotation of place in the sense of the place limiting the achievement of valued outcomes. Whichever way one interprets it, place attachment explicitly contains emotional content in the form of social attachment. Scannell & Gifford (2010: 4) have noted that, “much of the research on place attachment (and related concepts) has focused on its social aspect; people are attached to places that facilitate social relationships and group identity.” This may lead to NIMBYism, that is the place-protective manner in which residents act toward windfarm development which may be regarded as a not-in-my-backyard (NIMBY) attitude.

In this study’s context NIMBYism relates to the general public’s attitudes toward wind power being different to those held toward specific windfarms (Wolsink 2007b). The Oxford English Dictionary (2011 online) defines NIMBYism as “an attitude ascribed to persons who object to the siting of something they regard as detrimental or hazardous in their own neighbourhood, while by implication raising no such objections to similar developments elsewhere.” Notably, NIMBY is not used exclusively in relation to the development of windfarms.

A NIMBY attitude concerning windfarms simply refers to people generally being very positive toward the development of wind power in the country in which they reside, but as soon as they are confronted with the idea of a windfarm development in their immediate vicinity, they tend to adopt a negative attitude. NIMBYs who oppose wind energy developments in the vicinity of their neighbourhood are seen as being selfish. It implies that a gap exists “between an attitude motivated by concern for the common good” (positivity of a windfarm) and “behaviour motivated by self-interest” (Bell, Gray & Haggett 2005: 260).

NIMBYism is often misunderstood by developers, policy makers and academics who tend to associate all opposition to development with this attitude. Wolsink (2007b: 1300) contends that “the validity of the NIMBY theory is questionable because the reasoning behind it is faulty.” Academics often use the term without clearly defining it which leads to confusion and fuzziness. Given this uncertainty Wolsink (1994; 2000) opted to identify four types of objections or resistances to windfarms (see Table 2.1). Resistance type A is the NIMBY attitude which is complemented by the other three which can be used to explain public opposition to windfarm development.

Table 2.1 Four types of objections to windfarms

Type	Nature of objection
Resistance type A	Positive attitude towards wind power, combined with opposition to the construction of a windfarm anywhere in one’s own neighbourhood.
Resistance type B	Rejection of and opposition to a windfarm in the neighbourhood because one rejects wind turbine technology in general. Sometimes called ‘NIABY’ (not-in-any-backyard).
Resistance type C	Positive attitude towards wind power which becomes negative as a result of discussions around the proposed construction of a windfarm.
Resistance type D	Resistance created because particular projects are considered faulty, without a rejection of the technology as a whole. Negative attitude to the planning procedure of a particular windfarm, rather than wind power as a whole.

Source: Adapted from: Wolsink (1994; 2000)

Wolsink (2000:57) concludes that “all four behaviour-motive combinations can and will exist with the siting of any facility, but one may become dominant during a particular effort.” Following intensive research on the term, Wolsink (2007a) concluded that it is ‘outdated’ and a ‘myth’ for explaining opposition to wind power. Earlier, Kempton et al. (2005) identified three reasons why the term NIMBY should not be used: (1) it is generally used as a pejorative, implying selfishness as an underlying cause; (2) it appears to incorrectly describe much local

opposition to wind projects; and (3) the actual causes of opposition are obscured, not explained by the label.

Van der Horst (2007) investigated the measurement of the NIMBY phenomenon by various academics and concluded that more qualitative research needs to be done on public perceptions of windfarms to establish whether or not all opposition should be regarded as selfish NIMBYism which this study aims to do. Because NIMBY is a simplistic way of analysing all people's attitudes toward wind energy, we need to look at other factors to gain a more universal explanation of public attitude toward these developments. This study aims to investigate the degree to which respondents' opposition to proposed windfarm projects in the WCR are attributable to NIMBYism. Chapter 4 reports on that exercise. The second component of the social dimension, landscape interference, is treated next.

2.2.2 Windfarms and landscape aesthetics and function interference

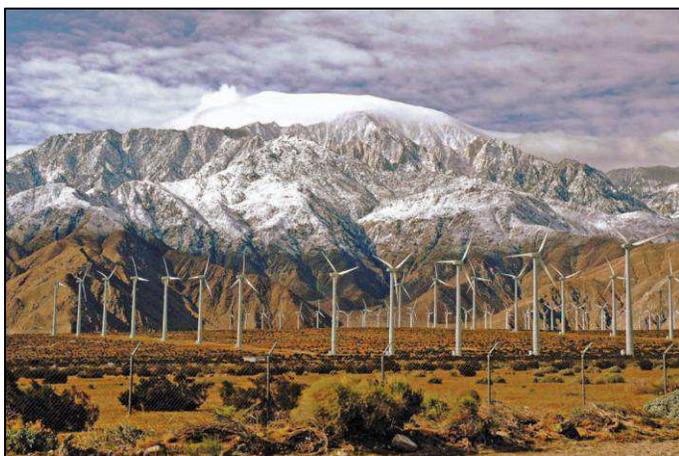
According to Pasqualetti (2011a: 207) wind energy exploitation “produces the most blatant landscape changes of any renewable energy resource.” It possesses the ability to transform what can be classified as natural landscapes into landscapes of power, in other words undisturbed landscapes are converted into energy-production landscapes. The European Wind Energy Association (2010: 329) defines a landscape as “an area perceived by people, whose character is the result of the action and/or interaction of natural and/or human factors.” Van de Wardt & Staats (1988) have made it clear that the type of landscape in which wind turbines are deployed is the most significant factor in visual landscape evaluations fully overshadowing all other visual and scenic factors of windfarms. In the case of offshore windfarms the landscape can only be a sea of surrounding water and in most instances objections toward these farms occur when the turbines are visible from a popular beach or beachfront housing development. Onshore windfarm development is much more complex regarding its landscape interference.

From a wind resource perspective, onshore windfarm development works best in areas with a higher elevation, for example on hilltops or clifftops where the wind blows towards them and the structures are usually between 150 and 300 metres in height (Spilsbury & Spilsbury 2009;

Frolova & Pérez Pérez 2011; Katsaprakakis 2012) so that the turbines are visible from longer distances. Objectors see these turbines as “blots on the landscape” whereas others see them as symbols of clean energy and commitments to sustainable development (Spilsbury & Spilsbury 2009: 24). There are two distinct interferences that wind turbines have on landscapes: (1) a visual intrusion which impacts on the scenic value of the landscape; and (2) an impact on the specific land use the landscape has been put to. These are discussed in turn in the next subsections.

2.2.2.1 Visual intrusion of wind turbines

The visual intrusion of wind turbines on a landscape is related to their ability to ruin the scenic value of the landscape. According to Katsaprakakis (2012) the visual impact is especially high in areas which lack any other form of human interference, that is natural, undisturbed landscapes free of any form of development. Whether these turbine structures have positive or negative impacts on the aesthetic value of a landscape is a matter of individual opinion and the nature of the impacts is determined specifically by the type of surroundings (Wolsink 2007a). A good example of landscape change impact is the San Gorgonio Pass area north of the resort city of Palm Springs in the USA. Hundreds of wind turbines are clustered along the routes visitors travel to Palm Springs, as shown in Figure 2.5.



Source: Pasqualetti (2011b: 909)

Figure 2.5 Wind turbines interfering with the view of Mt. San Jacinto at the southern end of the San Gorgonio Pass, Palm Springs

The question: To what degree are we willing to give up landscape quality for other qualities of life? is related to the public's perception of windfarms. According to Wolsink (2007b: 1194), the "visual evaluation of the impact of wind power on the values of the landscape is by far the dominant factor in explaining why some are opposed to wind power implementation and why others support it." The burning question, however, is: To what extent is scenic value in the eyes of the beholder? Lothian (1999) provides two intrinsic paradigms of landscape aesthetics as specified in Table 2.2.

Table 2.2 Paradigms of landscape aesthetics

Paradigm	Paradigm characteristics
Objectivist or physical paradigm	<ul style="list-style-type: none"> - landscape quality is an intrinsic physical attribute - assessed by applying criteria to a landscape - subjectivity presented as objectivity
Subjectivist or psychological paradigm	<ul style="list-style-type: none"> - landscape quality derives from the eyes of the beholder - assessed using psychological methods - objective evaluation of subjectivity

Source: Adapted from Lothian (1999)

The objectivist or physical paradigm is mostly associated with planners and geographers who classify landscapes either on a numerical scale or on a range of high, medium or low quality. They make use of visual impact assessments to determine the visual influence of wind turbines on landscapes before implementation. The Provincial Government of the Western Cape (2006) has formulated criteria for visual impact assessments as reproduced in Table 2.3.

Table 2.3 Criteria for visual impact assessments

Impact domain	High-impact criteria	Moderate-impact criteria	Low-impact criteria
Visibility of the project: geographic area from which project will be visible, or view catchment area	Visible from a large area	Visible from an intermediate area	Visible from a small area around the project site (very unlikely)
Visual exposure: based on distance from the project to selected viewpoints	Dominant or clearly noticeable	Recognizable to the viewer	Not particularly noticeable to the viewer (landscape type and distance to viewpoint exceeding 15 to 20 km)

Continued overleaf

Table 2.3 continued

Impact domain	High-impact criteria	Moderate-impact criteria	Low-impact criteria
Visual sensitivity of the area: inherent visibility of the landscape, usually determined by combination of topography, landform, vegetation cover and settlement pattern	Highly visible and potentially sensitive areas in the landscape	Moderately visible area in the landscape	Minimally visible areas in the landscape
Visual sensitivity of receptors: level of visual impact considered acceptable is dependent on the type of receptors	Residential areas, nature reserves and scenic routes or trails	Sporting or recreational areas, or places of work	Industrial, mining or degraded areas
Visual absorption capacity (VAC): potential of the landscape to conceal the proposed project	Effective screening by topography and vegetation, e.g. long, flat, agricultural landscapes	Partial screening by topography and vegetation	Little screening by topography or vegetation
Visual intrusion: level of compatibility or congruence of the project with the particular qualities of the area, or its ' <i>sense of place</i> '	Results in noticeable change or is discordant with the surroundings	Partially fits into the surroundings, but clearly noticeable	Minimal change or blends in well with the surroundings

Source: Adapted from Provincial Government of the Western Cape (2006)

In all instances, except for visual absorption capacity (VAC), it is advisable that the visual impact of the windfarm should be in the 'low' category. For VAC visual impact should reside in the 'high' category, so resulting in an effective 'cover up' of the turbines by topography and vegetation. However, most criteria, guidelines and policy documents for visual impact assessment on landscape aesthetics focus on vision, visibility and distance, and not necessarily on cultural heritage that might be intrinsic to the value of a specific landscape. (Jerpåsen & Larsen 2011; De Vries, De Groot & Broers 2012).

The subjectivist or psychological paradigm uses psychological methods to "examine community preferences for landscapes and then through statistical analysis, derive the overall quality of the landscape" (Lothian 1999: 178). This study is primarily concerned with the second paradigm for appraising the quality of the WCR's landscape from the respondents' perspective of what they value most about their natural landscapes. The development of windfarms may also lead to change(s) in the specific land use associated with an area.

2.2.2.2 Land use diversification

Land not only provides a material basis for the economy, it also gives us cultural meanings such as a “sense of place and a sense of history” (Lobley & Winter 2009: 7). Land and its use represent the core relationship between the natural environment and human activity. It is important to distinguish between land cover and land use as these terms are sometimes used interchangeably. Land cover is concerned with “the bio-physical characteristics of the land and cannot necessarily tell us what the land is used for, particularly if there are multiple uses made of a specific area of land” whereas land use is “operations or activities carried out on land” (Lobley & Winter 2009: 7). In this context, windfarm development will change the use of land or diversify it to a certain extent.

Windfarms are often developed on land used exclusively for agricultural purposes, for example the Lestrade windfarm in France (Figure 2.6). The construction of windfarms there led to the provision of subsidies to farmers thereby promoting land use diversification as land is no longer used only for farming, but also for generating electricity. According to Williams (2010), in South Africa developers give farmers one of two options, either they receive a set subsidy of between R35 000 and R40 000 per wind turbine per year or they receive a percentage (usually around 1%) of the electricity sold from the windfarm per year. It is not surprising that wind energy is classified by some as the new cash crop of the agricultural industry (Financial Mail 2009).



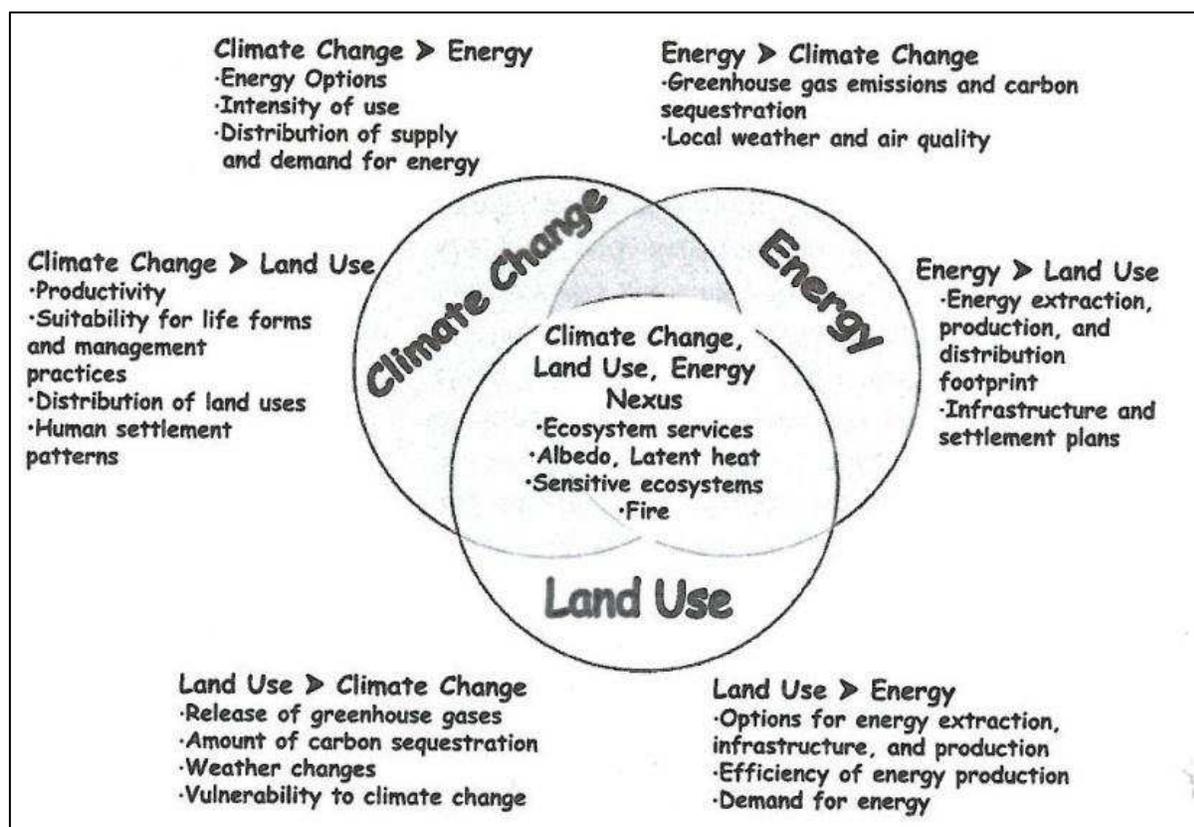
Source: Juwi (2008)

Figure 2.6 Windfarm on agricultural land in Lestrade, France

According to Dunlop (2009: 273) “the success of subsidies is a function of the context within which they are applied and the technology to which they are applied.” In the case of windfarms and land use, it becomes a battle between energy security and food security. Dunlop (2009: 263) summarizes the situation between land use and windfarms as:

The complex technologies associated with new uses of land offer potentially huge benefits for the amelioration of the risks posed by climate change and energy insecurity. They also carry with them, however, their own significant social, environmental, economic, legal and human challenges.

Dale, Efroymson & Kline (2011) has illustrated the land use/climate change/energy nexus in Figure 2.7. This nexus derives from an ecological process and pattern perspective to “offer insights into the dynamic processes and interactions among climate change, energy choices, and land-use activities” (Dale, Efroymson & Kline 2011: 758).



Source: Dale, Efroymson & Kline (2011: 758)

Figure 2.7 The land use/climate change/energy nexus

The effects of energy on land use represent a direct relationship. The activities practiced on land all need certain types of energy and the availability of energy affects the type of activity practiced. Energy development can impact land use through the alteration of the surface area, for example the deployment of wind turbines, roads and associated power grids directly influencing subsequent and neighbouring land uses. The type of landscape and the land use associated with it have decided influences on the successful implementation of windfarms. If conventional land use has impacted a landscape so that it is no longer suitable for windfarm development, such developments will not be accomplishable. The physical characteristics of the landscape will also determine if it is suitable for energy extraction and the associated infrastructure development. Land use practices also affect the demand for energy in the sense that urban and industrial lands possess greater demand for energy than residential, agricultural and forested lands (Dale, Efroymsom & Kline 2011).

Land use affects climate change in various ways, for example the over-exploitation of natural vegetation used for feeding cattle and the burning of fossil fuels in urban areas. “Land use decisions can exacerbate social and economic effects of climate change” (Dale, Efroymsom & Kline 2011). On the other hand, if land is to be used for the generation of renewable energy, as in the case of windfarms, the specific land use can aid in the fight against proposed global climate change. By planting specific crops, such as Spekboom, carbon sequestration can also help to absorb vast amounts of carbon dioxide, so countering climate change in the process (Paviour 2012). Climate change can of course also influence land use by impacting on the productivity of crops and livestock so that farming these may become unsustainable. Climate change may also impact the distribution of land uses so, for example areas profitable for wool sheep farming may become unsuitable due to increases in temperature. These areas would then be used for a different heat-resistant type of livestock to the disadvantage of the wool industry. Human settlement patterns and industries have been strongly influenced by climatic factors. Fishing and agricultural communities are strongly influenced by climatic conditions, meaning that the close relationship between land use and climate change can create especially difficult situations for rural populations that depend on local resources (Dale, Efroymsom & Kline 2011).

Climate change influences energy by affecting demand, distribution, intensities and types of energy that are available and being used (Wilbanks et al. 2008). As temperatures increase or decrease from climate change, so does the demand for cooling and heating systems in homes and workplaces, consequently increasing the demand for energy. Energy generation also impacts on climate change. Wind energy is a renewable energy source with relatively little impact on the environment, but energy sources such as fossil fuels are known to impact adversely on the environment and consequently contribute to climate change.

The above relationships constitute the land use/climate change/energy nexus which helps to explain the relationship between land use and windfarm development. It is advisable to develop windfarms on low-potential agricultural land, thereby supplementing farm income without adversely affecting agricultural production. The development of windfarms in agricultural landscapes can result in multifunctional countrysides, but if the potential windfarm areas surrounding farmland also have tourism value, conflict might arise. This is discussed in the following section.

2.2.3 Windfarms and its effect on tourism

While a farmer might see a landscape as a ‘production landscape’, a tourist might see it as a natural space with an aesthetic value and view it as a ‘picture postcard’. The relationship between windfarms and tourism is a double-edged sword in that wind turbines are seen by some people as spectacular and attract tourists, whereas others claim that windfarm disturbances to the scenic value of the landscape can reduce tourists appeal for these areas. Rural communities – like many of those involved in this study – in which tourism is a main revenue generator are understandably concerned about the perceived detrimental impacts of windfarms on the scenic value of their environs and on the regional tourism industry generally.

Surprisingly, little evidence is forthcoming to support the assertion that windfarms influence tourism negatively. A literature search failed to find an empirical case study confirming that tourists are deterred from visiting windfarmed areas. Studies conducted in Scotland, Australia, Denmark, Sweden and California found that wind turbines increase tourism (Countryside Energy

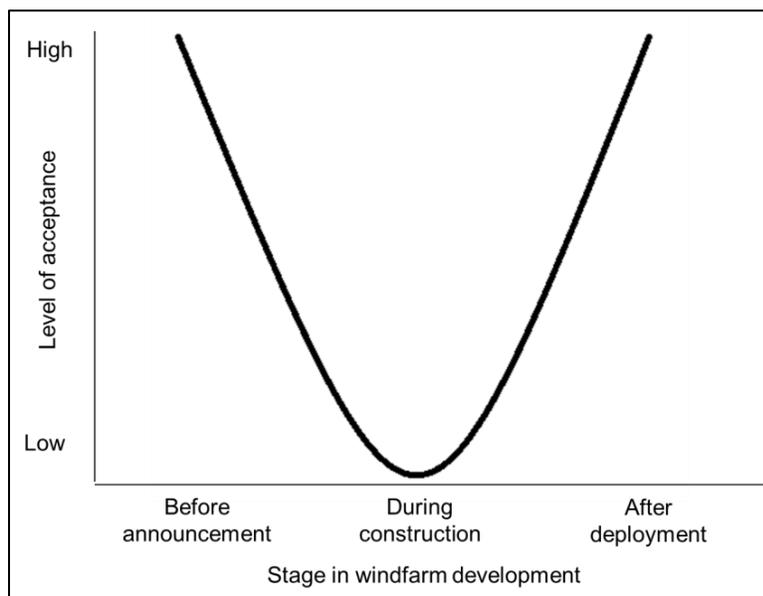
Co-operative Inc. 2010). A survey in Wales showed that only 2% of the visitors indicated that they would not return to a specific area if wind turbines were deployed there (RenewableUK 2010). The study did report some drawbacks the tourist respondents associate with windfarms, namely concern about the future 'cumulative effect' of a relatively large number of windfarms in one region; apprehension about the visual impact of the wind turbines; unease with the detrimental effects on wildlife; and disquiet about potential divisions in local communities caused by disputes over uneven monetary benefits.

MORI, a UK organization which conducts public opinion polls, surveyed attitudes toward wind power among visitors to scenic Scottish areas (MORI 2002). Fifty-five per cent of the respondents indicated that turbines had a positive effect on their impressions of the scenic spots, 32% were undecided and only 8% had negative impressions caused by these structures. The survey also found that 91% of the respondents said that the presence of windfarms would not influence their decision to return to the area (MORI 2002). A similar poll in Victoria, Australia, found that 94% of the respondents reported wind turbines to be interesting and 74% saw them as graceful. Interestingly, 36% of the respondents were more likely to visit a coastal area if it had a windfarm, while 55% said it would make no difference and only 8% said it would deter them from visiting (Countryside Energy Co-operative Inc. 2010).

Although the San Gorginio Pass underwent tremendous landscape change following the deployment of hundreds of wind turbines, residents of the area have started marketing the windfarm as wind tourism. The San Gorginio Pass had been the location of many films before the installation of the wind turbines and now the same film makers are returning to use the new wind landscape as a backdrop for movies and advertisements (Pasqualetti 2001a). The main recipe for success is, however, that the residents of an area marked for windfarm development should market it correctly as a wind power attraction. The tourism industry must promote windfarms as visitor centres with guided tours for people to learn more about wind energy, so turning windfarms into tourist attractions (Spilsbury & Spilsbury 2009). The nature of public attitudes toward wind energy is inherent to the successful development of windfarm projects as made clear in the next section.

2.3 PUBLIC ATTITUDES TO WIND ENERGY

When considering wind energy and public attitudes it is noteworthy that there is a distinct difference between attitudes to wind power and attitudes to windfarms. Attitudes to wind power are generally positive, but there is a minority who are opposed to the development of wind energy. According to Wolsink (1994) and Devine-Wright (2005) attitudes to wind power resemble a U-shaped pattern over time ranging from a very positive level of acceptance (for example when people are not faced with a wind power scheme in the vicinity of their neighbourhood) to more critical attitudes with a low level of acceptance (when developers announce a project) and later a return to a high level of acceptance some years after deployment of a project as illustrated in Figure 2.8.



Source: Devine-Wright (2005: 130)

Figure 2.8 U-shaped levels of acceptance of wind energy developments over time

Attitudes to and perceptions of wind energy therefore seem to follow a distinct pattern over time, but the high level of acceptance can only be reached when all the environmental impacts associated with a project have been addressed. There are two different types of opposition to windfarms: (1) involves opposition as negative attitudes; and (2) involves opposition as actual behaviour, for example direct acts of resistance against the proposal for a windfarm project (Wolsink 1996). This thesis concentrates on the first type. Attitudes to wind energy are mostly

based on “individual values and beliefs” (Krohn & Damborg 1999: 956). Specific places have certain values attached to them, for example the WCR is known for its simple, undisturbed and mostly natural landscapes to which some residents of the region feel attached. Attitudes to windfarms are not only influenced by the values treasured by residents of an area, but also by residents’ process of decision making to accept or not. This process is discussed in the following section.

2.3.1 The process of meaning making

The values people attach to landscape quality and preservation are possibly the strongest determinants of acceptance of windfarms, but attitudes, especially of the public in the socio-political dimension, are also critical in the decision-making process concerning acceptance or not. The decision-making process of the public on whether or not to accept a windfarm project in the vicinity of their neighbourhood is explained by Wolsink (2007a: 2693) as a process of meaning making:

Effective and positive decisions are affected by a complex set of variables that are rooted in institutional arrangements and social and political culture. These are variables in categories such as the planning regime, the financial support system, values attached to the landscape quality and preservation, and the degree of local ownership of schemes to build windfarms.

Decision making is primarily based on the consideration of facts and values (Brynard 2006). The facts surrounding a windfarm project are supplied by the developers and authorities in a specific region, but the values are determined by the public themselves in the region and these values must be taken into account by the developers and authorities. The process by which the public decides which values will be affected by a windfarm in their region is termed meaning making. These values include attachment to the natural landscape, the cultural interference or the tourism value associated with the region. The relationship between attitude and behaviour plays a significant role in this meaning-making process.

2.3.2 Attitude–behaviour relations

Attitude–behavior relations have been defined according to the same component basis as those in the place attachment definition of Altman & Low (1992) explored in Section 2.2.1, namely affect cognition and behaviour (practice or conative action). Fishbein & Ajzen (1975: 11-13) refer to attitude as the affect component in decision making which relates to “a person’s feelings toward and evaluation of some object, person, issue, or event.” Cognition in decision making is driven by a person’s beliefs which constitute the information he/she has available about the object, person, issue or event. Practice or conative action in decision making is the behavioural intention or “a person’s intentions to perform various behaviors” (Fishbein & Azjen (1975: 12).

The public decides which of their values and beliefs might be influenced by windfarm developments and this forms their attitude, belief and behavioural intention toward these developments. This is also called the theory of reasoned action which posits that “people consider the consequences of alternative behaviors before engaging in them, and that they choose to perform behaviors they associate with desirable outcomes” (Bang et al. 2000: 453). Unfortunately, according to Hill (2012), the classical view of reasoning still argues that the longer one reasons in support of a false claim, the more falsely confident one can become, which leads to poor decision making. In the case of opposition to windfarms, if one is falsely informed, for example on the effects windfarms, it leads to a false confidence and eventually poor decision making concerning opposition to a proposed windfarm development. The next section explores the decision-making process by discussing different types, models and theories of decision making.

2.3.3 Types, models and theories of decision making

According to Brynard (2006) there are various types of decision making as presented in Table 2.4. Certain objections to and support for windfarms can be coupled to specific types of decision making as discussed in Chapter 4. For now, the different types of decision making should be noted.

Table 2.4 Types of decision making

Type of decision making	Description
1) Impulsive decision making	Occurs on the spur of the moment and no discretion, value judgement or alternatives are taken into account.
2) Intuitive decision making	A high degree of rationality or clarity of thought is implied. Decision not reached on basis of facts or statistics, but the decision maker “has a hunch”.
3) Programmed decision making	Programmed decisions are standing decisions and involve standards, procedures, methods, rules and policy.
4) Unprogrammed decision making	Decisions that require a large measure of creativity and discretion. Usually decisions that are made for special purposes such as programmes, strategies and budgets. Short lifespan as they exist only for a particular or single use.
5) Single-choice decisions	Decision maker has only two choices: accept the alternative or reject it.
6) Multichoice or multicriteria decisions	More complex decisions where various competing considerations have to be prioritised to arrive at the most appropriate decision at a given time.

Source: Adapted from Brynard (2006)

Apart from types of decision making, there are also various models and theories which provide conceptual frameworks for processes of decision making. Conflict trade-off theory claims that “decision making is highly influenced by situational factors” and that the quality of decision making decidedly influences the outcome (Baron & Weber 2001: 3). Decision making to support or oppose windfarm development can be very emotional so that the emotional trade-off can significantly influence decision-making behavior. Emotional tradeoff difficulty can be seen as “the level of subjective threat associated with an explicit between-attribute trade-off within the context of a particular choice” (Luce, Payne & Bettman 2001: 88). Conflict trade-off refers to the consideration of alternatives based on the trade-off between them.

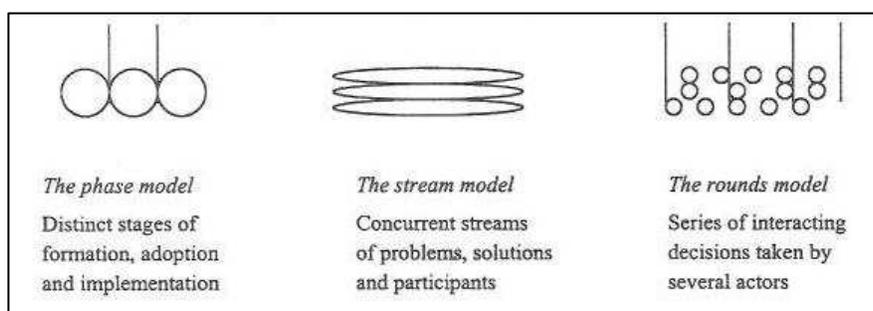
Furthermore, the theory of rational choice can also help to explain public opinion about and decision-making for windfarm development. According to Dawes (1988: 8), a rational choice is one that meets three criteria, namely:

1. It is based on the decision maker’s current assets. Assets include not only money, but physiological state, physiological capacities, social relationships and feelings.
2. It is based on the possible consequences of the choice.

3. When these consequences are uncertain, their likelihood is evaluated without violating the basic rules of probability theory.

Rational choice involves the ordering and grouping of alternatives to reach a conclusive, considerate decision, not just basing the decision on impulse or intuition, but taking the value of uncertainty into account. For example, opponents of a windfarm “might reasonably believe that actively opposing a development would make a significant contribution to their goal of protecting the local landscape to outweigh the costs of participation” (Bell, Gray & Haggett 2005: 462).

Two general models of decision making are the phase model and the stream model, the former being the more common approach (Teisman 2000). The phase model maintains that decision making is done through a number of distinct stages with each stage having its specific characteristics and participants. The stream model considers decision making as a combination of three separate concurrent streams, namely problems, policies or solutions and politics or participants. Teisman (2000: 938) introduces the rounds model as an approach which depicts decision making as a process consisting of different decision-making rounds in which all sets of rounds the “interaction between different actors results in one or more definitions of problems and solutions” as indicated in Figure 2.9.



Source: Teisman (2000: 939)

Figure 2.9 Three models for the analysis of decision-making processes

This research aims to investigate which type(s), theory(ies) and model(s) of decision making most accurately describe the public decision-making process of residents of the WCR to accept

or reject proposed windfarms. In the discussions over acceptance or rejection, landscape characteristics and community identity emerge as the main factors in which objections are rooted (Mercer 2003; Woods 2003). A review of the international scholarship on the discourse of support for or objection to windfarm development confirms the aforementioned conclusion, as discussed in the following subsection.

2.3.4 Support for and objection to windfarms: international experiences

South Africa is entering the world of wind energy as latecomers. International scholarship on the social dimension of windfarms has generated some useful insights and established that public perception of windfarms is a multidimensional phenomenon constituting a range of complex cultural, contextual, socio-economic, political and physical factors. This study explores the discourses of support and objection applicable to and experienced by people in the WCR.

The first studies on attitudes to wind power were done in the 1980s and they demonstrated general public support in the USA (Thayer & Freeman 1987) and the Netherlands on which Wolsink (1996) reported at a later stage. Some of the general issues and poll responses regarding wind energy from the perspective of countries where currently (2012) the use of wind energy is in full swing, but which faced the same issues in their implementation stage as now being experienced in South Africa, are recounted here. Wizelius (2007) has summarized the findings of studies in Australia, Denmark, France, Germany, Sweden and the United Kingdom. An Australian poll in 2003 showed 95% of the respondents indicated support for the building of new windfarms. The reason given by 71% of these supporting respondents was that reducing greenhouse pollution outweighed protecting industries relying on fossil fuels. In Denmark, wind turbines are regarded as an integral part of the Danish cultural landscape and a physical manifestation of a collective wish to reduce pollution (Nielsen 2002). In 1993, 82% of Danish respondents indicated they would appreciate the development of more wind power and 61% deemed windfarms to be well suited to the landscape. Around 2007 more than 60% of Denmark's electricity was generated by wind energy (Wizelius 2007).

A 2003 survey in France of 2090 persons found that 92% were in favour of further wind energy development considering its environmental and economic advantages. The French see wind energy as a substitute for other energy sources, including nuclear power (Wind Directions 2003). Germany ranks as the country where wind energy has been developed at the fastest pace. Similar surveys conducted in 1997 and in 2002 both recorded that 88% of Germans agreed to more wind energy development in their country (Wind Directions 2003). In Sweden, studies done since 1979 found that between 74% and 82% of surveyed respondents supported wind power, not only for the country generally, but also in their own municipal areas. However, the Swedes voiced some specific concerns about visual impacts, noise pollution, impact on birds, electromagnetic interference and land use associated with the development of windfarms (Devlin 2002). These concerns were however, weighed against the environmental and economic benefits of windfarm development.

The findings of a variety of studies and polls in the United Kingdom conducted between 1990 and 2002 have been summarized by Simon (1996) and Wizelius (2007). The salient point they make is that in that period only 9% of British respondents were opposed to windfarm development, while 77% were explicitly in favour of such developments. The Omnibus Report (1995) indicates that 79% of Canadians polled believe that wind energy should be given a high priority in public utility provision. In Greece there has been a decrease in acceptance of new windfarms, especially on the Greek mainland, but significant support for new windfarms prevails in the Greek Islands (Kaldellis 2005). The Netherlands is faced with a stagnating implementation of renewables due to a lack of available sites, yet in 1995 and 1996 80% of the polled Dutch indicated that they were in favour of wind energy development (Gipe 1995; Wolsink 1996). The European Renewable Energy Council (2004) conducted a cross-European audit which found strong overall public acceptance of wind power, but concerns surfaced from areas where wind power is reaching relatively high levels of penetration. The main concerns in Europe were about noise, visual intrusion into landscapes, bird mortalities and electromagnetic interference.

Damborg (2003) conducted a study for the Danish Wind Industry Association in which he compared various national studies related to wind energy perceptions. He singled out factors

supporting and others opposing wind energy. These are marshalled in Table 2.5 together with those distinguished by Spilsbury & Spilsbury (2009).

Table 2.5 Arguments for and against wind energy from an international perspective

Arguments for wind energy	Arguments against wind energy
<ul style="list-style-type: none"> - Renewable energy is very much an alternative to other energy sources. - The ability to mitigate climate change. - Wind energy is limitless, unlike finite fossil fuels. - Wind energy is non-polluting. - Wind energy is safe. - Landscapes have already been altered substantially by human intervention, such as farming, roads and electricity pylons – so why pick on wind turbines? - Turbines attract visitors interested in renewable energy and answers to the energy crisis. - Farming can continue around wind turbines. 	<ul style="list-style-type: none"> - Renewable energy cannot solve our energy problems. - Wind turbines are unreliable and dependent on the wind. - Wind energy is expensive. - Wind turbines spoil the scenery. - Wind turbines are noisy. - People living near wind turbines say they find it almost impossible to sell their homes because buyers do not like the turbines. - With an expanding population, there is a great need to protect the remaining natural landscape and keep it turbine-free.

Source: Adapted from Damborg (2003) and Spilsbury & Spilsbury (2009)

The debate on the development of wind energy is unlikely to abate. The arguments in favour of wind energy mainly focus on the environmental benefits, whereas those against it are predominantly concerned with issues that affect people living in the immediate surroundings of the projects.

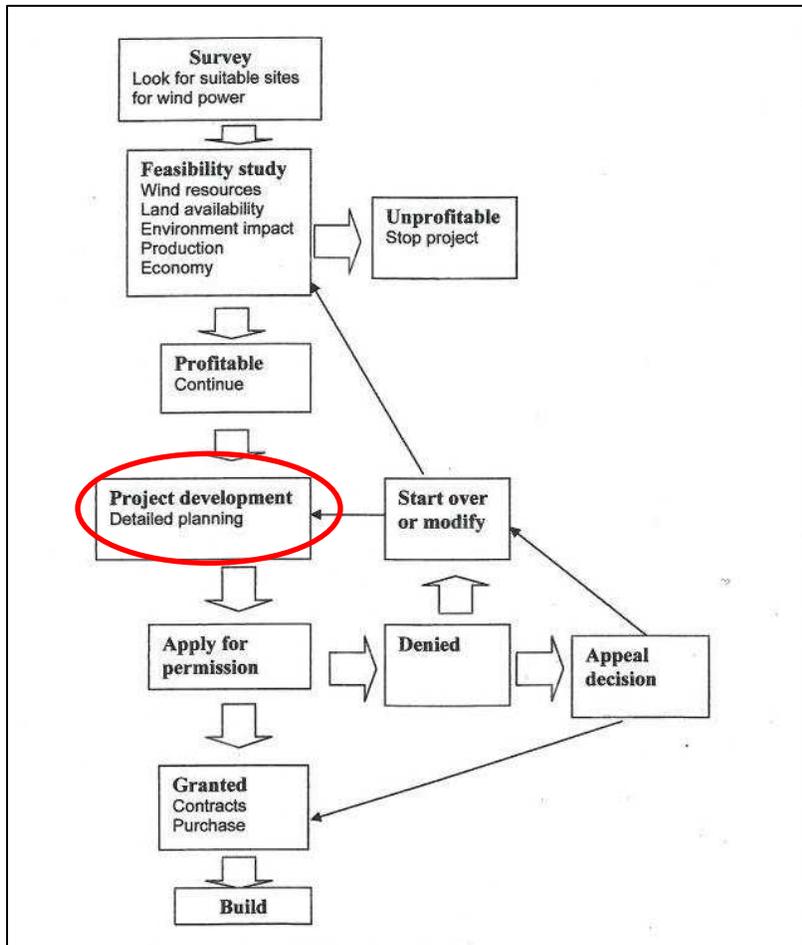
The foregoing review of the literature confirmed a relationship between windfarms and place attachment, landscapes, and tourism: the three perspectives of inquiry of this study. The review also showed beyond doubt the importance of decision-making processes and public participation involved in any windfarm development. A primary issue with windfarm development in most countries is the visual intrusion of wind turbines on landscapes. Most international studies also pay attention to how policy and the planning process influence public opposition to or support for windfarm developments. The South African policy and planning contexts are treated in Chapter 3.

CHAPTER 3: WINDFARM ESTABLISHMENT, POLICY, LEGISLATION AND PROCESS

Policy on windfarms is directly related to socio-political and community acceptance of Wüstenhagen, Wolsink & Bürer's (2007) triangle of social acceptance of renewable energy innovation (recall Figure 2.3). The positive overall picture for windfarm development shown in opinion polls worldwide has misled policy makers to believe that social acceptance is not an issue in development. Socio-political acceptance concerns the acceptance by key stakeholders and policy makers of effective policies. Policy makers, planners and developers often present renewable energy projects as solutions to global environmental problems such as the degradation of the natural environment due to global warming. Elliot (2000: 272), however, reminds us "that there may be some local environmental disruption" and that planners must recognize and set this against the much larger global benefits of the installation of renewable energy projects.

Community acceptance is occupied with the specific acceptance of siting decisions and renewable energy projects by local stakeholders, particularly residents and local authorities (Wüstenhagen, Wolsink & Bürer 2007). To fully understand the policy context and the related socio-political and community acceptance of windfarm development, the general process of wind energy development portrayed in Figure 3.1 should be noted.

The process of wind energy development must actively involve all people who are or could be affected by the project development (red oval in Figure 3.1) which normally starts after profitability has been established by the feasibility study. Wolsink (1996: 1087) warns that "any procedure that does not offer all involved parties real opportunities for influence on projects will make people more opposed than necessary." Developers refer to involved parties as interested and affected parties (I&APs), but it is important to note that some parties may experience an effect or effects of windfarm development directly depending on their proximity to the turbines. The involvement of all parties, especially stakeholders at the socio-political and community level, is very important during the policy and planning process of windfarm development.



Source: Wizelius (2007: 258)

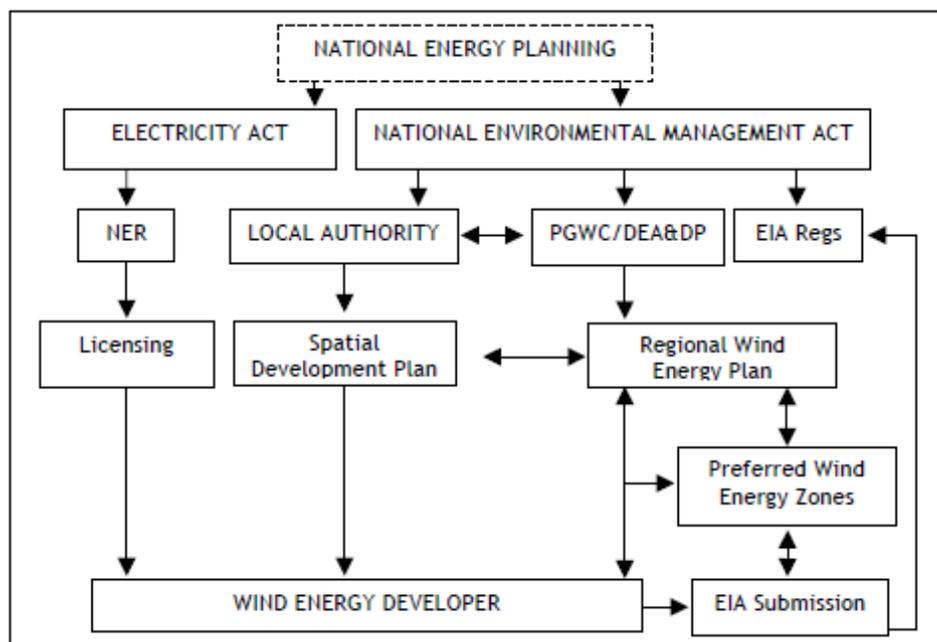
Figure 3.1 The wind energy development process

This chapter now turns to the policy and planning framework for windfarm development in South Africa which is followed by an examination of the public participation process, after which the difference between successful and unsuccessful policy is explained. The chapter concludes by considering the relevance of successful policy making and public participation to the discourse of support for or opposition to windfarm development.

3.1 POLICY AND PLANNING REQUIREMENTS FOR WINDFARM DEVELOPMENT IN SOUTH AFRICA

There is a clear national commitment to the implementation of renewable energy, especially wind energy, by the South African Government in its IRP (South Africa 2011). Policy requires

that a prescribed application process be followed before the development of a windfarm can commence. The South African policy and planning framework for the development of windfarms is illustrated in Figure 3.2. Although detailed discussion of the documents comprising this framework lies beyond the scope of this study, an overview is given of policy making at national, provincial and local level.



Source: Provincial Government of the Western Cape (2006: 9)

Figure 3.2 The South African wind energy planning and regulatory framework

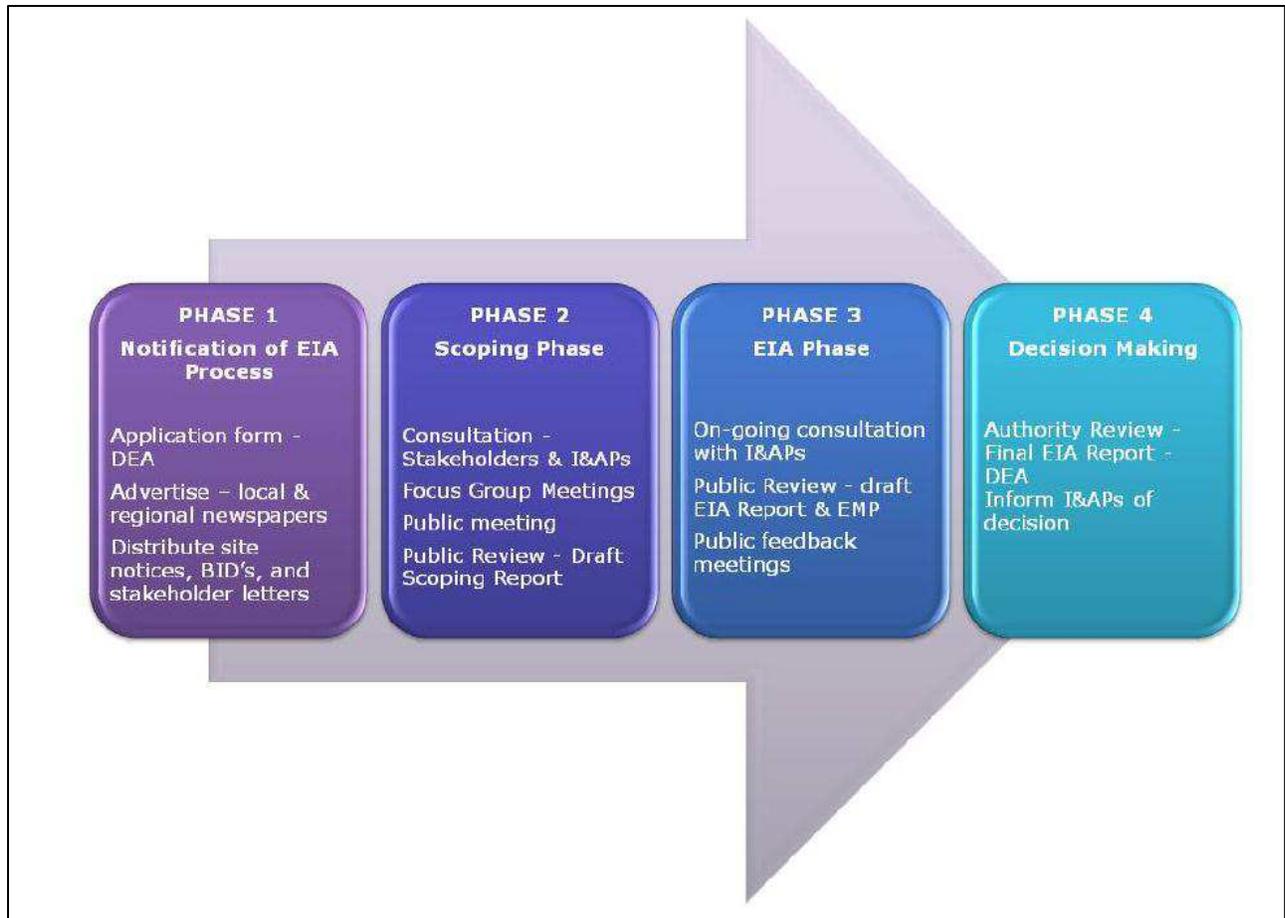
At national level the primary role of the planning and regulatory framework is the development of national energy and conservation strategies in the form of electricity and national environmental management acts, whereas at provincial level the responsibility lies with the strategic planning and authorization of development not delegated to the local level. This includes the regulations for the environmental impact assessment (EIA) process and the integration of windfarms into regional spatial development plans. At local level, the primary role is local planning and development control.

The Independent Power Producer Programme (IPPP) was launched in August 2011 for the development of renewable energy in the form of solar photovoltaic, concentrated solar power, wind, biomass, biogas, landfill gas and small hydro projects. The IPPP, initiated by the National

Energy Regulator of South Africa (NERSA), requires that developers undertake a bidding process to receive approval for their proposed projects (Tait 2012). By May 2012 there had been two rounds of bidding from which 47 projects were selected out of 132 submissions at national level representing a total capacity of about 2460 MW. Almost 1200 MW (49%) of the allocated capacity was for wind energy projects. However, not all of these successful projects are marked for the WCR. Submissions for the third round of bidding closed on 1 October 2012 after which a further 1850 MW will be allocated. Various criteria have to be met for project approval, but the detail of these fall beyond the scope of this discussion. The IPPP is exceptional in the sense that all projects seeking approval must give a clear indication of the benefits to local communities in the vicinity of the projects, in this case windfarms.

Certain phases of EIA processes involve the public at grassroots level. EIAs are compulsory for all projects in some countries, in some only for larger projects and in others they are not conducted at all, for example India (Jessa 2012). An EIA is a process which “considers the likely environmental consequences of a proposed action and in the light of that knowledge to identify possible responses” (Morgan 1998: 3). In South Africa EIAs are currently compulsory under the National Environmental Management Act no. 107 of 1998 for the development of windfarms (South Africa 2010). The EIA process involves four phases as seen in Figure 3.3.

Phase 1 of the EIA process involves obtaining the application form from the provincial Department of Environmental Affairs (DEA) and advertising the intention to develop a project through newspaper advertisements, site notices, background information documents (BIDs) and stakeholder letters. Phases 2 and 3 involve scoping and the EIA respectively, but both include consultation with the stakeholders and I&APs of a specific project. Scoping is “an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action” (Morgan 1998: 102). This is normally done through interviews, focus groups and public meetings which are advertised in local or regional newspapers. The benefits of these projects accruing to the local communities must become evident during the scoping phase of the EIA.



Source: Savannah Environmental (2011: 65)

Figure 3.3 The environmental impact assessment process in South Africa

Phase 3 revolves around the following main steps (Morgan 1998):

- Initiating and organizing, focusing and structuring the study
- Carrying out substantive work on impact prediction, for example on the visual impact, impact on wildlife, noise pollution, etc.
- Evaluating the predicted impacts, developing management and decision advice
- Communication of the findings to information users
- Implementing a monitoring programme and
- Using the monitoring information for impact management and related purposes, that is instituting an environmental management programme (EMP).

At a provincial government level, the authorities are responsible for the EIA approval process, a crucial step in any windfarm development project. The detrimental aspects of wind energy recounted in Chapter 2 can all be eliminated or at least mitigated if the EIA is conducted properly, but a project can also be rejected on the grounds of the EIA revealing that too many sensitive environmental aspects are involved. The EIA process is essential in wind energy development because failure to use such a framework can lead to wind turbines of different shapes and sizes being scattered all over the landscape, as happened in India (Jessa 2012). Unfortunately, the process has many flaws, especially regarding the involvement of the public.

If the 'public' is not correctly defined, the impression is given that all members of the community speak with a single unified voice and they are consequently all treated in the same way. This generalization is usually incorrect as there are certain interest groups within a community who oppose or support windfarm development for very specific reasons (Morgan 1998; Ricci, Bellaby & Flynn 2010). In the WCR, for example, the West Coast Bird Club is opposed to windfarm development because of the detrimental impact these turbines might have on the rich bird diversity of the region. The following section explains the process of involving the public in the windfarm development process.

3.2 PUBLIC PARTICIPATION PROCESS

A cornerstone of this study is the process of involving the public in the development process, that is public participation. This is seen as a micro-level development strategy because it aims at involving the general public at grassroots level, and not only the major stakeholders, in policy making. The International Association for Public Participation (IAP2 2005) has outlined seven principles in the IAP2 framework to be adhered to for any public participation process to be successful:

1. The public should have a say in decisions about actions that affect their lives.
2. Public participation includes the promise that the public's contribution will influence the decision.
3. Public participation promotes sustainable decisions by recognizing and communicating the needs and interests of all participants, including decision makers.

4. Public participation seeks out and facilitates the involvement of those potentially affected by or interested in a decision.
5. Public participation seeks input from participants in designing how they participate.
6. Public participation provides participants with the information they need to participate in a meaningful way.
7. Public participation communicates to participants how their input affected the decision.

The bottom line for development strategies is that “no planning is really worthwhile without public participation” (Hammarlund 2002: 101). An age-old debate in policy studies is whether to follow a top-down or a bottom-up approach to development (Theron 2005). Top-down refers to the policy makers and authorities making all the decisions and imposing them on the people at grassroots level, whereas bottom-up means that the people at grassroots level are actively involved in the development process and they provide insights to the policy makers and authorities (Theron 2005). Development should preferably follow the latter model, but this is seldom the case. For windfarm developers and consultants, implementation of all seven principles of public participation is a major challenge which to a large degree can influence decision-making processes involving the success of proposed schemes.

3.3 SUCCESSFUL VERSUS UNSUCCESSFUL POLICY MAKING

Although Wolsink (2000) contends that institutional factors have a greater impact on wind energy siting than public support, institutional factors may influence public attitudes and the decision-making process to support or oppose these projects. Policy making should include aspects of “democratic planning (Holden 1998), incremental planning, collaborative planning and collaborative learning (Healey 2006), which are all aspects that advocate increased collaboration and participation in planning processes” (Wolsink 2007a: 2695). At local level people want to become involved in decision-making and policy processes and making these decisions over their heads is a direct way to provoke protests.

Mallon (2006: 35) identifies ten key features of successful renewable energy policy, namely transparency, well-defined objectives, well-defined resources and technologies, appropriately applied incentives, adequacy, stability, contextual frameworks, energy market reform, land use planning reform, and equalizing the community risk and cost-benefit distribution. According to Breukers (2007), the socio-economic institutions that are conditional to planning in the spatial planning and energy policy domains, both of which are informed by environmental policy, may constitute the main problems regarding successful implementation policies for windfarms. An example is the Dutch planning system which, according to Wolsink (2007a), is inadequate to support the type of decision making necessary for wind projects. Because the Dutch level of public acceptance of wind energy is high, the siting policy is generally not considered to be the major problem.

Wolsink's (2007a: 2697) enquiry among the members of the Wadden Vereniging¹⁰ concluded that:

The choice between sustainable energy and ecological values is not really a dilemma for the members, because the contribution of wind energy to slowing the greenhouse effect is an insignificant explanation for their support for wind power developments in the area. They assess the applicability and acceptability of wind turbines in terms of visual intrusion, landscape quality and the consequences for the chosen location.

The Wadden Vereniging's opposition to Dutch siting policy led to the failure to develop the largest wind power scheme (278 MW) ever proposed for the Netherlands because the government refused to negotiate, primarily with the Wadden Vereniging and its allies, and tried to implement the windfarm through making use of a top-down approach. It is important here to note the immense financial investment in a windfarm even before implementation. The environmental consultants in South Africa, who conduct EIAs, charge between R750 000 and R1.6 million per project (Williams 2010). If a project were not to pass the rounds of bidding and fail, as in the Netherlands case, the developer stands to lose a large amount of money.

¹⁰ The Wadden Vereniging is a Dutch environmental organization for the protection of the Wadden Sea. The Wadden Sea is an ecologically important wetland of shallows and small islands extending along the coast of the Netherlands, Germany and Denmark.

A way to avoid the Netherlands predicament is to submit to the assumption by developers and policy makers that improving the knowledge of the public will promote positive attitudes to the development of windfarms (Wolsink 2007a). Although there is nothing wrong with providing the public with information and improving their knowledge about a scheme, it is unlikely to change their attitudes. Perhaps it will help them to make informed decisions. “Planning regimes and decision-making practices that really enhance the implementation processes of renewable energy require ‘strong’ ecological modernization” (Wolsink 2007a: 2696). According to Gibbs (2000) some key characteristics of ecological modernization are:

- Open, democratic decision making, rather than technocratic and corporatist-style decision making.
- Participation and involvement, rather than planning and decision-making carried out by scientific, economic and political elites.
- Open-ended approaches that allow multiple views, rather than the imposition of single, closed-ended proposals.
- Broad changes in institutions, incorporating environmental concerns, rather than technological solutions to environmental problems.

Proper socio-political and community acceptance of windfarms is possible if the above key characteristics are adhered to. This leads to a sense of ‘community power’ not only in the provision of material benefits for the community, but also the investment in their knowledge about the area in which the wind turbines are to be deployed (Cowell, Bristow & Munday 2011). South Africa is on the right track with the IPPP and its commitment to requiring community benefits to accrue from these projects. This policy is expected to lead to “job creation, local content, ownership and management control by those classified as previously disadvantaged” members of the community (Tait 2012: 21). The rub, however, is that it may lead to a community feeling that their support has been ‘bought’ with gifts of investment without proper consultation of the public during the planning phases of the project. It is vitally important that the public be involved in the planning stage and benefit materially from the project after implementation.

The critical question on public engagement in these projects remains: Who has to trust whom? Do the public put their trust in the developers and policy makers who come to their region as strangers or do the windfarm developers and policy makers trust the local public enough to include them in their projects (Ricci, Bellaby & Flynn 2010). Trust between these parties engenders “shared cognition, reducing the thinking demands of the individual” (Mumford & Gray 2010: 2664). The issue of trust recalls Wüstenhagen, Wolsink & Bürer’s (2007) triangle of social acceptance of renewable energy innovation which asserts that community acceptance is influenced by procedural justice, distributional justice and trust.

Now that the wind energy development process involving government, developers, planners and the public is better understood, it is the opportune time to turn to the WCR’s proposed windfarm projects, and the stages of development in which the various projects are currently engaged.

3.4 THE WCR PROPOSED WINDFARM PROJECTS

The WCR is suitable for wind energy development due to the abundant wind resource available (Diab 1995). However, because of the environmental and social sensitivity of the region, especially regarding bird life, heritage conservation areas and the airfield near Langebaanweg, the Department of Environmental Affairs and Development Planning (DEA&DP) has reported that only 11% of the total surface area of the West Coast district (all six subregions) is suitable for windfarm development (Davies 2011). This conclusion is based on criteria such as physical wind resource available, visual intrusion, radar interference and presence of sites with heritage and conservation value. The WCR already hosts four, near Darling, of the eight operational wind turbines in South Africa. Hermann Oelsner, the mastermind of the Darling windfarm development and chairman of the African Wind Energy Association (AfriWEA), claims that wind energy is ‘not just a breeze’ and that the West Coast alone has the potential to generate 10 000 MW of wind power (SouthAfrica.info 2004) which is 25% of the current (2012) electricity consumption of South Africa.

There is a clear commitment by the local government of the WCR to implementing wind energy projects as they are regarded as an economic investment opportunity which features in the spatial

development framework (SDF) as “a need to harness wind energy” (West Coast District Municipality 2012b). The commitment involves, inter alia, supporting the pilot projects of Eskom, identifying preferred wind energy zones, and the collection and distribution of information on proposed windfarms in the region (West Coast District Municipality 2012b). Currently, (October 2012) there are 13 windfarm proposals for the WCR with a total of more than 700 wind turbines (see Table 3.1).

Table 3.1 Proposed windfarms in the West Coast region

	Town closest to windfarm (Name of windfarm)	Developer	Number of turbines	Expected output in MW	Status of proposal
<u>SWARTLAND SUBREGION</u>					
1	Darling (Rheboksfontein)	Moyeng Energy	43	129	Environmental authorization granted
2	Darling (Expansion of the current farm's 4 turbines)	Oelsner Group	4 + 16	26	Environmental authorization granted
3	Darling (Langefontein)	Oelsner Group	18	50	Pending application
<u>WEST COAST PENINSULA SUBREGION</u>					
4	Hopefield (Koperfontein)	Umoya Energy	40	100	Successful bid
5	Britannia Bay	Terra Power Solutions	20	30-60	Pending application
6	St Helena Bay	Just Energy	8	24-28	Environmental authorization granted
7	Vredenburg	Crenersol	22	66	Pending application
8	Vredenburg/Velddrif (Nooitgedacht)	Mainstream SA	13 (Phase 1) 50 (Phase 2)	180-271	Environmental authorization granted
9	Vredenburg (Schuitjesklip)	IPD Power	197	519	Provisionally postponed
10	Saldanha	ArcelorMittal	6	15	Environmental authorization granted
11	Paternoster	Moyeng Energy	55	91	Successful bid
<u>BERGRIVIER SUBREGION</u>					
12	Dwarskersbos	Mainstream SA	50	81-122	Pending application
13	Velddrif	IPD Power	173	519	Provisionally postponed
Totals			715	1830-2000	

The Swartland subregion has three proposed windfarms of which two have reached the level of environmental authorization. These three farms have a total capacity of 205 MW with 81 proposed turbines. The West Coast Peninsula subregion has the prospect of eight proposed windfarms totalling between 1025 and 1150 MW with 411 proposed turbines. This is the only subregion of the three with successful bids, namely the Hopefield (Koperfontein) windfarm and Paternoster windfarm of which construction is expected to commence shortly. Three other windfarm applications in this subregion have received environmental authorization, while two are pending and one has been provisionally postponed. The Bergrivier subregion has two proposed windfarms totaling to between 600 and 641 MW with 223 proposed wind turbines. The Dwarskersbos windfarm's application is pending, whereas the Velddrif windfarm has been provisionally postponed.

To date (October 2012) only two windfarms have been successful in the bidding process of the IPPP and are ready for development, namely the Hopefield (Koperfontein) and Paternoster windfarms. Five windfarms have received environmental authorization meaning that their EIA process has been approved and they are now awaiting confirmation from the bidding process. The windfarms at Vredenburg (Schuitjiesklip) and Velddrif have provisionally been postponed because either there are certain environmental issues that need to be cleared up or financial constraints have surfaced. Four windfarm applications are pending while the feasibility phase of the windfarm development process continues.

The generation capacity allocation for windfarms nationally in rounds one and two totals 1196.39 MW of which the two approved farms in the WCR will contribute nearly 200 MW. The IRP states that it will account for 1400 MW of wind energy by 2030, so that only 203.61 MW is still available to developers for bidding round three. The 11 remaining proposed windfarms in the study area have a combined capacity of about 1600 to 1800 MW implying that a number the proposals will fail during further bidding rounds. Anyhow, this study will examine the social dimensions of the proposed farms as if all of them will be approved and be implemented. The degree of public concern throughout the region about the proposals vindicates this decision. The spatial distribution of the proposed windfarms is shown in Figure 3.4.

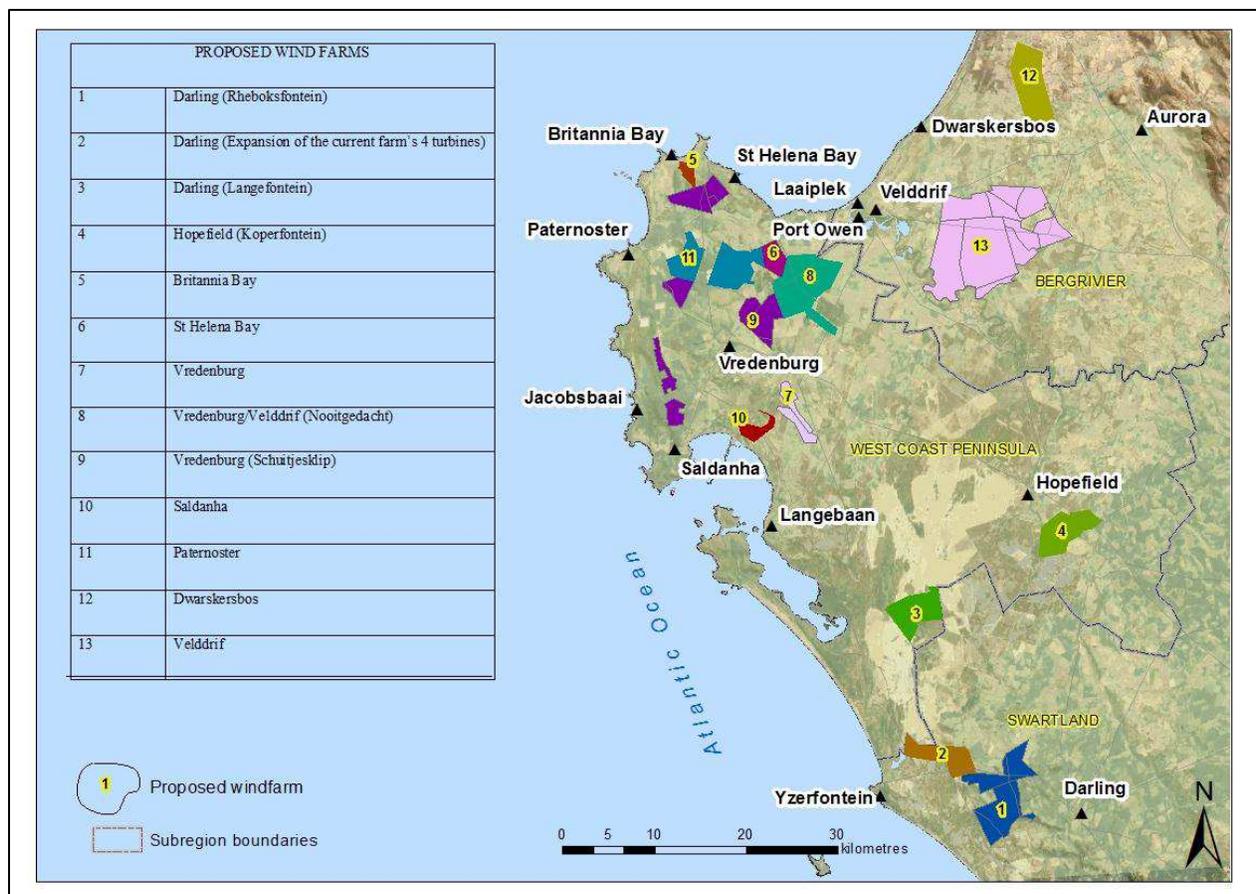


Figure 3.4 Location of proposed windfarms in the West Coast region

In Figure 3.4 the windfarm areas are the farms to which the proposals relate and where turbines may be located. The depicted farm areas will not necessarily be covered by wind turbines so that farming activities can continue around the turbines (as explained in Section 2.2.2.2).

The distribution pattern is dominated by eight projects clustered in the West Coast Peninsula subregion. This certainly raises alarm for a number of reasons. The concentration of proposed windfarms in the West Coast Peninsula subregion, characterized by wide, open plains dressed in wild flowers in spring add to the debate about farmland as production landscapes versus the tourism industry's view of the landscape as a postcard. The latter argument is relevant in the West Coast Peninsula which is a tourism-rich region along the coast of the WCR. The farm located farther inland near Hopefield will presumably not experience the same social acceptance issues as those located closer to the coast. Comments made by the registered I&APs of the

windfarms as part of the SIA process, produced the various issues about proposed windfarms in the West Coast Peninsula subregion set out in Table 3.2.

Table 3.2 Issues regarding windfarm developments: West Coast Peninsula subregion

Town closest to windfarm (Name of windfarm)	Issues
Hopefield (Koperfontein)	Visual impacts and aesthetics; site access and security of farms; social impacts and benefits; impacts on landowners and land use; erosion control and dust pollution; noise impacts; biodiversity impacts; impacts on birdlife; integration with the electricity grid; safety of turbines; aviation airspace; site footprint; construction phase time frame; and transportation and road access (UNFCCC 2011)
Britannia Bay	West Coast District Municipality see land as unsuitable for the development of 20 wind turbines and requests complete environmental management programme from developer. Too close to residential areas, especially the Golden Mile from a visual and noise pollution perspective; proposal in the flight path of birds; concern about the sense of place along the pristine coastline (Kotze 2012 pers com.)
St Helena Bay	Community benefits; public consultation; potential impact on rural sense of place (visual impacts); negative impact on tourism and potential impact on property values in the area (Arcus GIBB 2011)
Vredenburg	Not available
Vredenburg/Velddrif (Nooitgedacht)	Health concerns as a facility for autism patients lies in close proximity to the proposed windfarm. Saldanha Bay Municipality would receive carbon credits gained at Nooitgedacht, the Velddrif community will need to live with the visual impact. Detrimental effect on tourism as turbines will be placed east and west of the R399 running between Vredenburg and Velddrif. Natural vegetation disturbance; bird life impacts; soil and erosion impacts; noise impacts; health and safety impacts; alteration of current landscape character; impact on property values (ERM 2011)
Vredenburg (Schuitjesklip)	Impact on current road conditions; visual impact on cultural landscape and significant heritage resources such as Kasteelberg. Same health concerns as with Nooitgedacht windfarm also on Siyabonga Care Village where children with serious illnesses are treated – concerns about wind turbine syndrome. Public participation must include sensitive tourism receptors and all the relevant tourism industries. Loss of attractiveness of area as a retirement destination; loss of market property values; loss of biodiversity and undisturbed natural vegetation; impact on bird life; advertising and notification of windfarm troublesome (not good enough to place an advertisement in the Cape Times for only one day); noise impact on tranquil character of area (Aurecon 2011)
Saldanha	Critical Biodiversity Area concern; cumulative visual impacts; construction phase impact on roads (Aurecon 2012)
Paternoster	Critical Biodiversity Area concerns; possible impact on tourism industry; visual intrusion; avifauna impact; noise impact on nearby farming communities (Savannah Environmental 2010)

The windfarms in the Swartland subregion are located in areas where the landscape has already been influenced by wind turbines (Darling area) and where the other two proposed windfarms

are located in areas less sensitive from a tourism perspective than in the West Coast Peninsula. Concerns raised about these windfarms are listed in Table 3.3.

Table 3.3 Concerns regarding windfarm developments: Swartland subregion

Town closest to windfarm (Name of windfarm)	Concerns
Darling (Rheboksfontein)	Neighbouring property owners' concerns about visual, sound and heritage impacts and non-consultation in the process; value of adjacent farmland properties; electromagnetic interference (Savannah Environmental 2011)
Darling (expansion of current farm with 4 turbines)	Avifauna impacts; public involvement issues; noise; unclear on community benefits; turbines' distraction of drivers on road from Darling to Yzerfontein; cumulative effect of windfarms so close to each other (Environmental Evaluation Unit UCT 2010)
Darling (Langefontein)	Same concerns and source as expansion of current Darling windfarm.

The proposed windfarms in the Bergrivier subregion are also farther from areas where the scenic value of the landscape plays an important role in tourism. Comments made by I&APs on these farms are presented Table 3.4.

Table 3.4 Concerns regarding windfarm developments: Bergrivier subregion

Town closest to windfarm (Name of windfarm)	Concerns
Dwarskersbos	Risks to tourism; too close to Rocher Pan Nature Reserve (ERM 2010)
Velddrif	Not available

The concerns raised are not necessarily region specific, rather project specific. However, a number of these concerns stem from the characteristics of the WCR, for example the sense of place associated with the pristine coastline of the West Coast Peninsula subregion. The secondary information reported here provides sufficient reasoning for examination of the relationship between windfarms and place attachment, landscape interference and tourism. Chapter 4 reports the results of the primary data collection process on the examination of this relationship.

CHAPTER 4: RESULTS AND DISCUSSION

This chapter reports the findings of the study based on analyses of primary-sourced information collected through the questionnaire survey and supplemented by knowledge gained from semi-structured interviews, informal discussions, observation and group discussions. The secondary-sourced information presented in Chapter 3 is also drawn into the examination in order to help explain and interpret the results. Because the public's perceptions and 'soft' issues in human geography are not eminently analysable by statistical methods (Dorling 2003), frequency distributions and diagrammatic representations are used to present results for close examination. The data analyses were performed with SPSS and ArcGIS and visual representations created in Excel. The chapter starts by exploring the environmental and energy-related knowledge of the respondents and then details the findings about the three perspectives of inquiry of the study, namely the place attachment, windfarm interference with landscapes and the effect of windfarms on tourism in the WCR.

4.1 RESPONDENTS' ENERGY-RELATED ENVIRONMENTAL KNOWLEDGE AND AWARENESS

It is essential to determine the extent of respondents' knowledge about environmental and energy issues before enquiring about their support for or opposition to proposed windfarms. This is done because if respondents have no knowledge of energy resources and the associated environmental impacts of energy generation their answers on support for or opposition to windfarms will represent uninformed guesswork. This section focuses on the questions in Section B of the questionnaire up to and including Question B9.

4.1.1 Sustainability issues

This enquiry was initiated by asking respondents (Question B1) whether issues about the sustainability of the natural environment are important to them or not. Overwhelmingly, 98% of the residents and the visitors alike indicated that these issues are important to them. Only 2% of the residents were unsure and 2% of the visitors answered that they were not important. Because

actions speak louder than words respondents were asked what they do to reduce their impact on the environment (see Figure 4.1). The most prominent actions taken by both groups are to recycle waste (39%), attempts to save electricity (27%), use of solar geysers (10%) and the catching of rainwater for home usage (4%). Other actions mentioned are the use of public transport in Cape Town, bicycling instead of using a car, using environmentally-friendly products, composting organic waste and planting indigenous species. Recycling and attempts to save electricity clearly dominate all other actions taken to reduce environmental impacts, but overall a commitment by all respondents exist to reduce their environmental impacts.

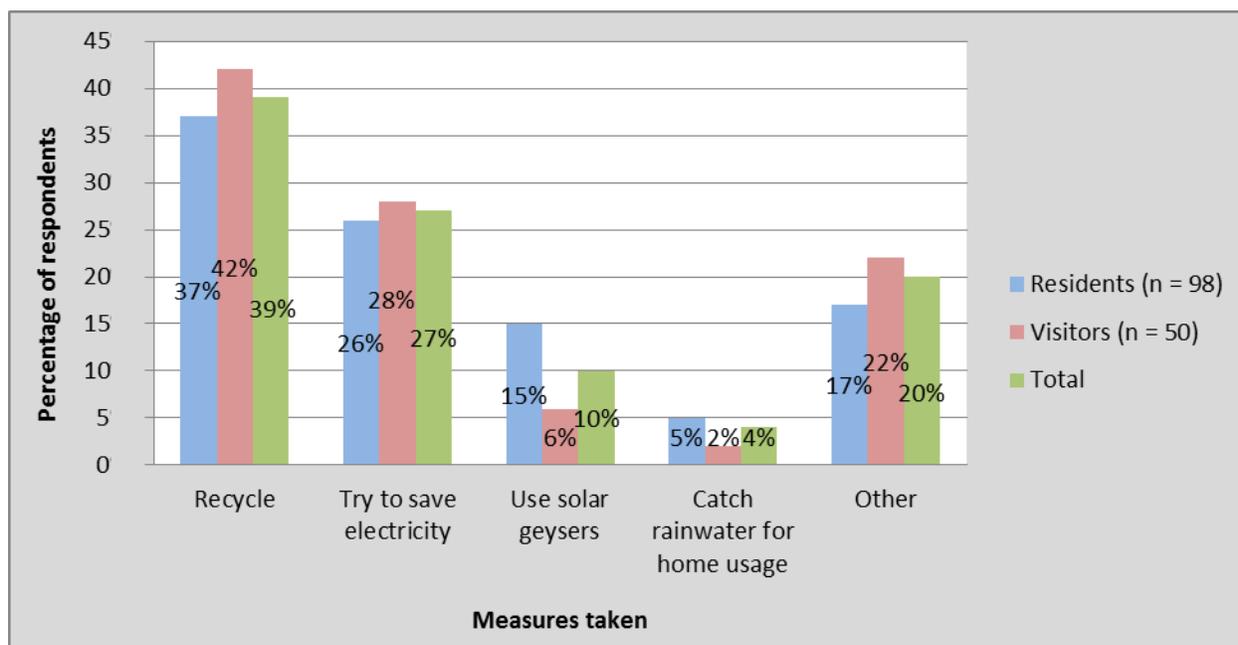


Figure 4.1 Actions taken by WCR respondents to reduce environmental impacts

Respondents were given four statements (Question B1.1) about environmental or natural resource issues and asked to indicate how realistic each one is (Table 4.1). The issues were arranged from most well known (or very real in people's minds) to those that are debatable and to many people not very real (because they are not really visible or do not affect us at this stage). The results are given as index values by weighting the answers according to the degree of realism, namely: very real (3), somewhat real (2), neutral (1), imagined (-1), non-existent (-2) and then totalling the weights in each category. The total of each category was then divided by the total respondents multiplied by 3 (as if all respondents indicated the issue to be very real) and expressed as an index value with 100 as the highest value.

Table 4.1 Realism index (according to weighted ratings) for environmental or energy-resource issues according to WCR respondents (100 = very real)

Issue	Residents	Visitors	Total
Pollution caused by non-renewable energy sources	83	91	86
Exhaustion of fossil fuels	77	77	77
Increases in production of CO ₂	83	83	83
Climate change	79	78	78

The results are quite similar for both respondent groups and the accumulated total. Pollution caused by non-renewable energy sources is perceived to be the most real issue, followed by increases in the production of CO₂, climate change and the exhaustion of fossil fuels. This main finding sets the scene for the responses supporting or opposing windfarms because wind turbines do not produce any pollution. It is assumed that respondents who regard pollution by non-renewable energy sources to be a very real issue will support the development of windfarms as a non-polluting renewable energy source. Given that all the index values exceed 76, indicates that respondents see these as real issues and it is a further indication of their familiarity with issues related to energy production and limited natural resources.

4.1.2 General energy resource and windfarm knowledge

Although the respondents achieved relatively high levels of education (recall Figure 1.14(d)), one cannot assume they are knowledgeable about energy resources. To determine the respondents' knowledge about renewable and non-renewable energy sources, they were asked (Question B2) to classify coal, wind, solar, oil, nuclear, natural gas and hydro-derived energy as renewable or non-renewable. With the exception of nuclear and natural gas sources, 95% of respondents correctly distinguished between the various renewable and non-renewable energy resources. In contrast, nuclear energy and natural gas were incorrectly classified by 55% of the respondents as renewable resources. The implication of the respondents' differentiating abilities is that their opinions on windfarm development can be accepted as quite reliable.

To determine and examine the respondents' arguments for and against windfarms, one must establish what they know about windfarms. Consequently, they were asked (Question B3)

whether they know what a windfarm is and they were required to explain what they consider a windfarm to be if they answered ‘yes’. Figure 4.2 shows the results.

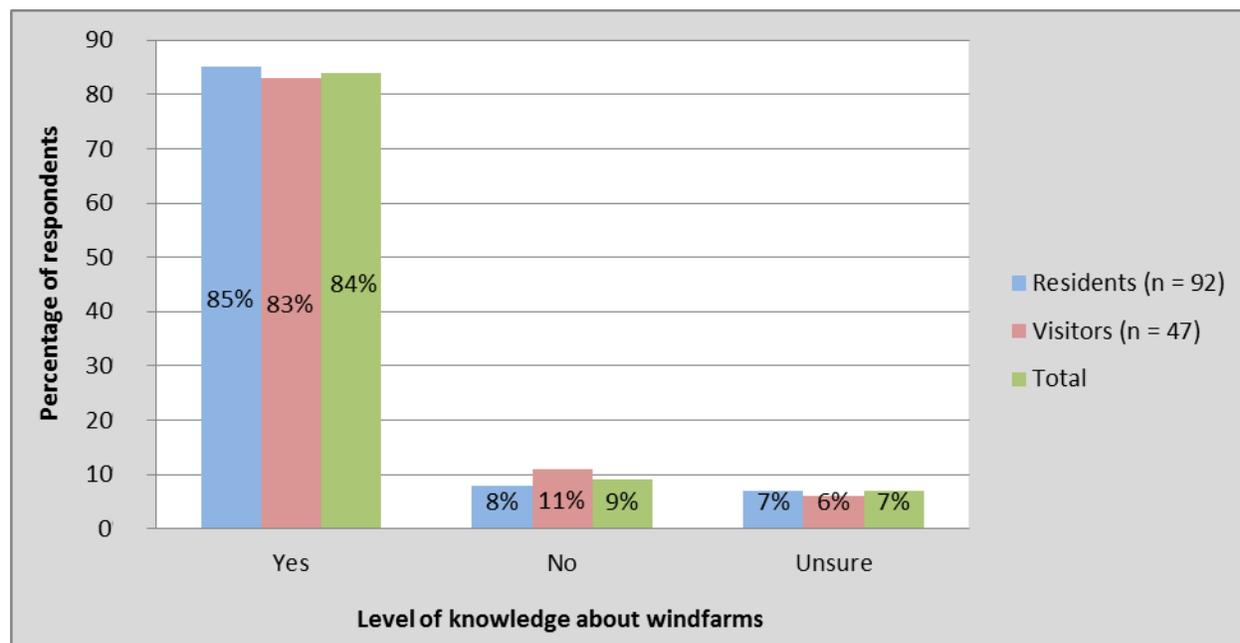


Figure 4.2 Respondents’ knowledge of what a windfarm is

Eighty-five per cent of the residents and 83% of the visitors know what a windfarm is and could accurately describe what it is. Of all the respondents nine per cent did not know what a windfarm is and seven per cent was unsure. This means that 16% of respondents did not know or were unsure about what a windfarm is when they started completing the questionnaire. The belief sampling model was included in the questionnaire to specifically address this issue as explained in Chapter 1.

Proceeding to the topic of support for or opposition to windfarm development in the WCR, the questionnaire was designed to give respondents information about the advantages and disadvantages of wind energy to enable them to give informed answers when asked in subsequent questions whether they support or oppose windfarm developments in the WCR.

Respondents were presented with ten advantages (Question B4) to rate on a Likert¹¹ scale how

¹¹ A Likert scale measures attitude through direction (agree/disagree) and intensity (strongly/not) (Likert 1932).

important or not each advantage is. The responses were weighed according to the following scale: unimportant (-2), low importance (-1), neutral (1), important (2) and very important (3). The total of each category was then divided by the total respondents multiplied by 3 (as if all respondents indicated the advantage to be very important) and expressed as an index value with 100 as the highest value as shown in Table 4.2.

Table 4.2 Respondents' weighted ratings of the advantages of wind energy (100 = very important)

Advantage of wind energy	Residents (n = 98)	Visitors (n = 47)	Total
Produces no atmospheric emissions	90	91	91
No air pollution	89	91	90
Increases electricity supply	86	87	86
Resource (wind) used to generate electricity is free	78	76	77
Land parcels used for wind turbine installations can still be used for farming	68	74	70
Conserves fossil fuels for future generations	65	66	65
Wind turbines are symbols of commitment to renewable energy	52	64	56
Produces economic gain for communities	46	72	55
Creates new employment opportunities	45	72	54
Increases tourism activities (as attractions)	5	24	5

The advantages of no atmospheric emissions and no air pollution were rated as the top two advantages of wind energy. Respondents considered the issue of pollution caused by non-renewable resources to be very real (recall Table 4.1) and this is confirmed by their rating these two advantages of wind energy to be the most important. The second and third most important advantages both relate to electricity supply. Given the escalating electricity prices and the issues of unreliable supply in South Africa, it is not surprising that respondents judge these advantages to be crucially important. Agricultural land is held as a valuable resource in South Africa so the commendable advantage that land parcels used for wind turbine installations can still be used for farming. The sixth place accorded to the conservation of (polluting) fossil fuels for future generations as an important advantage is paradoxical in light of their top ratings given to the non-polluting nature of wind energy. The last four advantages show considerable differences

between the appraisals by the residents and the visitors. Visitors who will not experience the windfarms near to where they live are more likely to see the wind turbines as symbols of commitment to renewable energy, whereas the residents who will be living in close proximity to the turbines do not feel as strongly about this advantage.

The residents do not believe as strongly as the visitors that windfarms will produce economic gains for the communities. This might be attributable to experiences by residents with the developers and issues of trust between communities and developers as elucidated by Wüstenhagen, Wolsink and Bürer's (2007) triangle of social acceptance of renewable energy innovations (recall Figure 2.3 on page 43) . The visitor responses indicate an anticipation that windfarms will create new employment opportunities, whereas the residents feel far less strongly about this advantage. An unexpected result is the rating of the advantage that windfarms increase tourism by being attractions. Both groups rated this as the least important advantage suggesting that wind turbines in the landscape are not a tourism attraction and therefore not an advantage of wind energy exploitation. Some respondents gave 'other' advantages they find important, namely that wind turbines produce relatively little noise, wind energy is safer than nuclear or coal-derived electricity, wind energy starts producing quickly after installation, and the addition of wind energy may reduce electricity costs in South Africa.

To contrast the advantages, respondents were also offered seven disadvantages and asked (Question B6) to rate on a Likert scale the degree of disturbance created by wind energy. The disadvantages were weighed as not disturbing at all (-2), somewhat disturbing (-1), neutral (1), disturbing (2), very disturbing (3). The total of each category was divided by the total respondents multiplied by 3 (as if all respondents indicated the disadvantage to be very disturbing) and expressed as an index value with 100 as the highest value. The results are given in Table 4.3. One can deduce from the lower ratings of the disadvantages that respondents do not find the disadvantages to be greatly disturbing, the high importance ratings of the advantages clearly overshadowing the low disturbance ratings of the disadvantages.

Table 4.3 Respondents' weighted ratings of the disadvantages of wind energy (100 = very disturbing)

Disadvantages	Residents (n = 98)	Visitors (n = 47)	Total
Wind energy can be more expensive than other sources	36	22	31
Turbine blades can harm flying wildlife	25	20	28
Wind turbines may impair radio and television signals	28	17	24
Wind turbines might deter tourists from visiting certain areas	28	15	23
Wind energy potential varies seasonally and daily	22	22	24
Wind turbines may be noisy	25	3	16
Wind turbines are perceived as ugly and so detract from the scenic value of natural landscapes	9	12	2

The disadvantage that wind energy is possibly more expensive than other energy sources was rated as the most disturbing. This is not surprising as electricity costs in South Africa are increasing rapidly, therefore respondents are adverse to alternative or additional electricity sources that might further increase the cost of electricity. The second most disturbing disadvantage is the harmful effect of turbine blades on flying wildlife. The WCR has a vast variety of bird species and Jenkins (2011) and Diamond (2012) contend that it is not the smaller, more common birds which are affected by wind turbines, but the bigger, endangered species which, in the WCR, are blue cranes, Cape raptors and black harriers. It is therefore not unexpected that respondents found this disadvantage disturbing. Jenkins (2011) points out that wind energy exploitation can influence bird life in three ways, namely bird collisions with turbine blades, displacement of birds to other areas, and disturbance of natural habitats and breeding grounds. The impact of wind turbines on birds is usually very site specific, for example only one turbine out of 200 may lead to bird mortalities (Oelsner 2012). Proper planning and monitoring during the EIA phase of a project can minimize or even eliminate the problem.

The disadvantage of wind turbines impacting on radio and television signals was ranked as the third most disturbing disadvantage. The WCR encompasses some rural and remote areas where radio and television broadcasts are important sources of information and entertainment so underlining evidence why this disadvantage is deemed so disturbing to some residents and visitors. From a tourism point of view it is worrying that respondents see the disadvantage that

wind turbines might deter tourists from visiting certain areas as the fourth most disturbing. Note, however, that the overall index for this disadvantage is very low (23) and that visitors ranked it even lower (15) than the residents (28). The low index value also indicates that respondents do not necessarily believe that wind turbines will not deter tourists from visiting certain areas, but by ranking it fourth most disturbing it is more serious than the three issues of wind energy potential varying seasonally and daily, noise pollution by wind turbines and wind turbines being perceived as ugly and so detracting from the scenic value of the natural landscape.

Residents rated the disadvantage that wind turbines may be noisy to be far more disturbing than visitors do. This is probably attributable to residents living in close proximity to the turbines whereas visitors only pass by and will not experience the noise levels to the same extent as the residents. An unexpected result is that overall the respondents rated the disadvantage of wind turbines being perceived as ugly and detracting from the natural landscape as the least disturbing disadvantage. This contradicts the international literature that agrees that the visual impacts of windfarms are undoubtedly the most controversial issue in windfarm development (Pasqualetti 2000; 2001b).

Against this background of the advantages and disadvantages of wind energy and the presence of wind turbines and the respondents' knowledge of energy resources and environmental issues, the next section deals with the respondents' expressed support for or opposition to windfarms in the WCR.

4.1.3 Acceptance levels of windfarms

Resident respondents were asked (Questions B5, B7 and B8) whether they would support the development of windfarms on three different locational levels, namely South Africa in general, the West Coast region and in or close to the town they reside in. Figure 4.3 shows the results of the residents' responses.

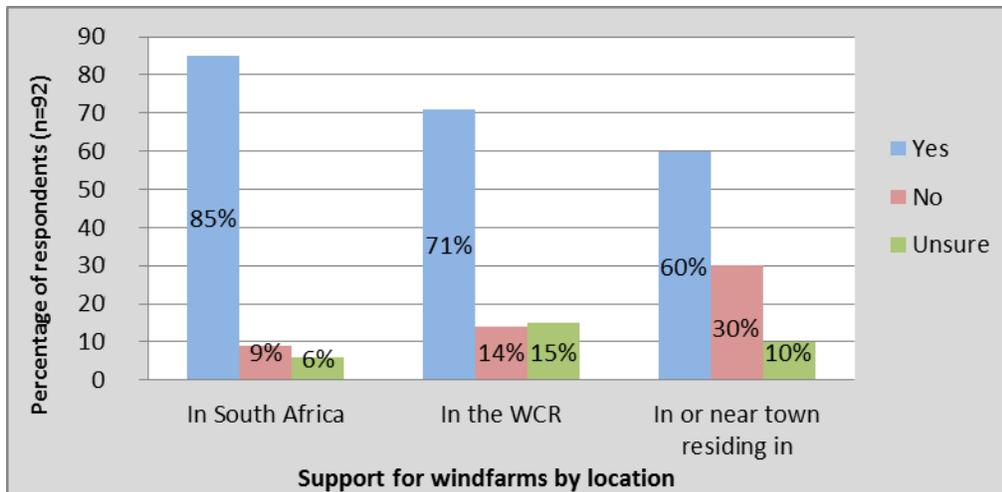


Figure 4.3 Residents' support for windfarm development

Almost all of the residents are in favour of the development of windfarms in South Africa, but as these developments move closer to home, the support decreases. But it is noteworthy that more than half of the residents (60%) expressed that they would support the development of windfarms in or close to the town they reside in. The significance of this latter finding is discussed in the context of place attachment in Section 4.2. More than one-quarter (30%) of residents still indicated that they would not support the development of windfarms in or near the town they reside in. This is a significant difference from the opposition on the other two levels.

Visitors were only questioned about the national and regional levels (Questions B7 and B8) as they do not reside in any towns in the WCR. Figure 4.4 shows the results.

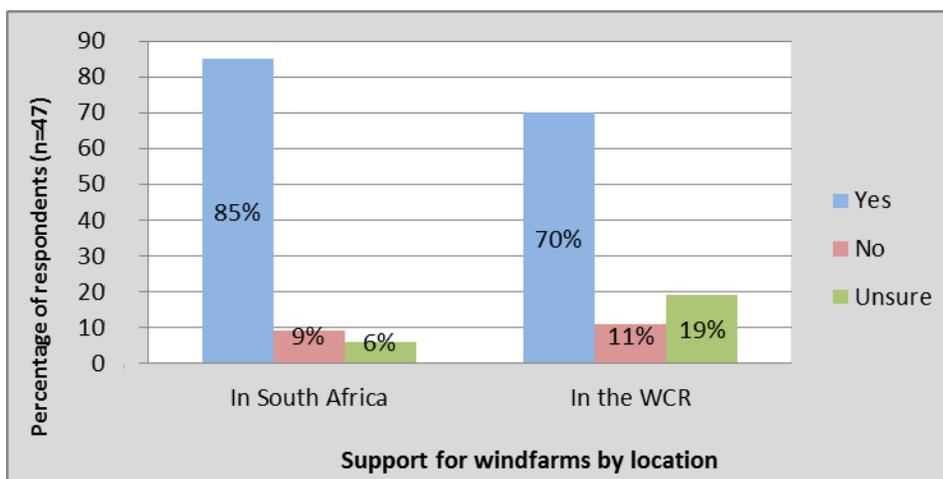


Figure 4.4 Visitors' support for windfarm development

Visitor levels of support for windfarms in South Africa was almost identical to that of residents, although their support for windfarms in the WCR was slightly higher as was their share of respondents being unsure whether or not they support the development of windfarms in the WCR. These findings are explored further in Section 4.4 which deals with the relationship between tourism and wind farm development in the WCR.

The levels of support are investigated here to establish if there is a link between the support for windfarm development in the WCR and respondents' concerns about the sustainability of the natural environment. Given that 98% of both groups of respondents reported that issues related to the sustainability of the natural environment are important to them, may reveal the 'type' of people who reside in or visit this region by virtue of their environmental awareness and behaviour regarding the sustainability of the natural environment. From a tourism perspective the sustainability of the natural environment by visitors to the WCR may suggest that ecotourism deserves high priority in the region. It is probably safe to assume that the respondents support the development of windfarms in the WCR because wind energy causes no or very little pollution of the natural environment. Figure 4.5 can be used to assess the contention that the resident and visitor respondents to whom the sustainability of the natural environment is important would support the development of windfarms in the WCR.

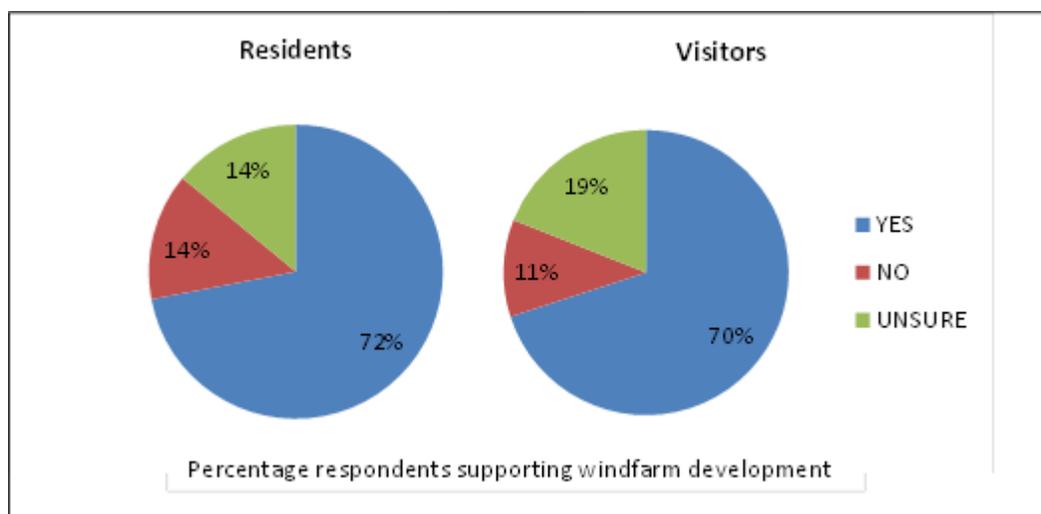


Figure 4.5 Support for windfarm development in the WCR by respondents' who are concerned about the sustainability of the natural environment

Seventy per cent or more of the residents and visitors concerned about issues relating to the sustainability of the natural environment support the development of windfarms in the WCR. It is noteworthy that among the respondents who are concerned about the natural environment are those who do not support the development of windfarms in the WCR. The incidence of respondents who are unsure is perplexing as one would expect environmentally-aware respondents to have a more explicit opinion. The energy-related environmental knowledge and awareness of respondents as well as their levels on support for the development of windfarms have been explored. The following section discusses the residents' place attachment and their views on windfarm development in the WCR.

4.2 PLACE ATTACHMENT OF RESIDENTS OF THE WCR

Place attachment is a complex construct as manifested in the tripartite model of Scannell & Gifford (2010) which involves persons, places and processes. To set the scene for exploring the residents' degree of place attachment to the WCR they were asked to rate their knowledge of the region. Figure 4.6 illustrates the results.

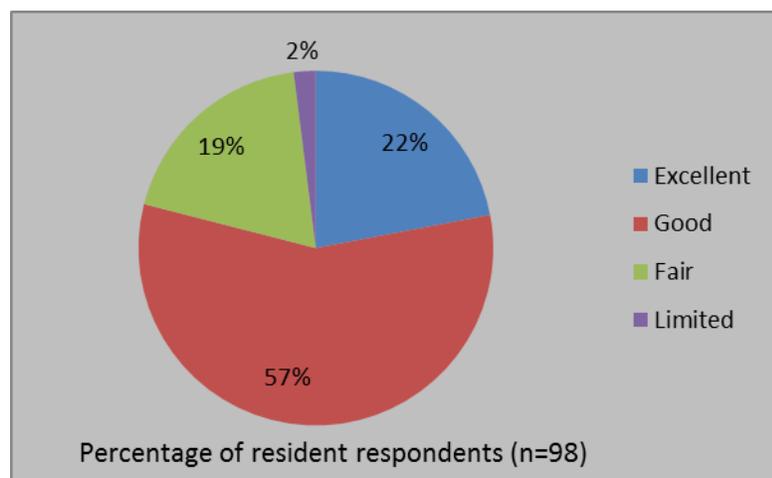


Figure 4.6 Residents' knowledge of the West Coast region

Not unexpectedly, 80% of the residents rated their knowledge of the region as good to excellent and the others as fair to limited. None of the residents rated their knowledge of the region as poor. One can safely assume that the resident respondents know the WCR well enough to

comment reliably on the proposed windfarm developments and other issues about which they were questioned.

While not underestimating the complexity of place attachment, residents were asked (Question A3) about the degree of their personal attachment to the WCR by indicating on a Likert scale, their agreement or disagreement with seven statements about their attachment to the region. Figure 4.7 displays the responses. It is clear that residents have a strong sense of place identity which equates to an attachment to the region with 95% indicating explicitly that the WCR is very special to them and 93% that they are very attached to the region. Similarly, 90% miss the region when they are absent from it for too long and 81% are more satisfied with living in the WCR than anywhere else, both affirming their place dependence. Place identity and place dependence are both constructs of physical place attachment (Jorgensen & Stedman 2001; Kyle et al. 2004). All seven statements drew neutral responses varying between 3% and 25% which reflect the uncertainty of some respondents about whether they experience any place attachment to the WCR, especially place dependence as the highest proportion (25%) of neutral responses occurs in this category. A maximum of 5% of the respondents indicated that they disagree/strongly disagree with the statements thus providing reassurance that the degrees of place attachment of the responding residents are reliable. For five of the seven statements the strongly agree responses outstrip the agree responses thereby attesting that, overall, residents do not just experience degrees of attachment, but that they have ardent feelings about their ties with the WCR. These intense degrees of attachment by residents to their region should help explain the reasons they have for protesting windfarm development, for example disquiet about disturbances to the scenic value of the landscape.

The number of years respondents have resided in the WCR ranges from one to 64 years with an average of 11 years and 35% have been living there for 11 or more years. This tells us that people tend to reside in this region quite long. When asked (Question A6) if they had an opportunity to live elsewhere in or outside the WCR, while maintaining the same standard of living, whether they would move, only 10% said that they would leave the region. More than four out of five (87%) of the resident respondents are homeowners in the town they reside in. This, together with the reported disinclination to move away from the region,

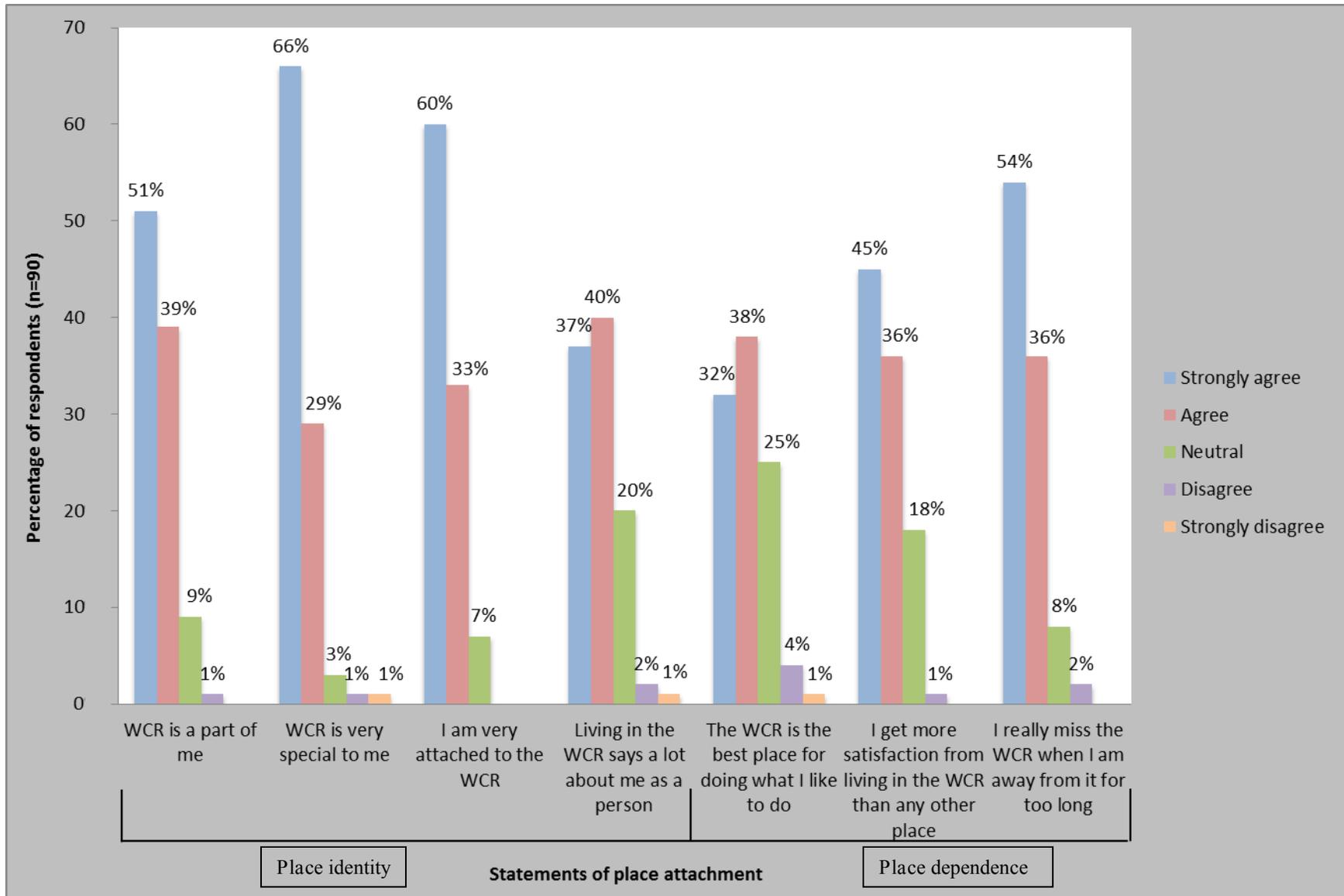


Figure 4.7 Residents' attachment to the West Coast region

strongly suggests intent to reside longer in the WCR, which in turn is no doubt an indication of attachment to the region.

Residents were asked to report what they enjoy most about living in the town they live in. The responses are given in Table 4.4 where they are categorized according to Scannell & Gifford's (2010) tripartite model of place attachment (recall Figure 2.4) to establish whether the person, place or process dimensions are significant in the place attachment of residents to the town they reside in.

Table 4.4 Reasons why resident respondents enjoy living in their town of residence

Reasons for enjoyment of living in a specific town (number of respondents = 93)	Dimension of the tripartite model of place attachment		
	Person (% response)	Place (% response)	Process (% response)
Culture of the people and cohesiveness of the community	16	–	–
Tranquility and small-town atmosphere	–	41	–
Features and beauty of the natural environment	–	30	–
Features of the built environment	–	5	–
Safety and freedom characterize the quality of life	–	–	8

The place dimension, composed of the social and physical environments, dominates the place attachment of the residents to their towns. The person dimension relates to the cultural cohesiveness of the townspeople that makes them feel attached to it. The process dimension, witnessed by the safe and free quality of life, relates to the behavioural component in the process of place attachment. All three of the dimensions of the tripartite model of place attachment are present in the WCR residents place attachment responses with the respondents mainly attached to the place dimension of the model.

Another method used in the study to establish the place attachment of residents to the WCR is map-based participatory GIS (PGIS). Residents were asked (Question E1) to indicate up to three places on a map of the WCR they regard as special places (Figure 4.8) and to give reasons for

their choices. This allows comparison of the results of the scale-based and map-based place attachments. Scale-based attachment was tested with a Likert scale using the seven statements of which the results are shown in Figure 4.7. Map-based place attachment measures provide place-specific information on where landscape bonds exist (Brown & Raymond 2007). This enables planners and policy makers to directly link the place attachment of people to geographic information where it exists in the landscape. Ninety-one per cent of the 179 places the residents marked as their special places are located in areas close to the coast.

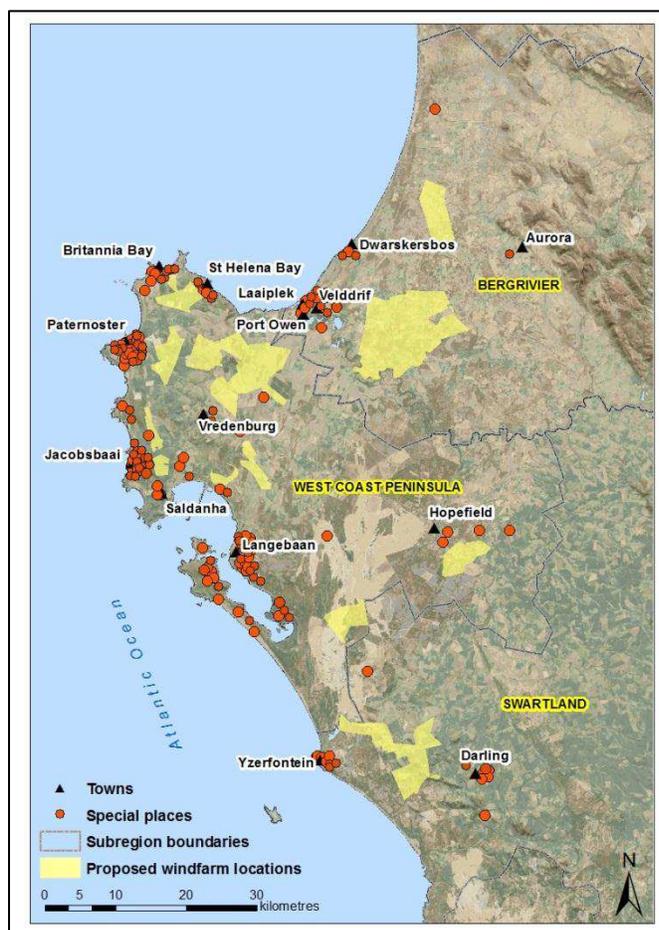


Figure 4.8 Location of places regarded as special by residents

Specifically, 80% of the special places are in the West Coast Peninsula subregion, 11% in the Bergvriër subregion and 9% in the Swartland subregion. As most of the resident respondents reside in the West Coast Peninsula subregion, the high percentage of special places here are not surprising. Only 8% of these places coincide with the areas of proposed windfarm developments, probably because farmland on which a windfarm is proposed to be located does

not easily qualify as a special place, rather it is coastal towns with their tranquil characteristics that do. This does not mean that these coastal special places would escape the detrimental effects of windfarms as the latter's visual impacts can be experienced over some distance from the windfarms. The special places that are collocated with proposed windfarms are in the St Helena Bay area where the proposed windfarms are closer to the coast and residential areas. Of the 179 marked special places, 141 were allocated reasons by the respondents on why they deem these places to be special. The reasons provided by residents are contextualized in the framework of Scannell & Gifford's (2010) tripartite model of place attachment in Table 4.5.

Table 4.5 Residents' reasons for identifying places as special

Reasons for identifying places as special (number of reasons = 141)	Component of the tripartite model of place attachment		
	Person (% response)	Place (% response)	Process (% response)
Place of residence	–	–	16
Past experience	–	–	4
Significance of the built environment	–	12	–
Significance of the natural environment	–	41	–
Tourism attractions	–	12	–
Beautiful scenery and tranquility	–	10	–
Cultural uniqueness of people	5	–	–

Their places of residence were selected by some respondents as being special to them. This reasons falls within the process dimension of the tripartite model as the knowledge and meaning of the place being their home lies in the cognition component. Past experiences (memories) were also identified as a reason for choosing the special places. As Tuan (1974) has argued, places are meaning centres based on experience, therefore past experience of a place can lead to an intense feeling of attachment to that place. Past experience also resides in the cognition component of the process of place attachment. The significance of the built environment, for example the white-washed building styles of Paternoster, was given as a reason for identifying 12% of the special places. The most significant reason for identifying special places is the natural environment of the WCR with 41% of the special places being classified according to their natural features.

Tourism attractions were identified as special places by 12% of the respondents. The beautiful scenery and tranquility of the WCR accounted for 10% of the special places. These are characteristics of the physical or natural component of the place dimension in the tripartite model. The presence of culturally-distinguished people, that is the cultural component of the person dimension, is also a reason from nomination as a special place. From the responses to both the scale-based and map-based place attachment measures, it is clear that all three components of Scannell & Gifford's (2010) tripartite model of place attachment are covered in defining the place attachment of residents to the WCR. It has been established that resident respondents experience strong place attachment to the WCR.

It was assumed that the strong place attachment of residents will stimulate a desire to preserve the natural character of the region by opposing the proposed windfarm developments, but examination of Figure 4.3 shows that 71% of resident respondents support the development of windfarms in the WCR and 60% in or close to towns they reside in. This presents the anomaly that although residents feel strongly attached to the WCR, they nevertheless support the development of windfarms in the region. Furthermore, only a small percentage (14%) of the residents recorded that they oppose windfarm development in the WCR, yet far more (30%) oppose such developments in or close to the town they reside in. Opposition to windfarms by residents is often regarded as NIMBYism.

The research aims to examine whether NIMBYism plays a role in the opposition voiced by residents to proposed windfarms in the WCR or in or near the towns where they live. NIMBY in this context refers to a decrease in levels of support for windfarm developments the closer they are to where the respondents live. The following paragraphs examine NIMBYism regarding windfarm development in South Africa in general, in the WCR and in or near the town respondents reside in based on the answers to Questions B5, B7 and B8. The results displayed in Figure 4.3 on page 88 help to examine the NIMBY phenomenon at three scale levels (national, regional and local).

Eighty-five per cent of the residents are in favour of the development of windfarms in South Africa, but support for windfarms wanes the closer they are to where the respondents live.

Opposition to windfarms therefore increases with decreased distance to where respondents live, where support is only 60%. A relatively high percentage (30%) of residents indicated they are unsure whether to support windfarm development in or near to the town they reside in. The uncertainty can be attributed to a lack of exposure to windfarms in the WCR. The Darling windfarm with four turbines is located in the WCR, but the number of turbines on the proposed farms ranges from four to 173 per farm. Uncertainty by some residents probably stem from their not knowing how many turbines are involved in each development. The uncertainty can also be attributed to the density of windfarms proposed for the WCR in the sense that it will not only be one farm, but 13 proposed for the region. Opposition to windfarms doubled from the regional level (14%) to that regarding windfarms in or near the town a resident lives in (30%). Despite the opposition to windfarm development by residents, 60% expressed support for the development of windfarms in or close to the town in which they reside.

The windfarm industry is quick to ascribe opposition to windfarm developments as NIMBYism. In the WCR and considering the specific views of this group of resident respondents, NIMBYism may not be a sufficient explanation for opposition on its own. Were NIMBYism the only explanation for opposition to windfarms in the WCR, the residents with strong degrees of attachment to the region would most likely not have supported local windfarm development. Wolsink (2012, pers com) has warned that the continued use of NIMBY as an explanation is a counterproductive attitude among authorities and developers and in practice it may be an insult to people in local communities. If the opposition is not NIMBY alone, what is it? Table 4.6 marshalls the reasons given by residents for their opposition to and support for windfarms in the WCR as elicited by Questions B7.1 and B8.1.

This variety of reasons underlines that opposition to proposed windfarm developments in the WCR is not simply a NIMBY response. These concerns and issues correspond with those raised in the SIA processes as discussed in Section 3.4. The forms of opposition against windfarm development in the WCR are classifiable as resistance types A, C and D of Wolsink's (1994; 2000) four types of objections to windfarms (recall Table 2.1).

Table 4.6 Reasons given by resident respondents for supporting and opposing windfarm developments in the West Coast region

Opposition	Resistance type ¹	Support	Uncertain response
<ul style="list-style-type: none"> • Windfarms can be developed in less-sensitive areas 	A	<ul style="list-style-type: none"> • Renewable source of energy • Aids electricity supply • Supply electricity to rural areas • Job creation • Area has sufficient wind resource, should be used • Would support one or two farms, but not 20 as proposed • Know advantages after questionnaire completion (ten in Question B4) • Successful in the Netherlands • Farming not as intensive everywhere, area can still be used for farming • If outside town and far away from tourist routes • Symbol of commitment to a sustainable future • Better than coal or nuclear energy • Turbines are something interesting to see • Focus of coastal towns toward the sea and not the inland landscape • Economic advantages 	<ul style="list-style-type: none"> • Not sure about requirements and process followed • Disturb scenic value of landscape • Should not be visible from towns or beaches • Not sufficiently knowledgeable about windfarms • Depends on specific siting • Turbines should be maintained • Unsure about all the negatives
<ul style="list-style-type: none"> • Region would lose its unique character 	A		
<ul style="list-style-type: none"> • Plenty of open space available away from residential areas 	C		
<ul style="list-style-type: none"> • Would spoil region's tourism income 	C		
<ul style="list-style-type: none"> • Spoils or disturbs scenic value of landscape 	C		
<ul style="list-style-type: none"> • Disadvantages mentioned in questionnaire (seven in Question B6) 	C		
<ul style="list-style-type: none"> • Noise pollution 	C		
<ul style="list-style-type: none"> • Technology proposed is 'too old' 	D		
<ul style="list-style-type: none"> • Proposed developments too close to beach 	D		
<ul style="list-style-type: none"> • Existing turbines near Darling do not look or sound good 	D		
<ul style="list-style-type: none"> • Lights at night disturbing 	D		
<ul style="list-style-type: none"> • Health impact (wind turbine syndrome) 	D		

Note: ¹Refer to Table 2.1 for an explanation of these resistance types

Source: Questionnaire survey, 2011

Resistance type A refers to a positive attitude towards wind power, combined with opposition to the construction of a windfarm in one's own neighbourhood and is probable NIMBYism. Resistance type B is the rejection of and opposition to a windfarm in the neighbourhood because one rejects wind turbine technology in general which is sometimes called not-in-any-backyard

(NIABY). Resistance type B is not represented by any of the reasons, but it is evident in the 6% of respondents who indicated they would not support windfarms in South Africa, thereby rejecting wind energy in general. Resistance type C is present where respondents have a positive attitude towards wind power which becomes negative as a result of discussions around the proposed construction of a windfarm. Resistance type D occurs where particular projects are considered faulty without rejection of the technology as a whole as a negative attitude to the planning procedure of a particular windfarm, rather than wind power as a whole.

No doubt, some degree of NIMBYism will always be present in windfarm development, so that the notion cannot be ignored, but it remains a complex concept, the contribution of which to the discourse on support for or opposition to windfarms remains open to debate. The comment made in an interview that “go put the turbines in the Karoo, there is nothing there” reasserts the ever-presence of NIMBYism where the respondent was unable to give sufficient reasons for objection and simply stated that the windfarm should be sited elsewhere and not in his surroundings. This raises the caveat not to regard all opposition to windfarms as the result of a NIMBY attitude as this obscures the actual causes of opposition.

The degree of attachment of residents to the WCR and their support for or opposition to the proposed windfarm developments have been discussed as well as the extent to which the residents’ opposition to proposed windfarms can be regarded as NIMBYism. It was established that a strong degree of place attachment exists, but the majority of resident respondents still support windfarm development in the WCR. NIMBYism does exist in the opposition of WCR residents to the proposed windfarms, but specific reasons for the opposition rule out NIMBYism as a sole factor. According to Stedman (2003), place attachment is not just a social construction because the physical environment also has an influence on place attachment. The next section proceeds to consider the second component of the WCR study, namely windfarm development and the associated landscape interference.

4.3 LANDSCAPES OF THE WCR

The WCR is known for its simple, undeveloped and mostly natural landscapes illustrated in Figure 4.9. Potential disturbances of these fine and prized landscapes by windfarm development are undoubtedly a grave concern to various stakeholders in the WCR. This section first considers how special the respondents regard the physical landscape of the WCR and then explores whether any connection exists between the respondents' treasuring of the physical landscape of the WCR and their response to the development of windfarms in this landscape.



Figure 4.9 Picturesque landscape in the West Coast region

Windfarms possess the ability to radically transform natural landscapes into landscapes of power or energy-production landscapes that alter the scenic value of the landscapes (Pasqualetti 2000). The aesthetic value of a landscape is however a matter of individual opinion so that the special

values associated with specific landscapes will be perceived differently by people. Respondents, residents and visitors, were asked to indicate how special they consider the physical landscape of the WCR to be (Question C1). Figure 4.10 displays their responses.

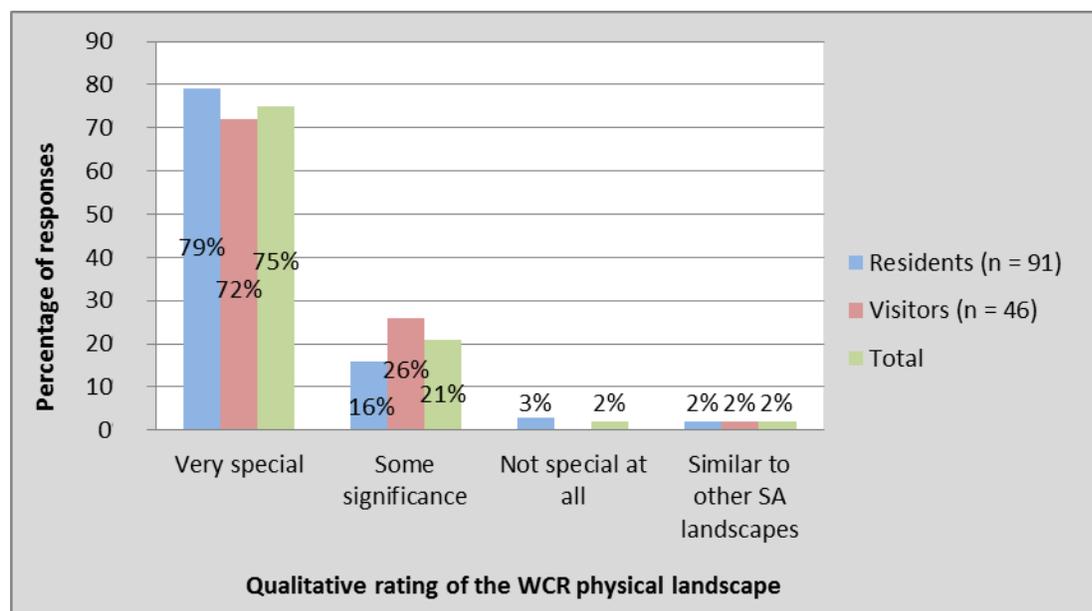


Figure 4.10 Nature of the physical landscape of the West Coast region

Clearly, the majority of residents and visitors regard the region's physical landscape as very special and they supported this by naming the fynbos vegetation, undisturbed coastlines, diversity and richness of floral species and the wide open and beautiful character of the landscape as features that make the landscape distinctive. The six per cent difference between residents (79%) and visitors (72%) who regard the landscape as very special is probably attributable to the residents' strong attachment to the region. About one quarter (26%) of the visitors regard the WCR landscapes as having some significance. Almost negligible percentages of respondents observed that the physical landscape of the WCR is not special at all and similar to other South African landscapes.

To gauge which features of the WCR's physical landscape appealed most to the residents and visitors, they were asked to select the top three characteristics of the landscape from a list of seven (Question C3) as the features they regard as the most appealing. The ratings were weighted according to the following: 1 = 3, 2 = 2 and 3 = 1 and each of the three categories

accumulated totals were derived. The total of each category was divided by the total respondents multiplied by 3 (as if all respondents rated the feature as the most appealing) and expressed as an index value with 100 as the highest value. The results are shown in Figure 4.11.

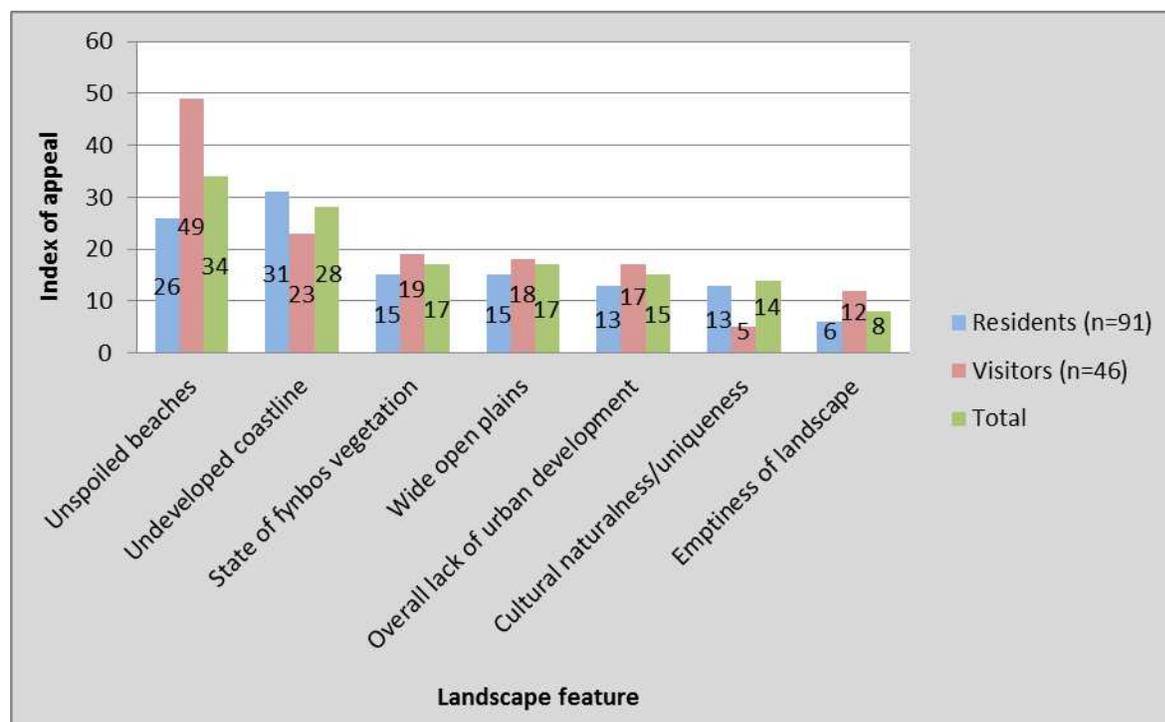


Figure 4.11 Most appealing characteristics of the WCR physical landscape according to respondents (100 = most appealing)

The resident respondents regard the undeveloped coastline of the WCR as the most appealing characteristic of the WCR physical landscape, whereas for the visitors the unspoiled beaches are most appealing. There is little difference between the two respondent groups' rankings of the state of fynbos vegetation, wide open plains and the overall lack of urban development. The residents regard the cultural naturalness/uniqueness of the landscape more appealing than do the visitors. In contrast, visitors regard the emptiness of the landscape more appealing than the residents do. Considerably, tourists regard the unspoiled beaches and undeveloped coastline as the most appealing features which points to their focus on the coastal areas rather than inland areas.

It is highly improbable that any wind turbine will ever be placed on an unspoiled beach, therefore the most appealing feature of the WCR's landscape to visitors is unlikely to be refashioned by windfarm developments. According to Osborn (2011 pers com), it is also unacceptable for the turbines to be visible from a beach. The visual impact assessment discussed in Chapter 2 might assist in this instance, but none of the current criteria involves the value of beaches as a landscape feature. The undeveloped coastline, regarded as the most appealing characteristic by the residents, will be disturbed by windfarm development and this will no doubt upset many residents. In the following section two forms of interferences by windfarms on landscapes, namely visual intrusion and land use diversification are discussed in the broader context of certain landscape values and the development of the proposed windfarms in the WCR.

4.3.1 Visual intrusion by windfarms

Wind turbines have the capacity to ruin the scenic value of a landscape. The visual impacts are high particularly in areas which lack any form of human interference, that is natural, undisturbed landscapes free of any form of development (Kataprakakis 2012). The natural landscapes of the WCR will experience scenic interference to a greater extent than in areas with developed landscapes. In the ratings of the disadvantages of wind energy presented in Table 4.3, the drawback of wind turbines perceived as ugly and so detracting from the scenic value of natural landscapes was appraised as the least disturbing liability which presumably indicates that respondents have low levels of unease about the visual intrusion of windfarms. This result is unexpectedly positive as Wolsink (2007a) and Pasqualetti (2011a) both assert that the visual intrusion of windfarms is the most controversial issue surrounding their development.

Another way of exploring the attitude of respondents to the adverse scenic impacts of windfarms was to show them a collage of photographs (see last page of questionnaire in Appendix C to F). After being instructed (Question B9) to observe the photographs, they were asked if they wanted to change their earlier answers to the questions whether they would support the development of windfarms in the WCR (Question B7) as well as in or near the town they reside in (Question B8). All the residents and visitors declared that they would not change their answers. Although respondents were required to provide a reason only if they changed their answers, some reasons

were given even though they did not change their answers. The reasons are that wind turbines are aesthetically more pleasing than nuclear reactors; they don't have any deterring effect; and they look good in other countries. The only negative reason was cited by a visitor, namely that windfarms are not pretty. The second component of windfarms and landscape interference, namely land use diversification is discussed next.

4.3.2 Windfarms and land use diversification

Windfarms afford farmers an economic opportunity to earn income through supplying land to developers. The link between the advantage (Question B4) of using land parcels for farming after installation of wind turbines and support for the development of windfarms in the WCR (Question B7) was investigated (see Figure 4.12). It is assumed that if a respondent rated it very important or important that windfarms possess the advantage of allowing land to be used for farming, he/she would support windfarm development in the region.

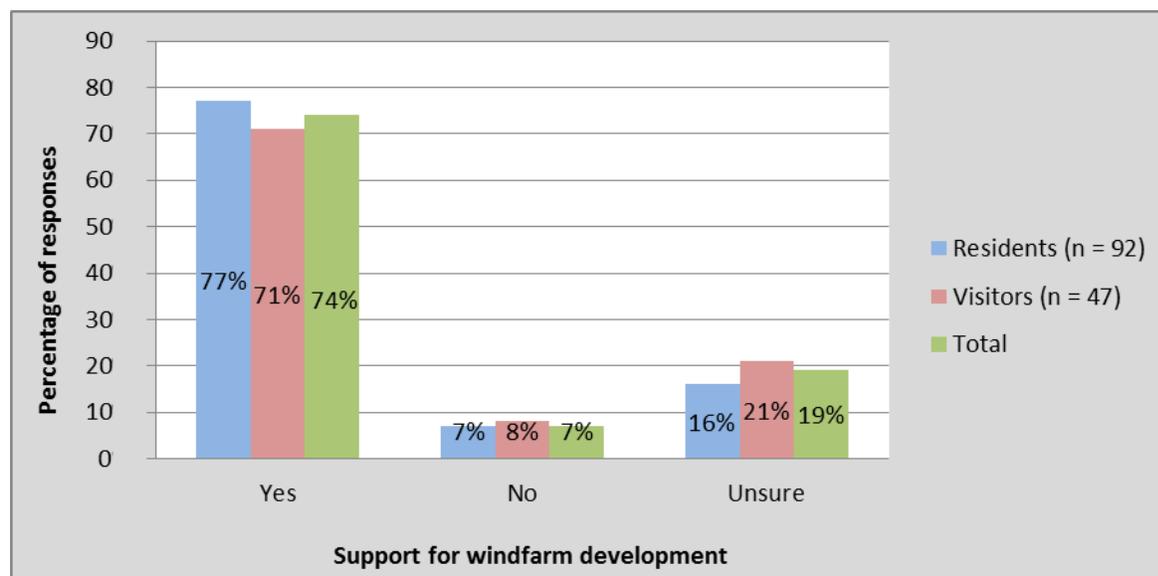


Figure 4.12 Support for windfarm development by respondents who rate the use of land occupied by windfarms for farming as an important advantage

The supposition is supported by the majority of the residents and the visitors who regard the advantage of farming continuing around wind turbines to be very important to their support for the development of windfarms in the region. Residents are even more supportive than visitors

which indicate the importance of agriculture to the residents of the area. The higher incidence of visitors over residents who were unsure about their support, even though they found the advantage important, can be attributed to visitors not residing in the region and not practicing agriculture there.

Windfarm development can secure agricultural sustainability over the long run with economic security derived from renting portions of land to windfarm developers. This appears to be a positive factor which will influence decisions whether to support or oppose the windfarm developments. According to Loubser (2011: 17) of the Vredenburg Agricultural Society, windfarm development is a way to sustain the already struggling agricultural sector of the WCR. He compared the contemporary 'alien' nature of the windfarms in South Africa to the time when ecotourism and tourism accommodation on farms was an innovation to provide extra income for farmers. Guesthouses have become a widespread and popular feature of farms in South Africa, so why shouldn't windfarms too. He also asserted that farmers are increasingly realizing the importance of sustaining the environment and that windfarms can function to sustain the environment for generations to come and to provide farmers with a much needed alternative income. Although wind turbines do not serve the same function as guesthouses in providing accommodation, the 'alien' nature of these developments on agricultural land is comparable. The last subsection on the landscape interference of windfarms focuses on the values attributed to the landscape by respondents and their general regard of the WCR landscape.

4.3.3 Windfarms and landscape values of the WCR

The findings (Figure 4.10) about respondents who regard the physical landscape of the WCR as very special and their support (Question B7) for windfarm development in the region are related geographically in Figure 4.13.

About three out of four resident and visitor respondents who regard the physical landscape of the WCR as very special also declared their support for windfarm development in the region. Conversely almost 20% of resident respondents who regard the physical landscape of the WCR as very special said they would not support the development of windfarms in the WCR.

Although this is a low incidence compared to those who support windfarms, it is noteworthy that one fifth of the resident respondents do not want their special landscape to be disturbed by windfarm development. Almost one fifth of visitor respondents who regard the physical landscape as very special were unsure whether they would support the development of windfarms in the WCR.

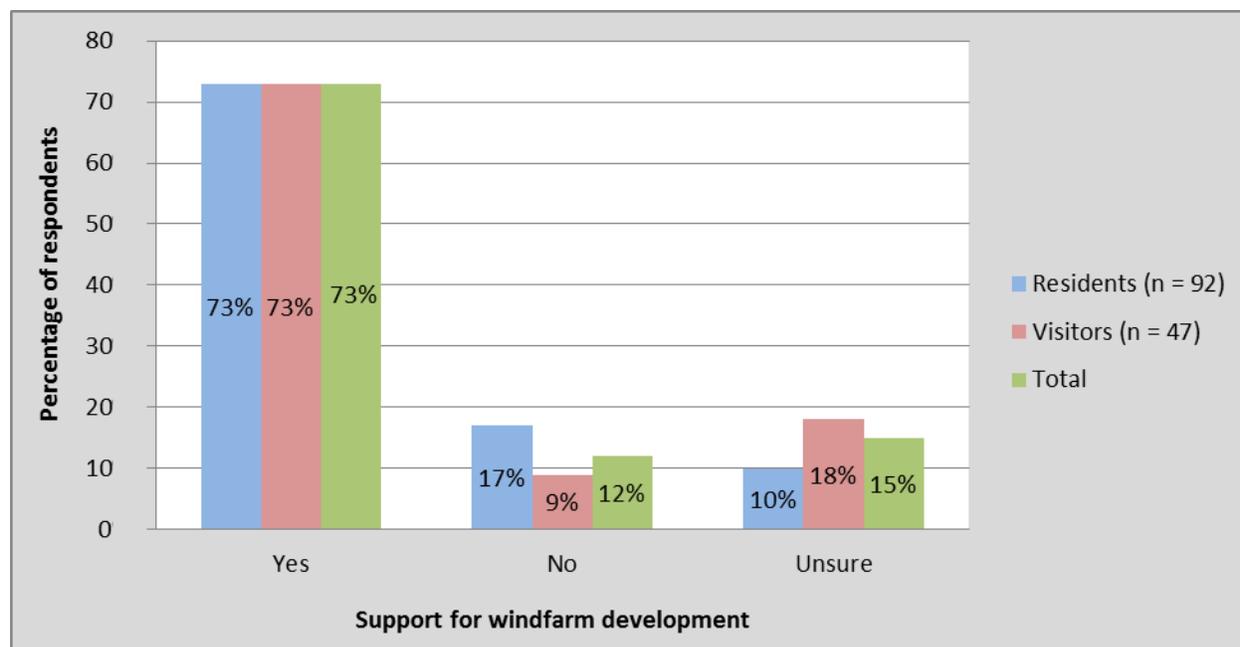


Figure 4.13 Support for windfarm development by respondents who rate the physical landscape as very special

The PGIS exercise in the questionnaire required respondents to indicate on a map the landscape value of places they deem to possess scenic/aesthetic, biological diversity, economic and recreational value (see Question E2). This is a descriptive mapping process of landscape valuation. The respondents had to rank the scenic, biological, economic and recreational value of their chosen places on a scale of one to three with three being the most prominent (exceptional). The distribution of these values was analysed by evaluating the spatial clustering of values as a dimension of spatial analysis. According to Longley et al. (2005: 316) “spatial analysis can reveal things that might otherwise be invisible – it can make what is implicit explicit.” In this instance spatial analysis is used to locate the areas where the highest concentrations of the four landscape values are found. To discern these patterns a specific tool

of spatial analysis was employed, namely Hot Spot analysis which “identifies statistically significant spatial clusters of high values (hot spots) and low values (cold spots)” (ArcGIS Desktop 2011). It uses z-scores and p-values, with a high z-score and small p-value indicating spatial clustering of high values. Figure 4.15a shows the distribution of places the resident and visitor respondents consider the landscape to have scenic value. To make sense of this distribution, the results of the Hot Spot analysis are shown in Figure 4.14b.

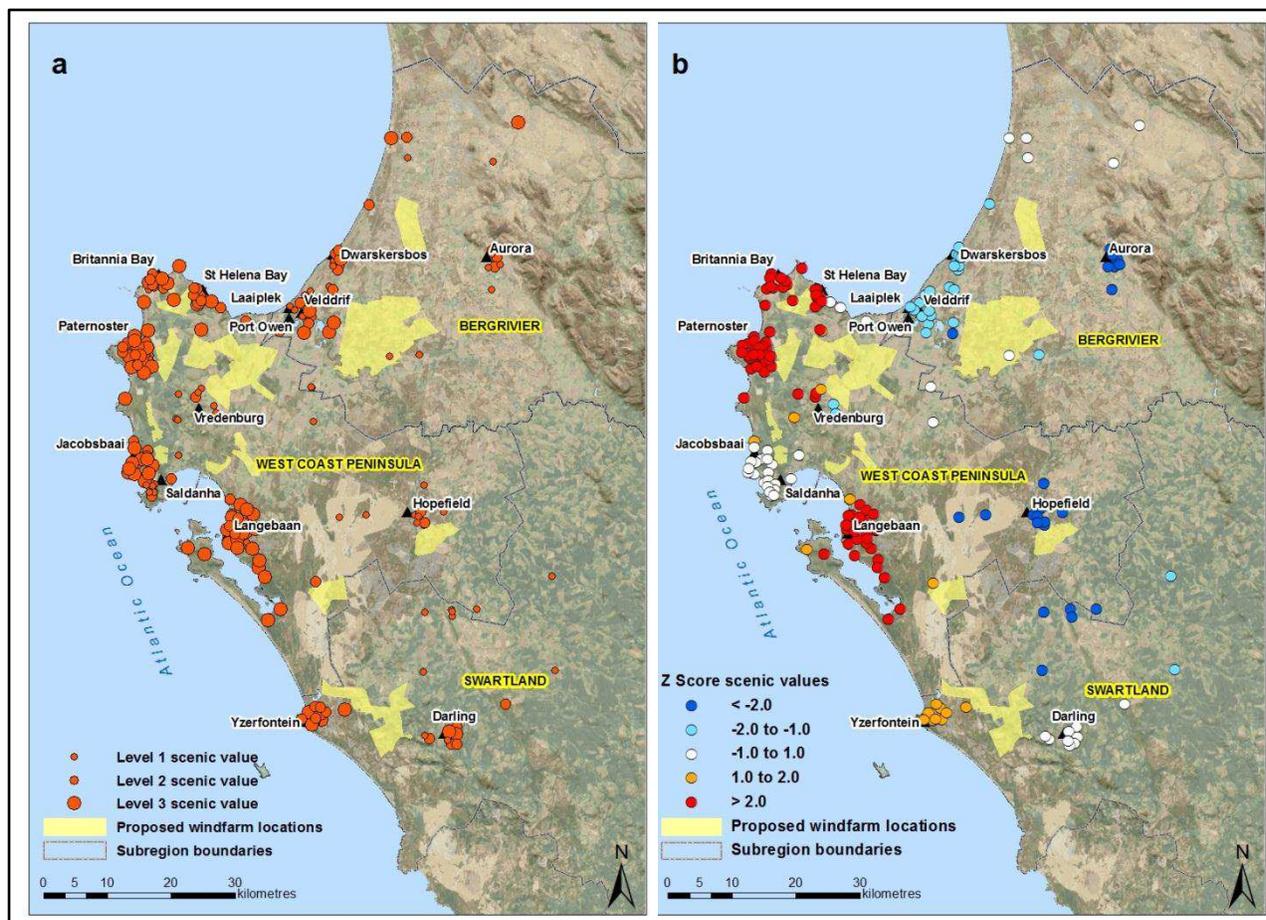


Figure 4.14 Scenic value of landscapes in the West Coast region: (a) Distribution of dots placed by respondents; (b) Hot Spot analysis results

Respondents indicated a total of 194 places with scenic value with 31% classified as level 1, 32% classified as level 2 and 37% classified as level 3. From the general distribution it is evident that scenic value is predominantly associated with coastal areas. The West Coast Peninsula subregion received 65% of the location of places with scenic value and specifically

79% of the level 3 scenic value classifications indicating that this subregion is regarded as the one with the highest level of scenic value of all three subregions. The hot spots (positive z scores) of scenic values are located around Langebaan, Paternoster and Britannia Bay. The cold spots (negative z scores) of scenic values are located more toward the interior than the hot spots indicating that respondents do not regard the interior of the WCR as having the same level of scenic value as the coastal areas. It is a cause for disquiet that some places of scenic value coincide with the proposed windfarm developments, for example at St Helena Bay and Paternoster. Windfarm development in these two areas of clustered scenic value will have to be handled judiciously by windfarm developers. The distributions of biological diversity values are shown in Figure 4.15(a) and hot spots in Figure 4.15(b).

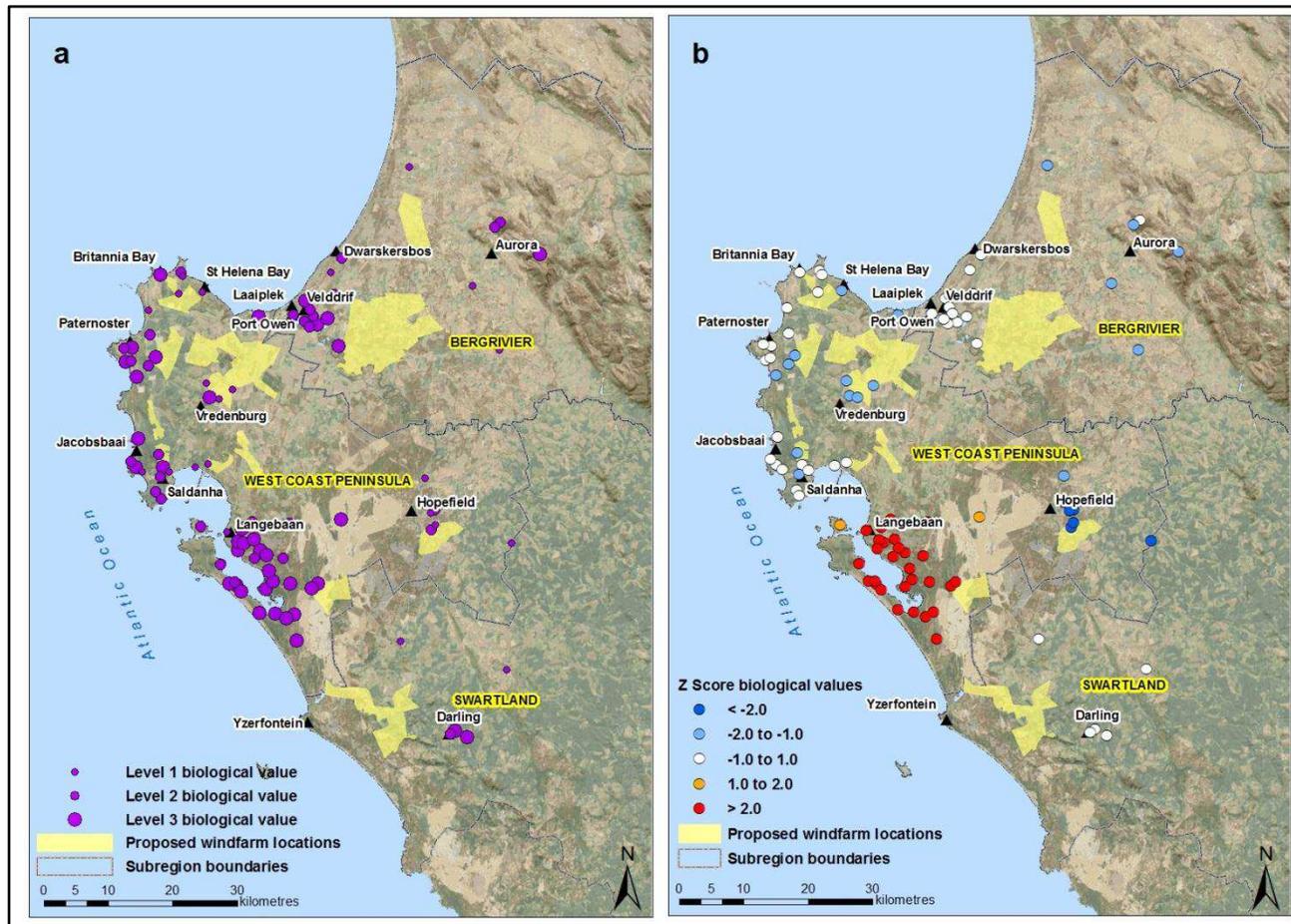


Figure 4.15 Biological diversity of landscapes in the West Coast region: (a) Distribution of dots placed by respondents; (b) Hot Spot analysis results

A total of 184 places with biological diversity value were identified by respondents of which 26% were classified as level 1, 32% as level 2 and 42% as level 3. The West Coast Peninsula subregion received 78% of the biological diversity value allocations, while the Bergrivier subregion 16% and the Swartland only 6%. According to the respondents, the areas associated with the highest density (hot spot) of biological diversity value are the Langebaan Lagoon and West Coast National Park areas. This is attributable to the marine animal and terrestrial plant diversity found in these areas. The Velddrif area is associated with moderate biological value which can be ascribed to the diversity of bird species found in this area. Other areas with moderate density of biological diversity values are the Britannia Bay, Paternoster, Jacobsbaai and Saldanha Bay coastal areas.

The third landscape attribute respondents were asked to map according from little to exceptional value is the economic value of the WCR landscape. The chosen locations are portrayed in Figure 4.16(a) and the economic hot spots in Figure 4.16(b).

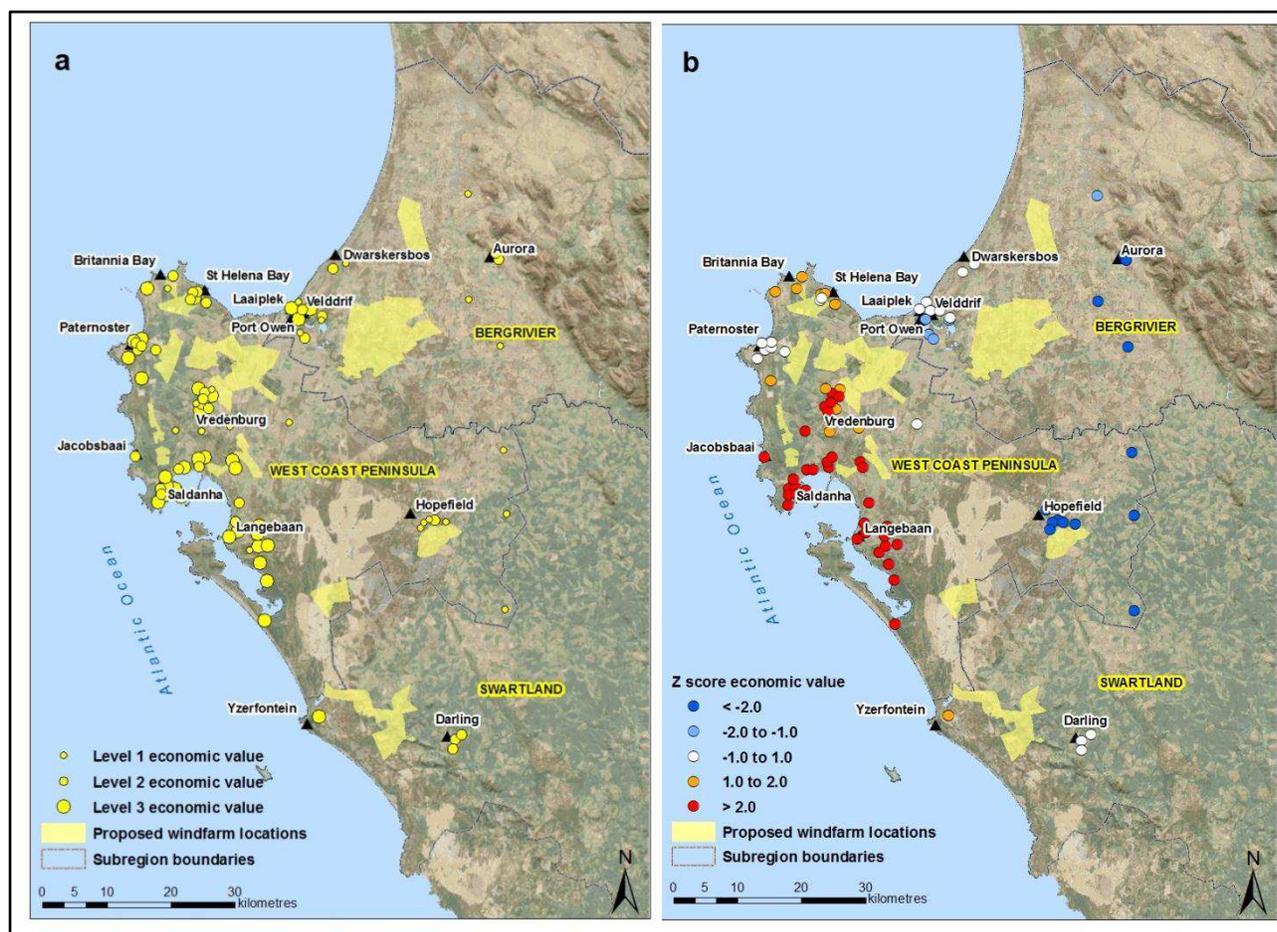


Figure 4.16 Economic value of landscapes in the West Coast region: (a) Distribution of dots placed by respondents; (b) Hot Spot analysis results

The respondents identified 178 places with economic value with 26% classified as level 1, 34% as level 2 and 40% as level 3. The areas identified with the most prominent economic value occur in the West Coast Peninsula subregion (78%) and are found in the Vredenburg, Saldanha and Langebaan areas according to the hot spot analysis. Vredenburg is the business centre of the WCR so that this economic hot spot is not surprising. The harbour industry and steel mill in the Saldanha area assign a high level of economic value to this area and Langebaan is a tourism hub of the WCR with various tourism-associated activities distinguishing the economy. Notable in Figure 4.16(b) is that the inland areas where mainly agriculture is practised are cold spots regarding economic value because agriculture exhibits a relatively low performance in comparison to the industries in the Langebaan, Saldanha and Vredenburg areas. The addition of windfarms to these agricultural areas may increase the associated economic value.

The last value respondents were asked to indicate on the maps is recreational value of areas where relaxed activities can be undertaken. Figure 4.17(a) shows the distribution of these places and Figure 4.17(b) the hot spots.

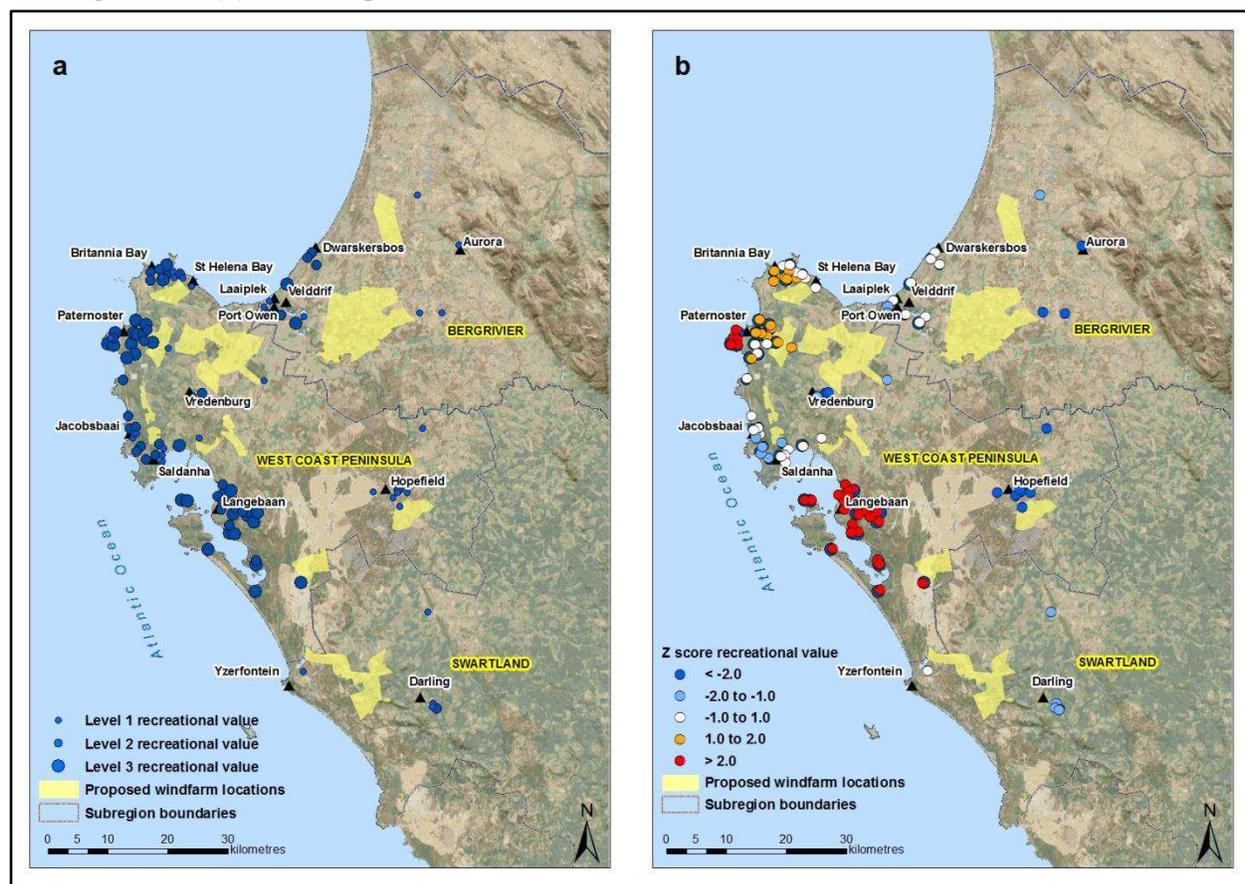


Figure 4.17 Recreational value of landscapes in the West Coast region: (a) Distribution of dots placed by respondents; (b) Hot Spot analysis results

A total of 204 places with recreational value were identified by respondents with 32% classified as level 1, 32% as level 2 and 36% as level 3. Again Langebaan is a hot spot. The West Coast Peninsula subregion is known for its tourism activities (as discussed in Chapter 1) so that it is no surprise that the majority of recreational values (80%) occur in this subregion. Paternoster is an established tourism jewel of the West Coast and is therefore a hot spot in terms of recreational value. Noteworthy is that the Bergrivier subregion received an allocation of 15% of the recreational values whereas the Swartland subregion only 5%. The respondents therefore associate the Bergrivier subregion as a probable holiday destination whereas the Swartland subregion is not so famous for recreational activities. The distribution of recreational value is concentrated in the coastal areas. Recreation plays a significant role in tourism and this is treated in the next section where the connection between tourism and windfarms in the WCR is examined as the final perspective of inquiry of the study.

4.4 TOURISM IN THE WCR

The sixth objective of this study is to assess the extent to which the presence of wind turbines will affect the tourism value of the WCR. The tourism value of the region comprises three elements. First, the tourism industry of the WCR has a distinct attraction value as evidenced in the portfolio which boasts the variety of appealing attractions introduced in Chapter 1. Second, tourism in the WCR invites outsiders to visit the local economy and if they find the region special and an enjoyable place to visit, the spillover effects also make it a desirable place to stay. Third, the presence of tourism development in the region also brings benefits to the local communities as exhibited in Table 4.7.

Table 4.7 Benefits of tourism to regional local communities

Benefit to the local community	Example
Retail services	Better shopping experiences such as the West Coast mall near Vredenburg
Community services	Better medical services
Market for locally-produced goods	The fishing harbour at Paternoster is a mecca for local arts and crafts.
Interest in agriculture industry	The wine farms near Darling provide an agricultural product to tourists.

Continued overleaf

Table 4.7 continued

Benefit to the local community	Example
More events and entertainment	The Langebaan Lagoon festival was held for the first time in 2012.
Local facilities	Established facilities are upgraded and, for example, new restaurants are built to meet increased demand.
Economic benefits	Jobs are created, increased spending occurs, economic diversification is created and infrastructure such as roads, parks and other public spaces can be developed and improved for both visitors and local residents through increased tourism activity in the region.
Social benefits	Community pride and identity can be generated through tourism and local communities can be encouraged to maintain their traditions and identity.
Environmental benefits	Conservation of the local environment and natural resources, especially through ecotourism

Source: Adapted from: Advance Tourism (2003) & Tourism Queensland (2012)

The WCR is largely dependent on tourism, particularly the West Coast Peninsula subregion where tourism is the second-largest revenue generator (Osborn 2011, pers com). In his view, the local tourism sector is facing an industrialization of the tourism landscape by the proposed windfarm developments. While entrepreneurs see the landscape as an opportunity for development and production, tourists see it as a ‘postcard’. From the tourism industry’s perspective there is apprehension about the installation of wind turbines leading to a decrease in the number of tourists to the region. In an article in the *Weslander*, Osborn refers to wind turbines as “a necessary eyesore, but positions need to be found where they will not impact the beauty and uniqueness of the West Coast” (Meissenheimer 2011b: 17). Although tourism is proportionally a smaller economic contributor in the Bergivier and Swartland subregions, it does play a part in the diversification of their regional economies. This section deals with the ways in which tourism has affected the WCR according to the respondents; the top features of the WCR according to visitors; the visitors’ familiarity with the WCR; the places most visited by tourists; and the potential influence of windfarm developments on tourism in the region.

4.4.1 Effects of tourism on the WCR

To establish the effects tourism has on the desirability of the WCR as a destination, respondents were asked to choose one of four statements that encapsulate the effect the presence of tourism

has had on the WCR over the period they have lived in or visited the region (Question A5 residents and A6 visitors). Figure 4.18 illustrates the results.

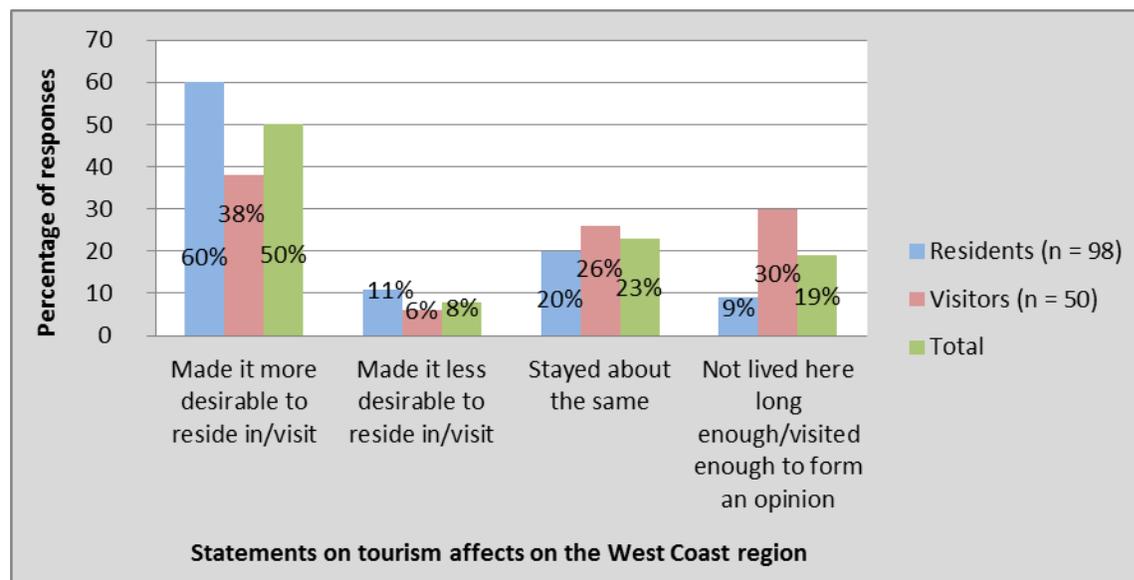


Figure 4.18 How tourism has affected the West Coast region

According to the opinions of 60% of the residents and almost 40% of the visitors, tourism appears to have made the region more desirable. Efforts should thus be made to sustain this sector in the region. Thirty per cent of the visitors felt that they have not visited the WCR enough to give an opinion about the influence tourism has had on the region. The value of tourism to the local economies is a reason why tourism has made the WCR more desirable to residents and visitors. Visitors were asked in an open-ended question what they enjoy most about visiting the WCR. The 97 responses were condensed to the seven categories presented in Figure 4.19.

Being close to nature, the presence of the sea and beaches, the local climate as well as the friendliness and unique culture of the people are the primary reasons why visitors enjoy the WCR. Among these three, only the feeling of being close to nature might be impacted by windfarm development as wind turbines add a sense of industrialization to natural areas. The friendliness and unique culture of the people are two valuable attributes of the WCR which in all likelihood will not be impacted by windfarm development and will remain a cherished tourism product.

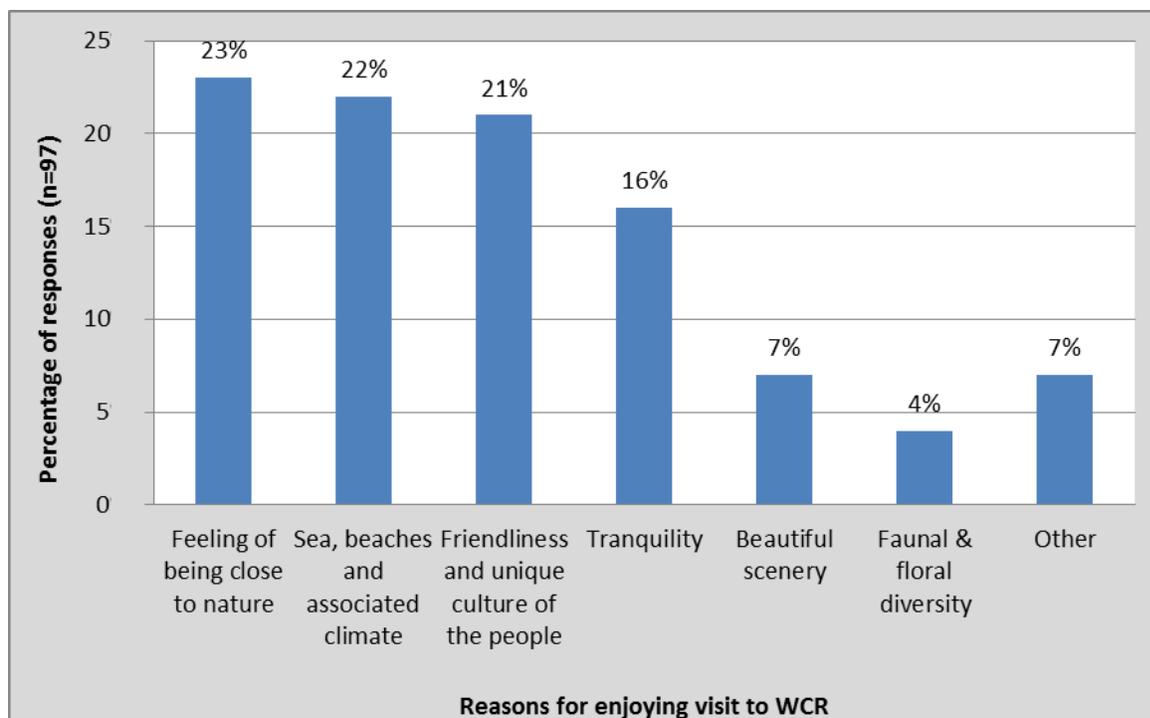


Figure 4.19 Reasons why visitor respondents enjoy visiting the West Coast region

To complement these reasons that make visits to the WCR enjoyable, visitors were asked to rank their three top features of the WCR from a list of nine (Question C2). Their answers were converted to index values which are represented diagrammatically in Figure 4.20.

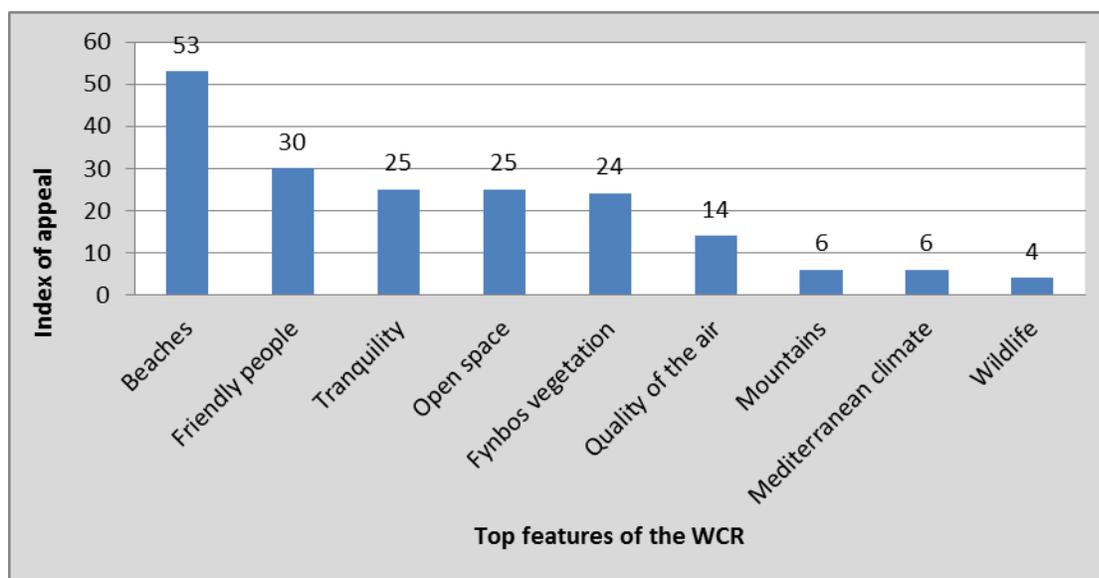


Figure 4.20 Visitor's view of top features of the WCR (100 = rated top feature by all respondents)

The top-ranked features are similar to the primary reasons why visitors enjoy visiting the WCR so emphasizing that the local tourism authorities should pay attention to these characteristics and promote them as invaluable attractions of the WCR. Beaches are confirmed as the primary feature of the WCR and fortunately windfarm development should not affect them because wind turbines will almost certainly never be placed on the region's beaches. The concerns about the visibility of wind turbines from beaches persist. The high ranking of the friendliness of the people of the WCR confirms the important role the local residents play in the region's tourism industry.

The visitors were also required to indicate on a map those places they regard as special (Question E1). Figure 4.21 plots these 47 special places with 74% located in the West Coast Peninsula subregion and 13% each in the Bergrivier and Swartland subregions.

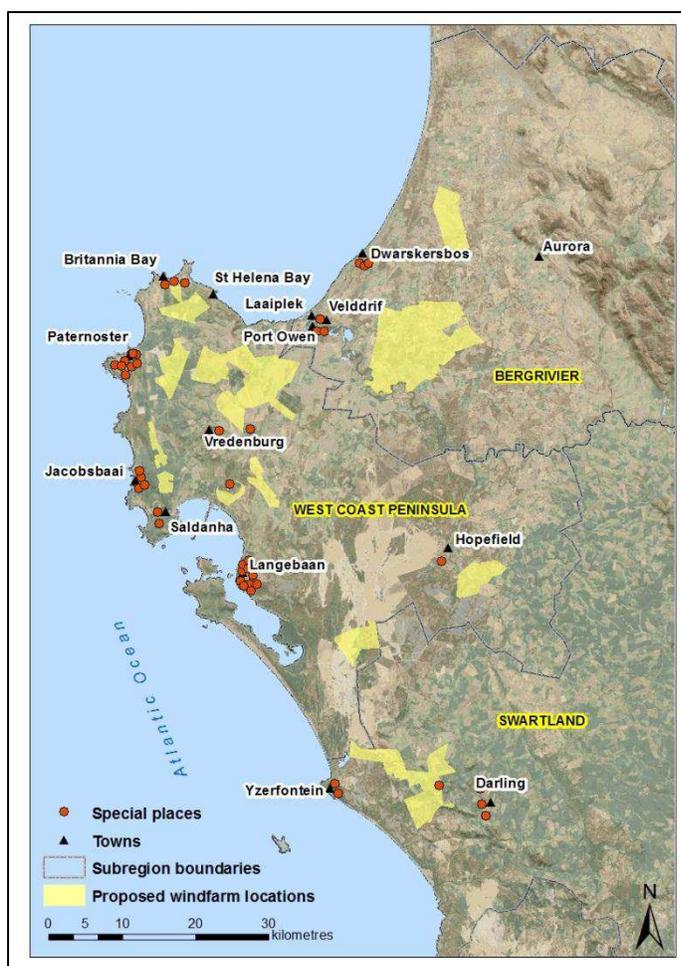


Figure 4.21 Special places in the West Coast region according to visitors

The places were identified as special places by virtue of their being great camping sites, fishing spots, natural and tranquil open areas, nostalgia evoking, rich in birdlife, redolent of a country living atmosphere, beautiful beaches and inhabited by friendly people. The visitors therefore regard features of both the natural and cultural landscapes of the WCR as special. The spatial distribution of these places shows that the visitors, like the residents, have a tendency to regard the coastal areas as special. The visitors' familiarity with the WCR substantiates this finding in the next section.

4.4.2 Visitors' familiarity with the WCR

Whereas residents were questioned about their place attachment to the WCR (refer to Section 4.2), visitors' familiarity with the region was gauged by asking them to indicate how many times they have visited the region and which of the 15 towns included in the study they have visited before. Fifty per cent of visitors have visited the WCR between one and ten times, 20% between 11 and 20 times and 30% 21 times and more (recall Figure 1.14(h)). The latter high frequency of visits demonstrates that visitors enjoy returning to the WCR.

Visitors were also asked (Question A3) to report which of the 15 towns associated with the tourism Route 27 in the WCR they have visited before. Figure 4.22 shows the result.

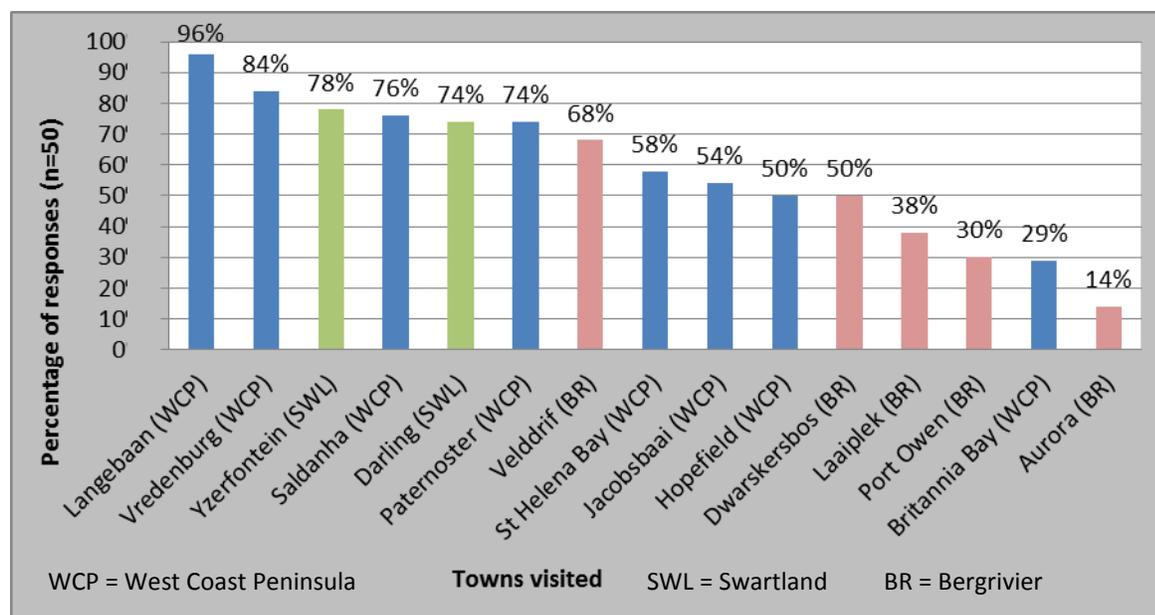


Figure 4.22 Towns in the West Coast region visited before by visitors

More than 80% of the visitors have previously visited Langebaan and Vredenburg. Langebaan being a popular tourist destination makes it no surprise that most visitors have previously visited the town. Vredenburg has a central location regarding connections with the rest of the WCR and one has to drive through Vredenburg to reach the popular destination Paternoster. Vredenburg is the business centre for the region with a large shopping mall and other important supporting services, for example a hospital. All the towns visited by between 70% and 80% of the respondents are also renowned for their tourism value. Places in the Bergrivier subregion are the least visited by tourists with the exception of Velddrif where 68% of the respondents have paid previous visits. The preponderance of visits are to Swartland and West Coast Peninsula towns and less so to those in the Bergrivier subregion.

Visitors were questioned about their knowledge of the WCR (Question A4) and significantly none possess excellent knowledge of the region (Figure 4.23). This can be attributed to the seasonal nature of their visits and that their visits are mostly short duration (holiday and weekend visits). Nonetheless, 18% say they have a good knowledge of the WCR, while 52% contend that they are fairly knowledgeable about the WCR.

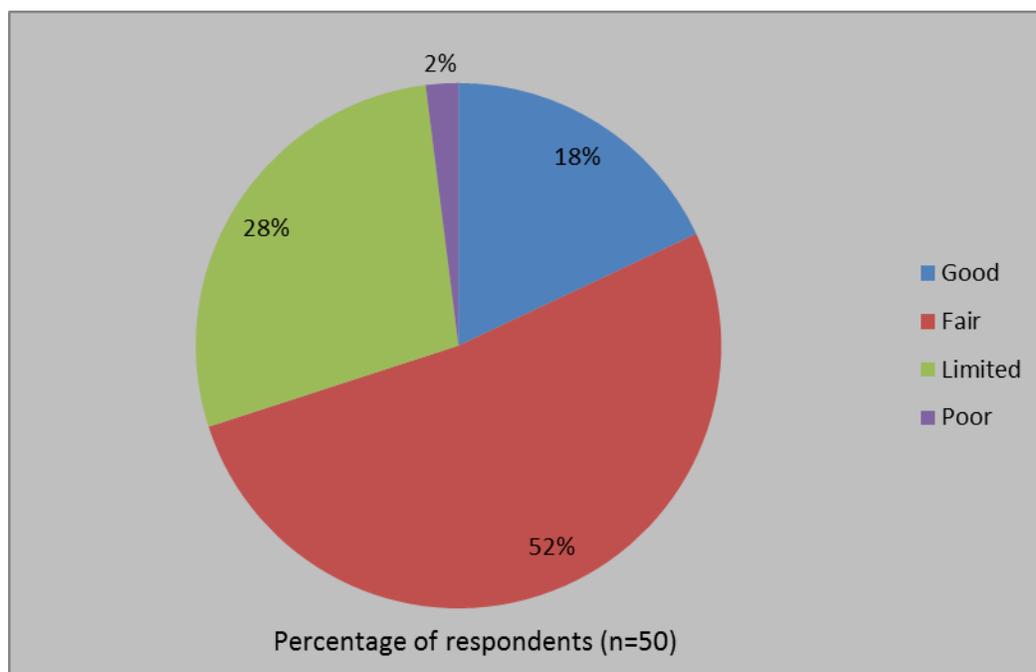


Figure 4.23 Visitors' knowledge of the West Coast region

Now that the value of tourism in the WCR has been established and visitors' familiarity with the region confirmed, the discussion moves to the expected impacts of windfarms on tourism in the WCR.

4.4.3 Windfarms and tourism in the WCR

The visitors and residents were questioned (Question B10) whether they believe that the installation of windfarms will deter tourists from visiting the WCR. Figure 4.24 illustrates the results.

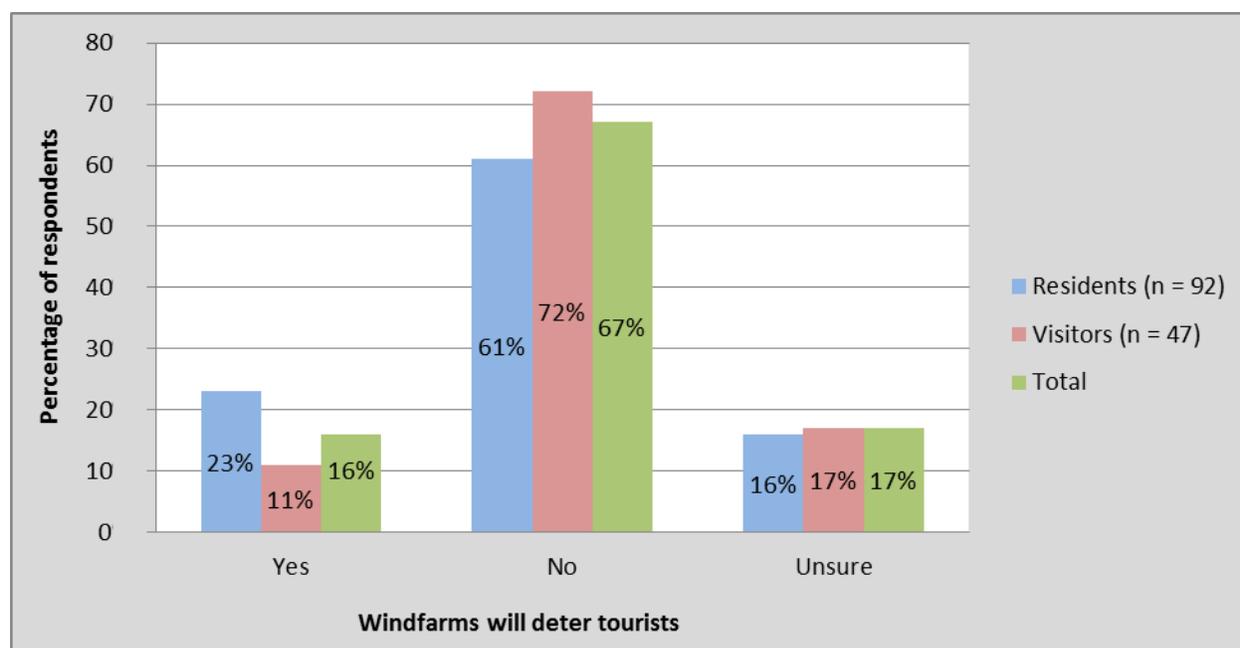


Figure 4.24 Windfarms as deterrents to tourists visiting the West Coast region

Although some respondents (less than 25%) hold that windfarms will deter tourists from visiting the WCR, the majority of resident and visitor respondents are resolved that windfarms will not deter tourist visitations. The reasons given by the latter groups are that wind turbines are quiet, stable structures; windfarms are attractions worth seeing; tourists can distance themselves from the windfarms if necessary; the WCR is special enough as a tourist destination to be unaffected; and the uniqueness of the culture of the people, a primary attraction, will not be influenced by windfarms.

Visitors were asked (Question B8) if they would continue to visit the WCR if a number of windfarms were developed in the region. Figure 4.25 portrays their answers.

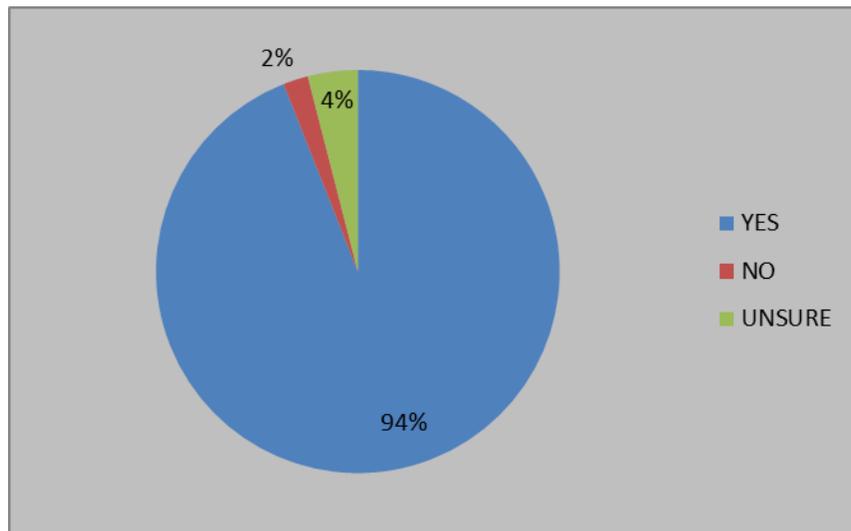


Figure 4.25 Percentage of tourists who would still visit West Coast region after the development of a number of windfarms

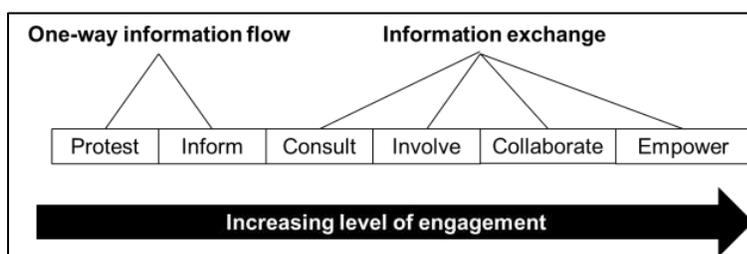
Despite some apprehensions by visitors about the impact of windfarms on the WCR, the vast majority would return to the WCR even if wind turbines were installed in the region. Also important is that 67% of those who are intent on visiting are in the 19 to 40 age cohort. The high proportion of visitors who are willing to return in spite of the presence of wind turbines underlines the tourist attractiveness of the region.

The three perspectives of inquiry of the study and their links to windfarm development have been examined. Because there are other factors which influence public opinion about and acceptance or rejection of windfarm development, the discussion now turns to the effects of policy and planning on public acceptance as well as the type of decision-making model which can be applied to windfarm development in the WCR.

4.5 THE EFFECTS OF POLICY AND PLANNING ON THE PUBLIC

According to Wüstenhagen, Wolsink & Bürer (2007) the socio-political dimension of windfarm acceptance relates directly to the acceptance of technologies and policies by the public, key

stakeholders and policy makers. Community acceptance is encouraged through procedural justice, distributional justice and trust between the public, policy makers and planners. Therefore, a direct link exists between the support or objection to windfarm schemes and the influence of the policy and planning processes and frameworks. The questionnaire survey, interviews and informal discussions exposed misgivings among some respondents about their ability to oppose or support windfarm developments due to their low levels of knowledge about windfarms. The public participation process should mitigate this issue by providing residents with the information needed to make informed decisions about their opposition or support. According to Figure 4.26, two levels of interaction between developers and policy makers and the public are involved, namely one-way information flow and information exchange.



Source: Theron (2005: 126)

Figure 4.26 Spectrum of levels of influence on the public

The one-way information flow levels should be sufficient to provide the public with enough information on the projects to enable them to reach a decision through a conflict-tradeoff or rational choice application. This can be done through legal notices, advertisements, magazines, newspaper articles, press releases, background information material, exhibits and displays, technical reports, websites, field trips, press conferences, radio and TV talk shows, expert panels and educational meetings. During a community meeting held in Paternoster on 20 April 2011 by one of the developers, the researcher experienced the tension generated when developers ‘alienate’ the culture of and attachment of residents to their region by following an EIA ‘template’ without paying attention to the uniqueness and sensitivity of the region.

The public participation process followed in the WCR was not sufficiently inclusive because a portion of the population is illiterate and therefore unable to read notices announcing the public participation meetings or the available information documents. Harvey (2011 pers com)

expressed her concerns during a community meeting in Paternoster on 19 December 2011 regarding the notifications and reports on projects released to libraries in the region which did not qualify as a transparent process and not at all enabling information exchange. The situation is reminiscent of Wolsink's (2007b: 1190) observation that "communication always misses its targets when it does not address the real concerns of the people to whom the message is directed." The consultants and developers must strive to find ways to inform and consult with all members of the affected communities to support the decision-making process to support or oppose the proposed windfarm developments.

The study aimed to examine the decision-making types and models that can be associated with the public's decision to support or oppose windfarm development. It was concluded that if the public is adequately informed of the proposed development, intuitive decision making can take place which occurs when "a high degree of rationality or clarity of thought is implied. The decision is not reached on basis of facts or statistics, but the decision maker has a hunch" (Brynard 2006: 168). Programmed decision making is more employed by the developers of the windfarms which holds that "programmed decisions are standing decisions and involve standards, procedures, methods, rules and policy" (Brynard 2006: 169).

Following careful examination of the phase-, stream- and rounds models of decision-making, the rounds model is the most applicable to describe decision making surrounding proposed windfarm developments in the WCR. The rounds model concludes that "problems and solutions are not linked to a single actor (policy maker) and are therefore not fixed at the single moment at which the policy is adopted" (Teisman 2000: 943). The processes followed in the planning phase of these farms and the involvement of the public indicates that this process is not linked to a single actor and that policy results from interaction between various decision makers. The rounds model is also a useful tool to develop future governance theories by taking into account the opposing views of the public on, for example, where they would want windfarms to be located and where not and their reasoning behind these views. These views are discussed in the context of this study in the next section.

4.6 OPPOSING VIEWS: WHERE AND WHERE NOT SHOULD WINDFARMS BE LOCATED?

The research has shown that very few of the respondents are opposed to windfarm developments, provided that the development occurs in the appropriate places. Consequently, respondents were invited to indicate on a map where they believe windfarms should not be located in the WCR (Question E3). Figure 4.27 maps their 178 plottings.

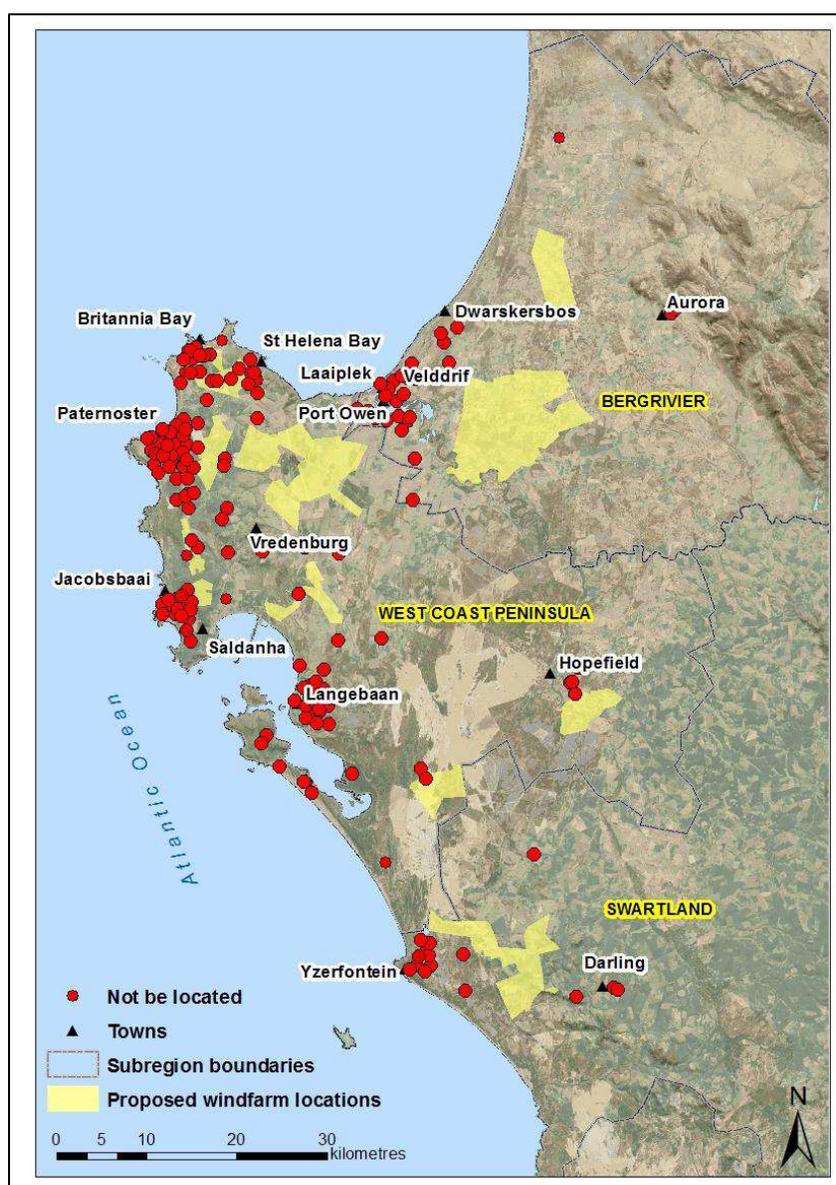


Figure 4.27 Places where windfarms should not be located according to respondents

Locations close to the coast emerge as no-go areas with an emphasis on the areas surrounding St Helena Bay, Britannia Bay and Paternoster. The West Coast Peninsula subregion received 78% of the markings of places where windfarms should not be located, whereas the Bergrivier subregion received 15% and the Swartland subregion 7%. The distribution of places where windfarms should not be located corresponds roughly with the special places sited by both respondent groups so that it becomes clear that places respondents regard as special should stay clear of windfarm development.

Reasons given for marking these locations are their scenic value, the natural emptiness of the surroundings and the associated tourism activities and facilities. For instance, Lubitz (2011 pers com) and her husband who operate a guesthouse outside Paternoster bemoaned that the windfarm would be located in the viewscape of their guesthouse so disturbing the peace and tranquility they offer their guests. Robinson (2011 pers com) who runs a home, Trevelyn Lodge, for 47 disabled people close to Paternoster in the community of Trekoskraal is concerned about the health effects the spinning turbines might have especially on his autistic residents.

The community of Paternoster has formed a group 'NoWindfarmsPaternoster' to express their discontent with the proposed windfarm project. During the group's meeting on 19 December 2011 their consternation became patently clear that the marginalized community of Paternoster had not been informed nor involved during the EIA process of the particular project. Only the literate members of the community have the opportunity to actively involve themselves in the proposed projects because the newspaper advertisements and information documents in the library are largely inaccessible to less literate citizens. The action group expressed the need for the developers and consultants to verbally and personally inform the marginalized groups about the meetings. In St Helena Bay and Britannia Bay residents believe that the windfarm project will benefit the community as a whole, although they do raise concerns, but to a lesser degree than the case with the Paternoster windfarm which has already been approved.

Given the respondents' clear and strong views about where windfarms do not belong, they were asked to map appropriate locations for windfarms in the WCR. Figure 4.28 indicates their sitings. A dispersed distribution pattern emerges for the 192 appropriate locations in comparison

to the concentrated nature of the inappropriate locations in Figure 4.27. There is not a very big difference between the 178 locations where windfarms should not be located and the 192 locations where windfarms are deemed appropriate. The 14 more appropriate places identified by respondents can indicate they find more appropriate locations for windfarm development in the WCR than locations that are not appropriate, but the difference is too small to say this for sure.

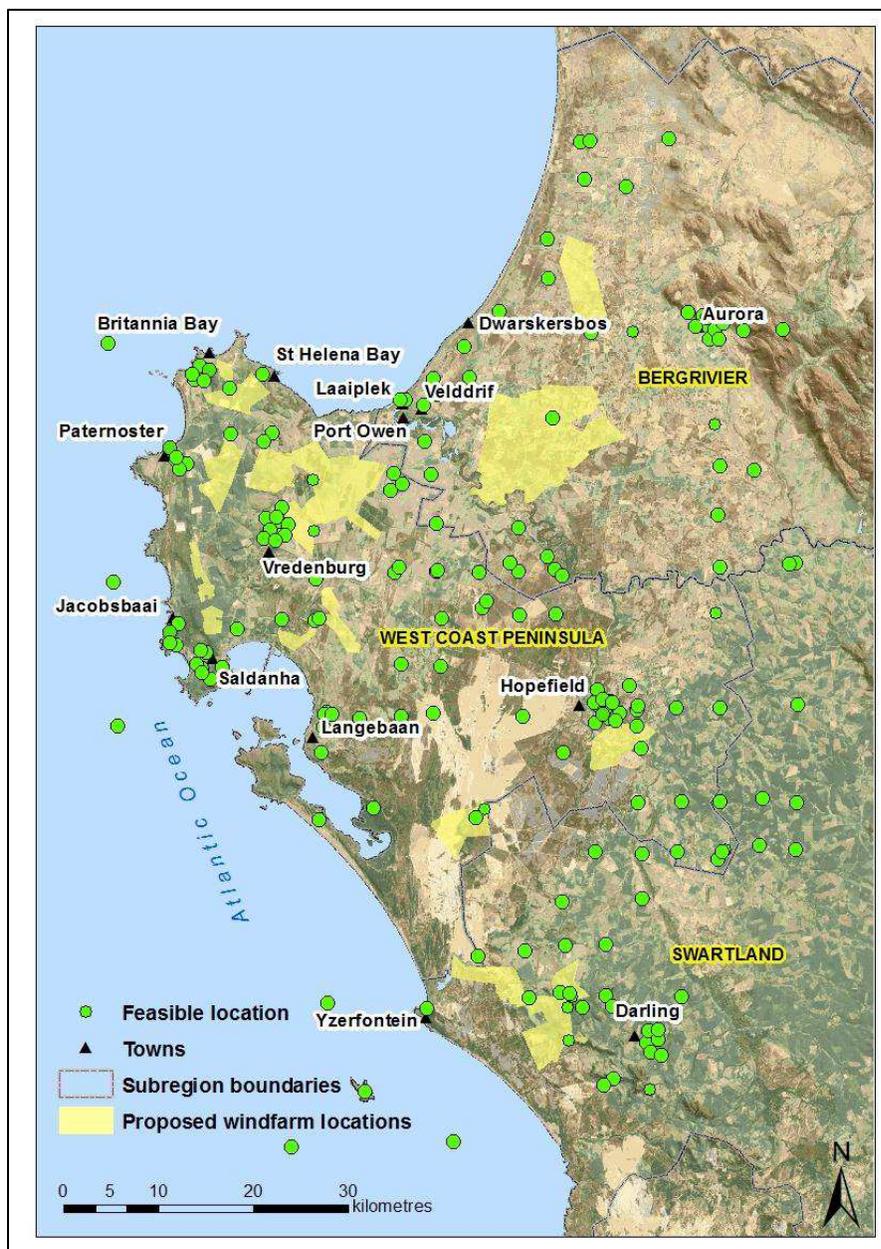


Figure 4.28 Places where windfarms should be located according to respondents

The distribution of places where the windfarms should be located clearly tends toward the interior of the region away from urban settlements. NIMBYism, from the coastal residents' point of view, could underlie this distribution, but as many other reasons have been cited for their opposition to windfarms, it cannot simply be attributed to NIMBYism. The inland locations are unfortunately not always endowed with exceptional prevailing wind resources like those closer to the coast (Diab 1995). Some respondents indicated that windfarms should be located offshore, but no offshore windfarms have yet been proposed for South Africa. Figure 4.28 does, however, show that a number of these appropriate places coincide with the areas where windfarms have already been proposed. There are fewer points in the Paternoster, St Helena Bay and Britannia Bay areas compared to Figure 4.27 which indicates that the windfarms close to these two locations are the definite ones that deserve more attention from the developers. Heather-Clark (2011), of Environmental Resources Management (ERM), reiterated it during a meeting of the West Coast Business Chamber that there is no 'yes' or 'no' answer to whether wind energy is the solution for the WCR, but emphasized that exploration of the issues associated with the proposed developments must be done to establish the most appropriate locations from both developer and community perspectives. The positives of any location must exceed the negatives.

Gipe (2004: 301) reminds us that "where it exists, criticism of wind energy results largely from fear of change this new technology may bring to the community. Though it may fear this technology, the community should not apply more stringent standards to wind machines than it applies to any other similar structure or device now standing." For example, the first Dutch windmills were burned to the ground by opposing parties, yet today, the Dutch windmills are valued as a natural part of the landscape (Gipe 2004). But not all forms of resistance are attributable to the 'growing pains' of accepting such a new technology as the results of this study tries to explain.

The information gathered through the questionnaire survey and from other primary data has been analysed and the findings discussed. The final chapter highlights the main findings of the study, revisits the objectives and lists the limitations before giving recommendations and making some concluding remarks.

CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

The main aim of this study was to determine whether or not the presence of wind turbines in the form of windfarms will have any effect on the sense of place of insiders (residents) of and outsiders (visitors) to the WCR, the insiders' attachment to their natural landscape and the outsiders' experiences of the region. Chapter 5 summarizes and synthesizes the main findings, revisits the objectives and addresses the limits of the study before making recommendations and concluding remarks with regards to the aim of the study.

5.1 SUMMARY AND SYNTHESIS OF THE MAIN FINDINGS OF SOCIAL ACCEPTANCE ISSUES WITH PROPOSED WINDFARMS IN THE WCR

The social aspects of windfarm development are equally important for the success of these developments as are the favourable physical geographic conditions. This study focused on the socio-political and community acceptance of windfarm development, the former referring to the processes and policies of windfarm development and the latter the acceptance of specific siting decisions by local stakeholders¹². With expected climate change and a sustainable energy supply problem facing humankind in the twenty-first century more and more people are becoming environmentally conscious. It was established that respondents of this study regard issues related to the sustainability of the natural environment very important and that all of them take certain actions to reduce their environmental impacts confirming their environmental awareness. The respondents find pollution caused by non-renewable energy sources concerning and in retrospect it is therefore not surprising that 85% of respondents would support the development of windfarms in South Africa as they believe it will make the electricity supply of the future more environmentally friendly than the current reliance on fossil fuel sources. The main findings of social acceptance issues with proposed windfarm developments in the WCR are summarized according to the three perspectives of inquiry of the study, namely the place attachment of residents, windfarms and landscape interference, and the effect of windfarms on future tourism to this region.

¹² The researcher is aware that the term community is a complex concept, but in the context of the results of this study, the local stakeholders and community refers to the resident respondents of the WCR.

5.1.1 Place attachment of residents of the WCR

From the international scholarship (Vaske & Kobrin (2001), Stedman (2002), Buckland & Williams (2003), Williams & Vaske (2003), Kyle et al. (2004), Kyle, Mowen & Tarrant (2004), Brown & Raymond (2007) and Devine-Wright (2009)) it is clearly confirmed that place attachment is a complex construct which differs between certain places and situations. It does not only represent the emotional attachment of people to a place, but also certain processes and behaviours that shape this emotional attachment. The study found that residents of the WCR have a strong sense of place identity and place dependence confirming their attachment to the region. Scannell and Gifford's (2010) tripartite model of place attachment were used to identify which dimensions of place attachment present the attachment of residents to the WCR the best. The tranquility and small-town atmosphere serve as most significant reasons why people enjoy living in their town of residence with the natural environment playing the most significant role in their identification of special places in the region both referring to the place dimension of the model. The person and process dimensions were also identified as reasons for the attachment of WCR residents to the region, establishing that all three dimensions of the tripartite model of place attachment are found in the WCR.

Although residents feel attached to the WCR, 71% of them would still support the development of windfarms in the region indicating that place attachment does not necessarily lead to opposition against proposed windfarms. Some opposition to windfarms in the WCR is attributable to NIMBYism as residents' support for windfarms decrease from 85% at national level to 71% at WCR level and 60% at local level in or near the town respondents live in. It was established that a decrease in support on these three levels cannot only be regarded as NIMBYism and specific reasons for opposition to these proposed windfarms was investigated within the framework of Wolsink's (1994; 2000) types of objections to windfarms. Most of the reasons were identified as resistance type C of Wolsink's framework which suggests that residents have a positive attitude towards wind power (national level) which becomes negative as a result of discussions around the proposed construction of a windfarm (regional and local levels). NIMBYism is often misunderstood and used as a 'short-cut' to diminish all opposition to windfarm developments. Although some NIMBY attitudes exist in the WCR, further

contextualization of the reasoning behind opposition was done to confirm that all opposition cannot be attributed to NIMBYism. The attachment of people to certain places should not be disregarded as creating NIMBY attitudes, but should be evaluated within the context of their physical environment as well which will be discussed in the next section.

5.1.2 Windfarms and landscape interference in the WCR

From the international literature it became evident that windfarm developments can influence the physical landscape in two ways, namely impacting on the aesthetics of the landscape as well as diversifying the land use practiced. Seventy-five per cent of the respondents regard the physical landscape of the WCR as very special indicating that the disturbance by proposed windfarms in the landscape is concerning. However, the unspoiled beaches were ranked as the most appealing characteristic of the WCR and it is highly improbable that wind turbines will be placed on beaches. Surprisingly, the visual intrusion of windfarms does not generate high levels of unease from respondents of the study in contrast with international literature (Wolsink 2007b; Pasqualetti 2011b) stating that the visual impact of windfarms is the most significant cause of opposition. The ability of windfarms to provide an extra income for farmers through land use diversification (refer to Section 2.2.2.2 on page 52) is regarded as imperative by respondents and the agricultural industry alike. It is believed that windfarms can assist in providing a sustainable income for farmers in a region where agriculture is seen as somewhat of a struggling industry (Loubser 2011). From the informal conversations, semi-structured interviews and observation at public meetings it became clear that the Langebaan area and the West Coast Peninsula subregion, boast the most scenic-, biological-, economic- and recreational value of the landscape as were confirmed by the respondents in the PGIS exercise.

5.1.3 Windfarms and tourism in the WCR

The value of tourism in the WCR has a distinct product portfolio ranging from its annual wildflower display to its al fresco eateries, watersports, etc. as well as a range of benefits to local communities. From the semi-structured interviews it became evident that tourism is especially a significant economic contributor to the West Coast Peninsula subregion (Osborn 2011 pers com)

and most respondents indicated that they have visited the towns of this subregion before. The unease of the West Coast Peninsula's tourism industry is natural in the light of eight of the proposed 13 windfarms suggested for this subregion. The development of windfarms in the West Coast Peninsula subregion should take the importance of the tourism industry into account. However, the majority of both resident and visitor respondents indicated that they do not believe windfarms will deter tourists from visiting the WCR. Visitors identified the feeling of being close to nature, the presence of the sea and beaches, the local climate as well as the friendliness and unique culture of the people as the main reasons why they enjoy visiting the WCR. Among these three, only the feeling of being close to nature might be impacted by windfarm development as wind turbines add a sense of industrialization to natural areas. Astonishingly, 94% of visitors indicated they would return to the WCR even after the development of a number of windfarms in the region. Both respondent groups indicated on maps that the appropriate locations for windfarm developments are towards the interior and windfarm development should be avoided in the coastal areas where tourism activities and attractions are mainly found. The objectives will now be revisited to establish whether all of them have been met.

5.2 REVISITING THE OBJECTIVES

The first objective of this study was to establish a solid base and understanding of the concepts and constructs related to wind energy, landscape aesthetics and place attachment and was explored in chapter two and three. It became clear from the literature that a definite connection exists between wind energy, place attachment and landscape aesthetics. The relationship between the NIMBY notion and place attachment was explored in order to determine if NIMBY is still a valid argument for explaining opposition to windfarm development. It was established that there is not only an influence on the aesthetics of a landscape, but windfarm development also leads to changes in land-use and the creation of a multifunctional countryside.

Objective two was to review appropriate case studies reported in the international literature and apply relevant methodologies in this study. The applicability of these case studies became evident in chapter two, three and the results section. It was established that what the residents and visitors of the WCR are currently experiencing were experienced by people all over the

world before the implementation of not only wind energy projects, but any type of development which impacts the landscape to such an extent.

The third objective was to investigate theories, types and models of public decision making to explore the degree to which these could be applied to windfarm support or objection in the WCR. In Chapter 4 it became evident that the residents of this region possess a strong sense of sustainability towards the natural environment which might influence their decision on whether to support or oppose proposed windfarm developments. Both the conflict trade-off and rational choice theories help to explain public opinion and decision-making for windfarm development. Two types of decision-making as identified by Brynard (2006) were found to be the most appropriate in explaining windfarm support or opposition, namely intuitive and programmed decision making. The rounds model was applied as the decision making model which best describes the desired involvement of the residents in the decision making process of windfarm development. It concludes that the development of these windfarms should not just focus on a single actor or policy maker, but involve the public to a large extent to create a sense of community acceptance.

Objective four was to critique current policies in windfarm establishment and discover whether and how these shape social objection to or support for windfarm development in the WCR. It was established in Chapter 4 that care should be taken not to alienate the local people from windfarm development in their region of residence. People at grassroots level want to become involved in the policies and processes of windfarm development. Theron (2005) exclaims the importance that the public should not only be incorporated through one-way information flow, but also information exchange between policy makers and the public should also take place.

The fifth objective was to establish the perceptions and attitudes relating to wind turbines of three groups of actors (tourism industry, tourists and residents) in the WCR by conducting questionnaire surveys in 15 West Coast towns and villages and interpret these views in relation to the impacts of wind turbines on the local landscape. It was concluded that in general there exists a strong support for windfarm development in the region from both tourists and residents,

with the exception of key role-players in the tourism industry who do not believe that wind turbines can serve as a tourism attraction.

Objective six was to determine the insiders' place attachments to the WCR, whether the presence of wind turbines will affect these attachments and whether their attachments influence decisions to support or oppose the proposed windfarm developments. This study concluded that residents feel a strong sense of attachment to the WCR, but more than half of the residents still support windfarm development thereby questioning the ability of place attachment to influence decision-making to oppose proposed windfarm developments.

The seventh objective was to assess the extent to which the presence of wind turbines will affect the tourism value of the region. From the a vocal perspective of residents, especially from the tourism industry, there were unease regarding the impact of windfarms on tourism in the WCR, but the results of the study showed that both residents and visitors do not believe the development of windfarms in this region would deter them from visiting the area. Almost all of the visitors also indicated they would still visit the WCR even after the development of a number of windfarms because visiting the WCR is about more than just the natural landscape. Although all seven of the objectives were met, this study was not free of limitations as discussed in the following section.

5.3 LIMITATIONS OF THE STUDY

This study was faced with a number of limitations encountered with mainly the following: using questionnaires as principal research method; the distribution and collection of these questionnaires; data processing and data analysis.

First of all, the number of respondents is seen as a limitation to this study. The problem incurred is that this study commenced during October 2010 with the fieldwork period stretching from April 2011 to December 2011 during which timeframe the windfarm proposals only became known among the residents of this region. The main argument from visitors who did not wish to complete the questionnaire was that wind turbines would not affect them at all. They visit the

WCR for the sea, the people and the food. Therefore, the very low number of visitor responses indicates only those who wished to complete the survey, but it should be taken into account that it does not necessarily reflect a negative point of view from the visitors' perspective.

The length of the questionnaire proved to be another problem, but the idea was not to ask respondents a simple few questions, but a systematic set of questions which enabled them to make considerate decisions when answering the questions on support for or opposition to proposed windfarms. Also, despite using simple phrasing and developing the questionnaire as 'user friendly' as possible, some respondents still misinterpreted the questions. An example of this is where respondents had to indicate the top three features of the physical landscape of the region. The question explicitly stated that they had to put a number one to three only at three features and not at every feature, but some respondents still put a number at every feature. This was mainly the only question respondents struggled with. Those who answered incorrectly were not used in the analysis of the data.

The extent of the study area made questionnaire distribution and collection quite challenging and coupled with the length of the questionnaire, the fieldwork proved to be not as time and financially effective. The researcher first visited the region in April 2011 during Easter weekend when tourists flock to this area. It became evident that a large number of the respondents were not interested in completing the questionnaire in the researcher's presence, as was the initial idea. The researcher then decided to deliver these questionnaires to potential respondents and collect them after a period of two to three days. A number of respondents asked for an electronic version of the questionnaire which created the necessity for an online version of the questionnaire. The researcher also realized that not all the respondents would complete the questionnaire during the time spent in the field which led to the distribution of a questionnaire together with an addressed, sealed envelope which the respondent could use to return the completed questionnaire to the researcher. This method proved to be efficient as the researcher kept contacting the respondent to ask whether he/she has completed and mailed the questionnaire back.

An extensive limitation is that the questionnaire did not address the issue of the influence of the windfarm policy and planning processes and its perceived impact on the community support for windfarms. The researcher did not realize the significance of this issue until the fieldwork had already commenced. The attendance of the public participation meetings indicated that further research needs to be conducted on the policy and planning processes associated with windfarm developments.

Data processing was a problem because of the limited number of responses, but it was still sufficient enough to draw a number of conclusions and address the objectives of the study without generalizing the results. The possibility of biased results regarding the PGIS process exist with most resident respondents residing in the West Coast Peninsula subregion, but as the visitor respondents confirmed, this is the subregion where most concern regarding the proposed windfarm developments are. The most significant issue was to convince respondents to take part in the study and that the research was not funded by any of the developers who might prejudice the study in an unfair way.

Although there were limitations, most of them were addressed to the best possible manner and the study is seen as a viable contribution to the human geography subdiscipline. A number of recommendations can be made from this study as will now be discussed, followed by the concluding remarks.

5.4 RECOMMENDATIONS AND CONCLUSION

The success of the windfarms in the WCR depends very much on “how well the wind industry include the public in decisions, both for the opportunities this allows for broader dissemination of information about wind power and for the suggestions the public can contribute to the discussion of their concerns and how to accommodate them” (Pasqualetti 2002: 169). Community acceptance is of integral importance to each and every project and trust between the developers, planners, authorities and the public is the key to the success of these projects. Respondents prefer these windfarms to be located more in the interior of the WCR than in the

areas closer to the coast which represents a spatial planning perspective for the success of the proposed windfarms

From a tourism perspective, the industry must realize that the product of the region does not purely lie in its natural, undisturbed landscapes, but in the cultural landscape as well. The authentic, soulful, unpretentious and down-to-earth people of the West Coast will always be the jewel of the region with their unconditional hospitality and warmth. The slogan of the tourism organization holds: “Here are no strangers, just friends still to be met” (Cape West Coast Peninsula 2012) which clearly states the value of the cultural uniqueness of the people. The power of the WCR’s tourism lies in the hands of the residents themselves. The industry needs to start thinking of ways to incorporate these wind turbines in their product. Hermann Oelsner (2012) and the Oelsner group have started working in the right direction with the expansion of the current Darling windfarm involving the development of a visitor centre with accommodation for up to 40 people, an auditorium and an education and training facility. The idea with the Darling SEES visitor centre is to market the windfarm as an educational facility where school groups with their teachers can come and stay over and experience the tourism product portfolio the rest of the WCR has to offer.

What became evident through this study is that in contrast with the vocal public objection to the windfarm developments, the survey results showed fairly positive support from both groups for these developments. It is recommended that this study be supplemented with a post-impact study in order to determine if attitudes toward windfarm development in the WCR will also follow Wolsink (1994) and Devine-Wright’s (2005) U-curve and become generally positive again after development. This study confirmed that place attachment, landscapes and tourism are interrelated when it comes to the development of windfarms, but that windfarms do not necessarily hinder these components. With careful planning and adequate involvement of the public, windfarms will be able to increase the South African electricity supply and create a supply system which does not only supply in the needs of the current generation, but also account for the needs of tomorrow. The current possible social costs of these windfarm developments should however not be overlooked in the context of future energy gains.

REFERENCES

- Advance Tourism 2003. How regional communities benefit from tourism [online]. Available from:
http://www.advancetourism.com.au/files/orhoqm3nq2/as_regional_communities_benefit_from_tourism.pdf [Accessed 8 November 2012].
- Altman I & Low SM (eds) 1992. Place attachment. New York: Plenum Press.
- ArcGIS Desktop 2011. ArcGIS Desktop 10. ArcGIS Inc. [Online Help]. Online available:
<http://help.arcgis.com/en/arcgisdesktop/10.0/help/index.html#//005p00000010000000>
- Arcus GIBB 2011. St Helena community wind farm development EIA issues and response report [online]. Available from:
http://projects.gibb.co.za/Portals/3/projects/201201%20StHelena/App%20E1_Issues%20and%20Response%20Report.pdf [Accessed 13 October 2012].
- Aurecon 2011. Environmental impact assessment: Proposed IPD Power Vredenburg wind energy facility, Saldanha Bay municipal area, Western Cape: Comments and response report 2 (draft scoping report phase) [online]. Available from:
http://aurecon.webfoundryza.com/assets/files/vredenburgDSR/Appendices/Appendix%20D/CRR2/CRR%20II_Vredenburg%20IPD%20Revised%20DSR_Final.pdf
[Accessed 13 October 2012].
- Aurecon 2012. Basic impact assessment process: Proposed isivunguvungu wind energy facility Saldanha Bay, Western Cape: Comments and response report 2: Comments on draft basic assessment report [online]. Available from:
[http://aurecon.webfoundryza.com/assets/files/107108%20Isivunguvungu%20WEF/107108_CRR%202_Complete\(1\).pdf](http://aurecon.webfoundryza.com/assets/files/107108%20Isivunguvungu%20WEF/107108_CRR%202_Complete(1).pdf) [Accessed 13 October 2012].
- Bailey KD 1994. Methods of social research, 4th ed. New York: The Free Press.
- Bang H, Ellinger AE, Hadjimarcou J & Traichal PA 2000. Consumer concern, knowledge, belief, and attitude toward renewable energy: An application of the reasoned action theory. *Psychology & Marketing* 17: 449-467.
- Barbour R 2009. Introducing qualitative research. London: SAGE Publications Ltd.
- Baron J & Weber EU 2001. Introduction. In Weber EU, Baron J & Loomes G (eds) *Conflict and tradeoffs in decision making*, 1-24. New York: Cambridge University Press.
- Bell D, Gray T & Haggett C 2005. The 'social gap' in wind farm siting decisions: Explanations and policy responses. *Environmental Politics* 14: 460-477.

- Breukers S 2007. Institutional capacity building for wind power. A geographical comparison. Doctoral dissertation. Amsterdam: University of Amsterdam.
- Brown G & Raymond C 2006. Mapping spatial attributes for conservation and tourism planning, Otways region Victoria: Survey of residents and visitors [online]. Available from http://www.crctourism.com.au/WMS/Upload/Resources/bookshop/Brown_TourismPlanning-Otways.VIC.pdf [Accessed 7 February 2011].
- Brown G & Raymond C 2007. The relationship between place attachment and landscape values: Toward mapping place attachment. *Applied Geography* 27: 89-111.
- Brusa A & Lanfranconi C 2006. Guidelines for realization of wind plants and their integration in the territory. Paper delivered at the EWEC 2006, Milano.
- Brynard P 2006. Policy decision making. In Cloete F, Wissink H & De Coning C (eds) *Improving public policy: From theory to practice*, 2nd ed. 165-179. Pretoria: Van Schaik.
- Buckland EA & Williams DR 2003. A quantitative synthesis of place attachment research: Investigating past experience and place attachment. Paper delivered at the Northeastern Recreation Research Symposium, New York.
- Cape West Coast Peninsula 2012. About the Cape West Coast Peninsula [online]. Available from: http://capewestcoastpeninsula.co.za/who_we_are.php [Accessed 12 January 2012].
- Cary M 2012. Energy efficiency and renewable energy resources. *Energize* April: 3.
- Chambers A 2004. *Renewable energy in nontechnical language*. Tulsa, Oklahoma: Pennwell.
- Chen Z & Blaaberg F 2009. Wind farm – A power source in future power systems. *Renewable and Sustainable Energy Reviews* 13: 1288-1300.
- Clifford NJ & Valentine G 2003. Getting started in geographical research. In Clifford NJ & Valentine G (eds) *Key methods in geography*, 1-16. London: SAGE Publications Ltd.
- Countryside Energy Co-operative Inc. 2010. *Windfarms & Tourism* [online]. Available from: www.countrysideenergyco-op.ca [Accessed 12 October 2010].
- Cowell R, Bristow G & Munday M 2011. Acceptance, acceptability and environmental justice: The role of community benefits in wind energy development. *Journal of Environmental Planning and Management* 54: 539-557.
- Crang M & Cook I 2007. *Doing ethnographies*. London: SAGE Publications Ltd.
- Cresswell J 2003. *Research design: Qualitative, quantitative and mixing method approaches*. London: SAGE Publications Ltd.

- Dale VH, Efroymson RA & Kline KL 2011. The land use-climate change-energy nexus. *Landscape ecology* 26(2011): 755-773.
- Damborg S 2003. Public attitudes towards wind power [online]. Available from: <http://www.windwin.de/images/pdf/wc03041.pdf>. [Accessed 12 October 2010].
- Davies H 2011. A strategic assessment of sites suitable for wind farms in the Western Cape in terms of relevant environmental and planning considerations. Paper delivered at 3rd Wind Power Africa conference, Cape Town.
- Dawes RM 1988. *Rational choice in an uncertain world*. Orlando: Harcourt Brace Jovanovich, Inc.
- Devine-Wright P 2005. Beyond NIMBYism: Towards an integrated framework for understanding public perceptions of wind energy. *Wind Energy* 8: 125-139.
- Devine-Wright P 2009. Rethinking NIMBYism: The role of place attachment and place identity in explaining place-protective action. *Journal of Community & Applied Social Psychology* 19: 426-441.
- Devlin E 2002. Factors affecting public acceptance of wind turbines in Sweden. Master's thesis. Lund: Lund University.
- De Vries S, De Groot M & Broers J 2012. Eyesores in sight: Quantifying the impact of man-made elements on the scenic beauty of Dutch landscapes. *Landscape and Urban Planning* 105: 118-127.
- Diab RD 1995. *Wind atlas of South Africa*. Pretoria: Department of Mineral and Energy Affairs.
- Diamond M 2012. Wind power projects & birds: The potential impacts and proposed approach. Paper delivered at Wind Power Africa conference, Cape Town.
- Donaldson R, Van Niekerk A, Du Plessis D & Spocter M 2012. Non-metropolitan growth potential of Western Cape municipalities. *Urban Forum* 23: 367-389.
- Dorling D 2003. Using statistics to describe and explore data. In Clifford NJ & Valentine G (eds) *Key methods in geography*, 369-382. London: SAGE Publications Ltd.
- Dunlop CA 2009. Regulating land use technologies: How does government juggle the risks? In Winter M & Lobley M (eds) *What is land for? The food, fuel and climate change debate*, 263-291. London: Earthscan.
- Dunn CE 2007. Participatory GIS – a people's GIS? *Progress in Human Geography* 31: 616-637.
- Du Toit I 2012. Ontdek die Weskus vir 'n opwindende aftrede of wegbreek. *Plus* 50 February/March: 12-21.

- Dwyer C & Limb M 2001. Introduction: Doing qualitative research in geography. In Limb M & Dwyer C (eds) *Qualitative methodologies for geographers: Issues and debates*, 1-20. New York: Oxford University Press.
- Elliot D 2000. Renewable energy and sustainable futures. *Futures* 32: 261-274.
- Ellis G, Barry J & Robinson C 2007. Many ways to say 'no', different ways to say 'yes': Applying Q-methodology to understand public acceptance of wind farm proposals. *Journal of Environmental Planning and Management* 50(4): 517-551.
- Eltham DC, Harrison GP & Simon JA 2008. Change in public attitudes towards a Cornish wind farm: Implications for planning. *Energy Policy* 36: 23-33.
- Environmental Evaluation Unit UCT 2010. The proposed Kerriefontein and Darling wind farm final environmental impact report [online]. Available from: http://www.eeu.org.za/thematic-areas/environmental-management-and-sustainability/kerriefontein-final/Kerrie%20Fontein%20%20Darling%20Wind%20Farm_FEIR_22Sept11.pdf [Accessed 13 October 2012].
- ERM 2010. EIA for proposed Dwarskersbos wind energy facility: Annex C: Public participation documents [online]. Available from: http://erm.com/PageFiles/3100/Annex_C_Public%20Participation%20Docs_Open%20day.pdf [Accessed 13 October 2012].
- ERM 2011. EIA for proposed Nooitgedacht wind energy facility: Annex C: Public participation documents [online]. Available from: [http://erm.com/PageFiles/3095/Annex_C_PP%20Docs\(small\).pdf](http://erm.com/PageFiles/3095/Annex_C_PP%20Docs(small).pdf) [Accessed 13 October 2012].
- Eskom 2011. Integrated report [online]. Available from http://financialresults.co.za/2011/eskom_ar2011/downloads/eskom-ar2011.pdf [Accessed 28 May 2012].
- European Renewable Energy Council 2004. *Renewable energy in Europe: Building markets and capacity*. London: James & James.
- European Wind Energy Association (EWEA) 2010. *Wind energy: The facts*. 2nd ed. London: Earthscan.
- Evans RL 2008. *Fueling our future: An introduction to sustainable energy*. 2nd ed. New York: Cambridge University Press.
- Fechner CA (Producer and Director) 2010. *The 4th revolution: Energy autonomy*. (DVD). Immendingen: fechnerMEDIA.

- Financial Mail 2009. Wind energy developers: Going where it blows. 16 October: 18.
- Firestone WA 1987. Meaning in method: The rhetoric of quantitative and qualitative research. *Educational Researcher* 16(7): 16-21.
- Fishbein M & Ajzen I 1975. *Belief, attitude, intention and behavior: An introduction to theory and research*. California: Addison-Wesley Publishing Inc.
- Frolova M & Pérez Pérez B 2011. New landscape concerns in the development of renewable energy projects in South-west Spain. In Roca Z, Claval P & Agnew J (eds) *Landscapes, identities and development*, 389-401. Surrey: Farmham.
- Gibbs D 2000. Ecological modernization, regional economic development and regional development agencies. *Geoforum* 31: 9-19.
- Gipe P 1995. *Wind energy comes of age*. New York: John Wiley & Sons.
- Gipe P 2004. *Wind power: Renewable energy for home, farm and business*. White River Junction: Chelsea Green Publishing Company.
- Giuliani V 2002. Theory of attachment and place attachment. In Bonnes M, Lee T & Bonaiuto M (eds) *Psychological theories for environmental issues*, 137-170. Aldershot: Ashgate.
- Graßl H, Kokott J, Kulesa M, Luther J, Nuscheler F, Sauerborn R, Schellnhuber HJ, Schubert R & Schulze ED 2004. *World in transition: Towards sustainable energy systems*. London: Earthscan.
- Hammarlund K 2002. Society and wind power in Sweden. In Pasqualetti MJ, Gipe P & Righter RW (eds) *Wind power in view: Energy landscapes in a crowded world*, 101-114. London: Academic Press.
- Healey P 2006. *Collaborative planning. Shaping places in fragmented societies*. 2nd ed. London: Macmillan.
- Heather-Clark S 2011. *Wind energy: The good, the bad and the ugly*. Paper delivered at meeting of the West Coast Business Chamber on 28 July, Saldanha.
- Hecklau J 2005. Visual characteristics of wind turbines, *Proceedings of the NWCC Technical Considerations in siting wind developments* [online]. Available from: <http://www.nationalwind.org/assets/siting/proceedings.pdf>. [Accessed: 2 September 2012].
- Herbert GMJ, Iniyar S, Sreevalsan E & Rajapandian S 2007. A review of wind energy technologies. *Renewable and Sustainable Energy Reviews* 11: 1117-1145.

- Hill R 2012. The argumentative theory of reasoning and its implications for deliberative decision-making. Paper delivered at SSAG 9th Biennial Conference on Building critical conversations in Geography, Cape Town.
- Holden E 1998. Planning theory: Democracy or sustainable development? – both (but don't bother about the bread, please). *Scandinavian Housing and Planning Research* 15: 227-247.
- Hopkins P, Olivier W, Slabbert D & Du Plessis J 2010. *Padlangas deur Suid-Afrika: 'n Streek-vir-streek reisgids*. Kaapstad: Stuik Travel & Heritage.
- IAP 2005. The core values revision process [online]. Available from <http://www.iap2.org/displaycommon.cfm?an=1&subarticlenbr=45> [Accessed 4 June 2012].
- Jenkins A 2011. Wind energy and birds in South Africa. Paper presented at West Coast Bird Club meeting on 20 July, Windstone centre, Vredenburg.
- Jerpåsen GB & Larsen KC 2011. Visual impact of wind farms on cultural heritage: A Norwegian case study. *Environmental Impact Assessment Review* 31: 206-215.
- Jessa Z 2012. Wind power development and use: Lessons learned from Sweden and India. Paper delivered at Wind Power Africa conference, Cape Town.
- Jorgensen BS & Stedman RC 2001. Sense of place as an attitude: Lakeshore owners attitudes toward their properties. *Journal of Environmental Psychology* 21: 233-248.
- Juwi 2008. Gallery [online]. Available from: <http://www.juwi.co.za/gallery.html> [Accessed 4 June 2011].
- Kaldellis JK 2005. Social attitude towards wind energy applications in Greece. *Energy Policy* 33: 595-602.
- Katsaprakakis DA 2012. A review of the environmental and human impacts from wind parks: A case study for the Prefecture of Lasithi, Crete. *Renewable and Sustainable Energy Reviews* 16: 2850-2863.
- Kempton W, Firestone J, Lilley J, Rouleau T & Whitaker P 2005. The off-shore wind power debate: Views from Cape Cod. *Coastal Management* 33: 119-149.
- Krohn S & Damborg S 1999. On public attitudes towards wind power. *Renewable Energy* 16: 954-960.
- Kumar R 1999. *Research methodology: A step-by-step guide for beginners*. London: SAGE Publications Ltd.

- Kuvlesky WP, Brennan LA, Morrison ML, Boydston KK, Ballard BM & Bryant FC 2007. Wind energy development and wildlife conservation: Challenges and opportunities. *The Journal of Wildlife Management* 71: 2487-2498.
- Kyle G, Graefe A, Manning R & Bacon J 2004. Effects of place attachment on users' perceptions of social and environmental conditions in a natural setting. *Journal of Environmental Psychology* 24: 213-225.
- Kyle GT, Mowen AJ & Tarrant M 2004. Linking place preferences with place meaning: An examination of the relationship between place motivation and place attachment. *Journal of Environmental Psychology* 24(2004): 439-454.
- Lane SN 2003. Numerical modelling in physical geography: Understanding explanation and prediction. In Clifford NJ & Valentine G (eds) *Key methods in geography*, 264-290. London: SAGE Publications Ltd.
- Lester S 1999. An introduction to phenomenological research [online]. Available from: <http://www.sld.demon.co.uk/resmethy.pdf> [Accessed 6 September 2012].
- Likert R 1932. A technique for the measurement of attitudes. *Archives of Psychology* 140: 44-53.
- Lobley M & Winter M 2009. Introduction: Knowing the land. In Winter M & Lobley M (ed) *What is land for? The food, fuel and climate change debate*, 1-20. London: Earthscan.
- Lombard A 2010. Feasibility of wind farms in the Western Cape. Honours research report. Stellenbosch: Stellenbosch University, Department of Geography and Environmental Studies.
- Longley PA, Goodchild MF, Maguire DJ & Rhind DW 2005. *Geographic information systems and science*. 2nd ed. Chichester: John Wiley & Sons, Ltd.
- Lothian A 1999. Landscape and the philosophy of aesthetics: Is landscape quality inherent in the landscape or in the eye of the beholder? *Landscape and Urban Planning* 44: 177-198.
- Loubser K 2011. Boere versprei risiko met windplase. *Weslander* 8 September: 17.
- Low SM 1992. Symbolic ties that bind. In Altman I & Low SM (eds) *Place attachment*, 165-185. New York: Plenum Press.
- Luce MF, Payne JW & Bettman JR 2001. The impact of emotional tradeoff difficulty on decision behavior. In Weber EU, Baron J & Loomes G (eds) *Conflict and tradeoffs in decision making*, 86-109. New York: Cambridge University Press.
- Lutgens FK & Tarbuck EJ 2007. *The atmosphere*. 10th ed. New Jersey: Pearson Prentice Hall.

- Mallon K 2006. Ten features of successful renewable markets. In Mallon K (ed) *Renewable energy policy and politics: A handbook for decision-making*, 35-84. London: Earthscan.
- Manwell JF, McGowan JG & Rogers AL 2002. *Wind energy: Theory, design and application*. Chichester: Wiley.
- McDaid L 2009. Renewable energy: Harnessing the power of Africa? In McDonald DA (ed) *Electric capitalism: Recolonising Africa on the power grid*, 202-228. Cape Town: HSRC Press.
- Meissenheimer H 2011b. Tourism concerned about wind farms. *Weslander* 8 September: 17.
- Mercer D 2003. The great Australian wind rush and the devaluation of landscape amenity. *Australian Geographer* 34: 91-121.
- Meyer C 2011. The Darling Wildflower Show: Annual spectacular. *West Coast Winter/Spring*, Issue 5: 34.
- Mohammad R 2001. 'Insiders' and/or 'outsiders': Positionality, theory and praxis. In Limb M & Dwyer C (eds) *Qualitative methodologies for geographers: Issues and debates*, 101-117. New York: Oxford University Press.
- Morgan RK 1998. *Environmental impact assessment: A methodological perspective*. Dordrecht: Kluwer Academic Publishers.
- MORI 2002. Tourist attitudes towards wind farms [online]. Available from: <http://www.bwea.com/pdf/MORI.pdf> [Accessed 15 March 2011].
- Morris C 2006. *Energy switch*. Gabriola, B.C.: New Society Publishers.
- Mouton J 2001. *How to succeed in your master's & doctoral studies: A South African guide and resource book*. Pretoria: Van Schaik.
- Mumford J & Gray D 2010. Consumer engagement in alternative energy: Can the regulators and suppliers be trusted? *Energy Policy* 38: 2664-2671.
- NaturalLifeNetwork.com 2010. Energy Autonomy: THE 4th REVOLUTION [online]. Available from: http://www.naturallifenetwork.com/news_detail.cfm?news=100 [Accessed 16 August 2011].
- Newman I & Benz CR 1998. *Qualitative-quantitative research methodology: Exploring the interactive continuum*. Carbondale: Southern Illinois University Press.
- Nielsen FB 2002. A formulas for success in Denmark. In Pasqualetti MJ, Gipe P & Righter RW (eds) *Wind power in view: Energy landscapes in a crowded world*, 115-132. London: Academic Press.

- Oelsner H 2012. Darling SEES – Renewable energy training and education centre. Paper delivered at Wind Power Africa conference, Cape Town.
- Omer AM 2008. Green energies and the environment. *Renewable and Sustainable Energy Reviews* 12: 1789-1821.
- Omnibus Report 1995. Public attitudes towards wind energy. Toronto: Canadian Wind Energy Association and Environmental Monitor.
- Oxford English Dictionary 2011. NIMBY definition [online]. Available from: <http://www.oed.com/view/Entry/245895?redirectedFrom=NIMBYism#eid12385700>. [Accessed 20 December 2011].
- Pasqualetti MJ 2000. Morality, space, and the power of wind energy landscapes. *Geographical Review* 90: 381-394.
- Pasqualetti MJ 2001a. Wind energy landscapes: Society and technology in the California desert. *Society and Natural Resources* 14: 689-699.
- Pasqualetti MJ 2001b. Living with wind power in a hostile landscape. In Pasqualetti MJ, Gipe P & Righter RW (eds) *Wind power in view: Energy landscapes in a crowded world*, 153-172. San Diego: Academic Press
- Pasqualetti MJ 2011a. Social barriers to renewable energy landscapes. *The Geographical Review* 101: 201-223.
- Pasqualetti MJ 2011b. Opposing wind energy landscapes: A search for common cause. *Annals of the Association of American Geographers* 101: 907-917.
- Paviour SJ 2012. Carbon sequestration and trading potential: a Karoo case study. Master's thesis. Stellenbosch: Stellenbosch University, Department of Geography and Environmental Studies.
- Pimentel D, Herz M, Glickstein M, Zimmerman M, Allen R, Becker K, Evans J, Hussain B, Sarsfeld R, Grosfeld A & Seidel T 2002. Renewable energy: Current and potential issues. *BioScience* 52: 1111-1120.
- Proshansky HM 1978. The city and self-identity. *Environment and Behavior* 10: 147-169.
- Provincial Government of the Western Cape 2006. Strategic initiative to introduce commercial land based wind energy development in the Western Cape: Towards a regional methodology for wind energy site selection, Report 6: Proposed project level methodology [online]. Available from: http://www.westerncape.gov.za/Text/2006/7/7_report_6_proposed_project_level_methodology_full_report_2.pdf [Accessed 3 August 2012].

- Rea LM & Parker RA 2005. Designing and conducting survey research: A comprehensive guide. 3rd ed. San Francisco: John Wiley & Sons, Inc.
- RenewableUK 2010. Wind farms and tourism [online]. Available from: <http://www.bwea.com/pdf/briefings/tourism.pdf> [Accessed 15 March 2011].
- Ricci M, Bellaby P & Flynn R 2010. Engaging the public to paths to sustainable energy: Who has to trust whom? *Energy Policy* 38: 2633-2640.
- Rodman LC & Meentemeyer RK 2005. A geographic analysis of wind turbine placement in Northern California. *Energy Policy* 34: 2137-2149.
- Rubenstein JM 2008. *The cultural landscape: An introduction to human geography*. 9th ed. New Jersey: Pearson Prentice Hall.
- Savannah Environmental 2010. Final scoping report: Proposed Moyeng Energy West Coast One wind energy facility environmental impact assessment, Western Cape [online]. Available from: <http://www.nieuwerustnoisewatch.org/wp-content/documents/commentsWC1/West%20Coast%20One%20FEIR.pdf> [Accessed 13 October 2012].
- Savannah Environmental 2011. Revised final environmental impact assessment report: Proposed Rheboksfontein wind energy facility and associated infrastructure on a site near Darling, Western Cape Province for Moyeng Energy (Pty) Ltd [online]. Available from: [http://www.savannahsa.com/documents/1155/Rheboksfontein%20FEIR%20revised%20%20\(Main%20Report\)%20Aug11.pdf](http://www.savannahsa.com/documents/1155/Rheboksfontein%20FEIR%20revised%20%20(Main%20Report)%20Aug11.pdf) [Accessed 23 March 2012].
- Scannell L & Gifford R 2010. Defining place attachment: A tripartite organizing framework. *Journal of Environmental Psychology* 30: 1-10.
- Silverman D (ed) 2000. *Doing qualitative research: A practical handbook*. London: SAGE Publications Pty Ltd.
- Simon AM 1996. A summary of research conducted into attitudes to wind power from 1990-1996. London: British Wind Energy Association.
- Simpson JF (Producer and Director) 2010. *The magic of the West Coast: Discover and experience the charm of the West Coast*. (DVD). Montagu: JTS International.
- Smart Holidays 2010/11a. Yzerfontein. Summer Edition 2010/11: 12-13.
- Smart Holidays 2010/11b. St Helena Bay. Summer Edition 2010/11: 31-37.
- Smith ERAN & Klick H 2008. Explaining NIMBY opposition to wind power. Paper delivered at Annual meeting of the American Political Science Association, Boston.

- South Africa 2010. National Environmental Management Act no 107 of 1998: Environmental Impact Assessment Regulations. Notice No 543 (Department of Environmental Affairs). Government Gazette No 33306. Pretoria: Government Printer.
- South Africa 2011. Electricity regulations on the Integrated Resource Plan 2010 – 2030. Notice No 400 (Department of Energy). Government Gazette No 34263. Pretoria: Government Printer.
- SouthAfrica.info 2004. SA wind power: Not just a breeze [online]. Available from: <http://www.southafrica.info/business/economy/infrastructure/windpower.htm>. [Accessed 12 August 2010].
- Spilsbury L & Spilsbury R 2009. Energy debate: Wind power. London: Wayland.
- Stanton C 2005. Visual impacts: UK and European perspectives. Proceedings of the NWCC Technical Considerations in siting wind developments [online]. Available from: <http://www.nationalwind.org/assets/siting/proceedings.pdf>. [Accessed: 2 September 2012].
- Stedman RC 2002. Toward a social psychology of place: Predicting behavior from place-based cognitions, attitude, and identity. *Environment and Behavior* 34: 405-425.
- Stedman RC 2003. Is it really just a social construction?: The contribution of the physical environment to sense of place. *Society and Natural Resources* 16: 617-685.
- Stevens U 2011. West Coast and beyond. Paarden Eiland: Wanderlust Books.
- Steyn A (ed) 1987. Off the beaten track: Selected day drives in Southern Africa. Cape Town: AA The Motorist Publications.
- Stokowski PA 2002. Languages of place and discourses of power: Constructing new senses of place. *Journal of Leisure Research* 34: 368-382.
- Sustainable Energy Ireland 2003. Attitudes towards the development of windfarms in Ireland [online]. Available from: <http://www.seai.ie/uploadedfiles/RenewableEnergy/Attitudestowardswind.pdf> [Accessed 14 January 2011].
- Tait L 2012. Community benefits and risks in South Africa: Policy frameworks and business models. World Wind Energy Association (WWEA): Quaterly bulletin, Issue 2: 20-23.
- Tegou L, Polatidis H & Haralambopoulos DA 2010. Environmental management framework for wind farm siting: Methodology and case study. *Journal of Environmental Management* 91: 2134-2147.
- Teisman GR 2000. Models for research into decision-making processes: On phases, streams and decision-making rounds. *Public Administration* 78: 937-956.

- Thayer RL & Freeman C 1987. Altamont: Public perceptions of a wind energy landscape. *Landscape and Urban Planning* 14: 379-398.
- Theron F 2005. Public participation as a micro-level development strategy. In Davids I, Theron F & Maphunye KJ (eds) *Participatory development in South Africa*, 111-132. Pretoria: Van Schaik.
- Tourism Queensland 2012. How tourism benefits communities [online]. Available from: http://www.tq.com.au/resource-centre/community-engagement/how-tourism-benefits-communities/how-tourism-benefits-communities_home.cfm [Accessed 8 November 2012].
- Trainer T 2007. *Renewable energy cannot sustain a consumer society*. London: Springer.
- Tuan YF 1974. *Topophilia: A study of environmental perception, attitudes, and values*. New York: Columbia University Press.
- UNFCCC 2011. Clean development mechanism project design document form: Hopefield wind energy facility in South Africa [online]. Available from: http://www.energy.gov.za/files/esources/kyoto/2012/2011-10-11_HopefieldWindEnergyFacilityPDD.pdf [Accessed 13 October 2012].
- Valentine G 1997. "Tell me about...": Using interviews as a research methodology. In Flowerdew R & Martin D (eds) *Methods in human geography: A guide for students doing a research project*, 110-126. Edinburgh Gate: Addison Wesley Longman.
- Van de Wardt JW & Staats H 1988. *Landschappen met windturbines*. Leiden: University of Leiden.
- Van der Horst D 2007. NIMBY or not? Exploring the relevance of location and the politics of voiced opinions in renewable energy siting controversies. *Energy Policy* 35: 2705-2714.
- Vaske JJ & Kobrin CK 2001. Place attachment and environmentally responsible behavior. *Journal of Environmental Education* 32: 16-21.
- Walliman N 2005. *Your research project: A step-by-step guide for the first-time researcher*, 2nd ed. London: SAGE Publications Ltd.
- Waugh D 2009. *Geography: An integrated approach*. 4th ed. Cheltenham: Nelson Thornes.
- West Coast District Municipality 2012b. *Spatial Development Framework* [online]. Available from: <http://westcoastdm.co.za/documents/sdf/> [Accessed 20 July 2012].
- Western Cape Government Provincial Treasury 2011. *Regional development profile: West Coast District* [online]. Available from:

http://www.westerncape.gov.za/other/2011/12/dc01_west_coast_district_profile_15-12-11.pdf [Accessed 4 August 2012].

Wide Blue 2012. Picture of Port Owen Marina [online]. Available from:

<http://www.wideblue.co.za/portowen.html> [Accessed 15 July 2012].

Wilbanks TJ, Bhatt V, Bilello DE, Bull SR, Ekmann J, Horak WC, Huang YJ, Levine MD, Sale MJ, Schmalzer DK, Scott MJ 2008. Effects of climate change on energy production and use in the United States [online]. Available from:

<http://www.climatescience.gov/Library/sap/sap4-5/final-report/sap4-5-final-all.pdf>

[Accessed 4 October 2012].

Williams DR & Vaske JJ 2003. The measurement of place attachment: Validity and generalizability of a psychometric approach. *Forest Science* 49: 830-840.

Williams F 2010. Windkrag verg groot belegging vooraf. *Sake Burger* 23 May: 6.

Wind Directions 2003. A summary of opinion surveys on wind power. September/October 2003: 16-33.

Wizelius T 2007. *Developing wind power projects: Theory and practice*. London: Earthscan.

Wolsink M 1994. Entanglement of interests and motives. Assumptions behind the nimby-theory on facility siting. *Urban Studies* 31: 851-866.

Wolsink 1996. Dutch wind power policy: Stagnating implementation of renewables. *Energy Policy* 24: 1079-1088.

Wolsink M 2000. Wind power and the NIMBY-myth: Institutional capacity and the limited significance of public support. *Renewable Energy* 21: 49-64.

Wolsink M 2007a. Planning of renewables schemes: Deliberative and fair decision-making on landscape issues instead of reproachful accusations of non-cooperation. *Energy Policy* 35: 2692-2704.

Wolsink M 2007b. Wind power implementation: The nature of public attitudes: Equity and fairness instead of 'backyard motives'. *Renewable and Sustainable Energy Reviews* 11: 1188-1207.

Woods M 2003. Conflicting environmental visions of the rural: Windfarm development in Mid Wales. *Sociologia Ruralis* 43: 171-288.

World Wind Energy Association 2008. *Wind energy international 2007/2008*. Bonn: World Wind Energy Association.

World Wind Energy Association 2011. *Half-year report 2011*. Bonn: World Wind Energy Association.

Wüstenhagen R, Wolsink M & Bürer MJ 2007. Social acceptance of renewable energy innovation: An introduction to the concept. *Energy Policy* 35: 2683-2691.

PERSONAL COMMUNICATIONS

Harvey K 2011. Concerned Paternoster resident, Paternoster. Discussion on 19 December at a community meeting at the Solomon Tollman Hall.

Kotze D 2012. Town and Regional Planner West Coast District Municipality, Moorreesburg. Discussion on 12 July of information on proposed windfarms in the WCR.

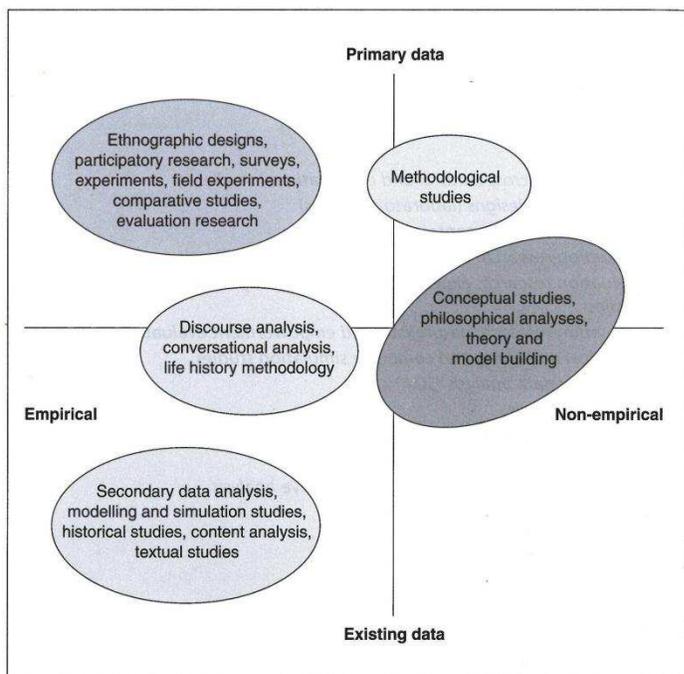
Lubitz M 2011. Owner of Farrout Guesthouse/B&B, Paternoster. Interview on 20 July 2011 about her concern with the wind farm proposal close to Paternoster.

Osborn D 2011. Manager Saldanha Bay Tourism Organisation, Langebaan. Interview on 18 July about tourism industry's concern with wind farm proposals.

Robinson J 2011. Manager of Trevelyn Lodge: A home for adults with special needs, Trekoskraal. Interview on 20 July 2011.

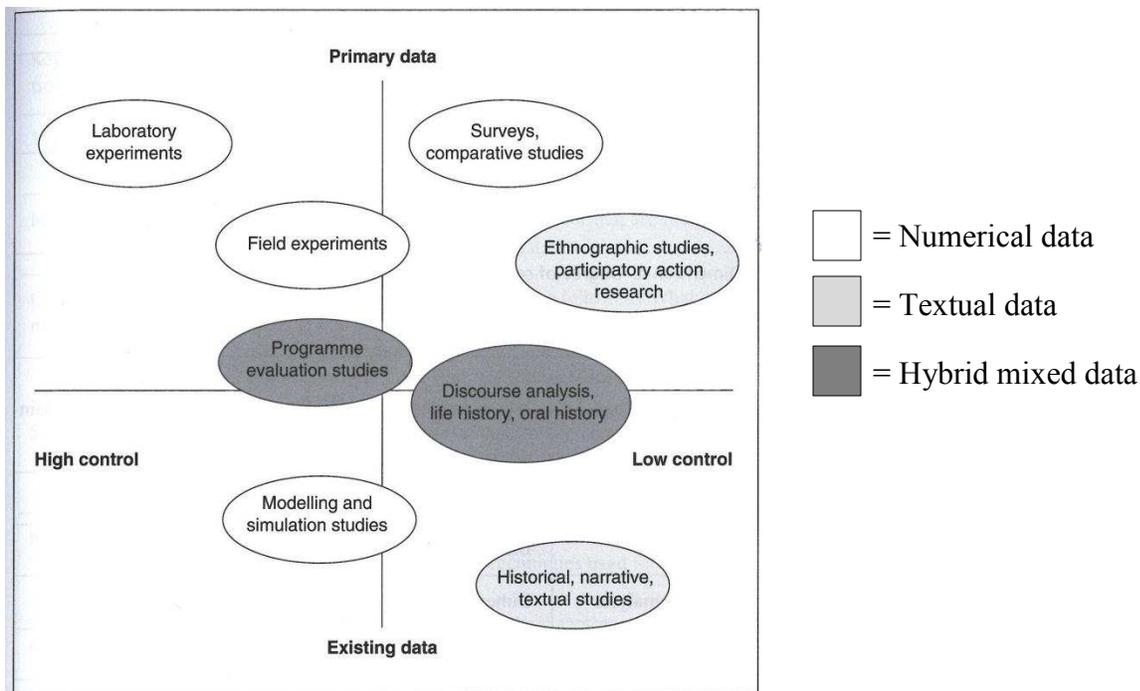
Wolsink M 2012. Associate Professor, Environmental Geography, University of Amsterdam. Email on 11 June 2012 about using NIMBY to explain opposition to wind farms in the WCR.

APPENDIX A: FRAMEWORKS FOR CLASSIFYING RESEARCH



Source: Mouton (2001: 144)

Figure A.1 Empirical vs non-empirical research designs



Source: Mouton (2001: 145)

Figure A.2 Primary vs secondary data collection in empirical research

APPENDIX B: SEMI-STRUCTURED INTERVIEW CHECKLIST**INTRODUCTION:**

I am a Master's student in Geography and Environmental Studies at Stellenbosch University. I am conducting research on the relationship between wind energy landscapes, place attachment and tourism in the West Coast/Route 27 region.

With your permission I would like to make notes of this informal interview and if at any point you want to end the interview, please feel free to do so.

BIOGRAPHICAL INFORMATION:

Profession:

Company/institution/interest group you represent:

TYPES OF QUESTIONS ASKED:

What do you value most about the West Coast region?

Why do you choose to live here?

Are you aware of the number of windfarms proposed for this region?

What is your view on the proposed windfarms?

How do you think tourism will be affected by these windfarms?

Do you have any suggestions for the development of these windfarms or specific places where you would want to see them developed?

APPENDIX C: ENGLISH QUESTIONNAIRE FOR RESIDENTS



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jou kennisvenoot • your knowledge partner

Dear Participant

I am a postgraduate student in Geography and Environmental Studies at Stellenbosch University. I am conducting a survey for my Master's studies on the relationship between wind energy landscapes, place attachment and tourism in the Route 27, West Coast region.

This survey should only take about 15-20 minutes of your time. Your answers will be regarded as anonymous and will be kept confidential. Your help with this research is strictly voluntary. You don't have to answer any questions you don't wish to.

If you have questions or concerns, please contact me, Andrea Lombard at: 15080242@sun.ac.za. You may also contact my supervisor, Prof Sanette Ferreira: slaf@sun.ac.za.

Thank you for your time and consideration.

Sincerely,

A handwritten signature in black ink, appearing to read 'Andrea Lombard', written over a horizontal line.

Andrea Lombard
Stellenbosch University Student

A handwritten signature in black ink, appearing to read 'S. Ferreira', written over a horizontal line.

Prof Sanette Ferreira
Associate Professor, Department of Geography and Environmental Studies



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**ROUTE 27/WEST COAST SURVEY OF THE WIND ENERGY LANDSCAPE AND
IMPACT ON TOURISM
QUESTIONNAIRE FOR RESIDENTS**

**SECTION A: FAMILIARITY WITH AND ATTACHMENT TO ROUTE 27, WEST
COAST REGION**

A1) How many years have you lived in the Route 27/West Coast region? _____

A2) Rate your knowledge of the Route27/West Coast region (Please mark one option).

Excellent	<input type="checkbox"/>	Good	<input type="checkbox"/>	Fair	<input type="checkbox"/>	Limited	<input type="checkbox"/>	Poor	<input type="checkbox"/>
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A3) Below are a set of statements about your personal attachment to the Route 27/West Coast region. Please indicate your degree of agreement or disagreement with each statement. (Mark one response for each).

STATEMENT	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE
The West Coast region is a part of me	1	2	3	4	5
The West Coast region is very special to me	1	2	3	4	5
I am very attached to the West Coast region	1	2	3	4	5
Living in the West Coast region says a lot about me as a person	1	2	3	4	5
The West Coast region is the best place for doing what I like to do	1	2	3	4	5
I get more satisfaction from living in the West Coast region than any other place	1	2	3	4	5
I really miss the West Coast region when I am away from it for too long	1	2	3	4	5

A4) In which West Coast town do you reside? _____

A4.1) Are you a homeowner in this town?

YES	<input type="checkbox"/>	NO	<input type="checkbox"/>
-----	--------------------------	----	--------------------------

A4.2) How many years have you been residing in this town? _____

A4.3) What do you enjoy most about living in this town? _____

A5) Over the period you have been living in the Route 27/West Coast region, which one of the following statements best describes how tourism has altered the region:

Made it a more desirable region to live	<input type="checkbox"/>
Made it a less desirable region to live	<input type="checkbox"/>
Stayed about the same	<input type="checkbox"/>
Cannot form an opinion yet	<input type="checkbox"/>

A6) If you had the opportunity to live elsewhere in or outside of the West Coast region with the same standard of living, what would you do?

I would still live in this place on the West Coast region	<input type="checkbox"/>
I would move to another place or community in the West Coast	<input type="checkbox"/>
I would move away from the West Coast	<input type="checkbox"/>

SECTION B: ENERGY-RELATED ISSUES

B1) Are issues about the sustainability of the natural environment important to you?

YES	<input type="checkbox"/>	NO	<input type="checkbox"/>	Unsure	<input type="checkbox"/>
-----	--------------------------	----	--------------------------	--------	--------------------------

B1.1) How real do you consider the following issues to be? (1 = very real; 2 = somewhat real; 3 = neutral; 4 = imagined; 5 = non-existent)

Pollution caused by non-renewable energy sources	1	2	3	4	5
Exhaustion of fossil fuels	1	2	3	4	5
Increases in production of CO ₂	1	2	3	4	5
Climate change	1	2	3	4	5

B1.2) What do you do to reduce your impact on the environment?

B2) Please indicate which of the following energy sources are considered to be renewable and which non-renewable (R = renewable; NR = non-renewable):

Coal-derived energy	R	NR
Wind energy	R	NR
Solar energy	R	NR
Oil-derived energy	R	NR
Nuclear energy	R	NR
Natural gas	R	NR
Hydro energy	R	NR

B3) Do you know what a 'windfarm' is?

YES	<input type="checkbox"/>	NO	<input type="checkbox"/>	Unsure	<input type="checkbox"/>
-----	--------------------------	----	--------------------------	--------	--------------------------

B3.1) If YES, please explain what you consider it to be.

B4) Rate the following advantages of wind energy? (1 = unimportant; 2 = low importance; 3 = neutral; 4 = important; 5 = very important)

Produces no atmospheric emissions	1	2	3	4	5
Increases electricity supply	1	2	3	4	5
Creates new employment opportunities	1	2	3	4	5
Conserves fossil fuels for future generations	1	2	3	4	5
Increases tourism activities (as attractions)	1	2	3	4	5
Wind turbines are symbols of commitment to renewable energy	1	2	3	4	5
No air pollution	1	2	3	4	5
Land parcels used for wind turbine installations can still be used for farming	1	2	3	4	5
Produces economic gain for communities	1	2	3	4	5
Resource (wind) used to generate electricity is free	1	2	3	4	5
Other (please specify) _____ _____	1	2	3	4	5

B5) Do you support the development of windfarms in general in South Africa?

YES	<input type="checkbox"/>	NO	<input type="checkbox"/>	Unsure	<input type="checkbox"/>
-----	--------------------------	----	--------------------------	--------	--------------------------

B6) How disturbing do you rate the following disadvantages of wind energy? (1 = not disturbing at all; 2 = somewhat disturbing; 3 = neutral; 4 = disturbing; 5 = very disturbing)

Turbine blades can harm flying wildlife	1	2	3	4	5
Wind turbines may be noisy	1	2	3	4	5
Wind turbines are perceived as ugly and so detract from the scenic value of natural landscapes	1	2	3	4	5
Wind energy can be more expensive than other sources	1	2	3	4	5
Wind energy potential varies seasonally and daily	1	2	3	4	5
Wind turbines may impair radio and television signals	1	2	3	4	5
Wind turbines might deter tourists from visiting certain areas	1	2	3	4	5

B7) Would you support the development of a windfarm in the Route 27, West Coast region?

YES	<input type="checkbox"/>	NO	<input type="checkbox"/>	Unsure	<input type="checkbox"/>
-----	--------------------------	----	--------------------------	--------	--------------------------

B7.1) Please provide reason(s) for your answer:

B8) Would you support the development of a windfarm in or nearby (on farms or open land adjacent to) the town you reside in?

YES	<input type="checkbox"/>	NO	<input type="checkbox"/>	Unsure	<input type="checkbox"/>
-----	--------------------------	----	--------------------------	--------	--------------------------

B8.1) Please provide a reason(s) for your answer:

B9) After observing the photographs of a windfarm, would you change your answers to questions B7 and B8, and if so, why? (Attached at back of questionnaire)

B10) Do you believe that the installation of windfarms in the Route 27/West Coast region would deter tourist visitation to the region?

YES	<input type="checkbox"/>	NO	<input type="checkbox"/>	Unsure	<input type="checkbox"/>
-----	--------------------------	----	--------------------------	--------	--------------------------

B10.1) Please provide reason(s) for your answer:

SECTION C: LANDSCAPE VALUES ASSOCIATED WITH WEST COAST

C1) How special is the physical landscape of the West Coast to you?

Very special	<input type="checkbox"/>	Has some significance	<input type="checkbox"/>	Not special at all	<input type="checkbox"/>
Does not really differ from other landscapes across South Africa			<input type="checkbox"/>		

C1.1) Please provide reason(s) for your answer:

C2) Please rank the three top features of the West Coast by placing a 1, 2, or 3 next to it in the block:

Beaches	<input type="checkbox"/>	Mountains	<input type="checkbox"/>	Fynbos vegetation	<input type="checkbox"/>
Open space	<input type="checkbox"/>	Wildlife	<input type="checkbox"/>	Air quality	<input type="checkbox"/>
Warm, friendly people	<input type="checkbox"/>	Mediterranean climate	<input type="checkbox"/>	Tranquility	<input type="checkbox"/>

C3) Which of these characteristics are the most appealing regarding the physical landscape along the Route 27/West Coast region? Please rank the top three appealing most to you by placing a 1, 2, or 3 in the block.

Unspoiled beaches	<input type="text"/>
State of Fynbos vegetation	<input type="text"/>
Undeveloped coastline	<input type="text"/>
Wide open plains	<input type="text"/>
Overall lack of urban development	<input type="text"/>
Cultural naturalness/uniqueness	<input type="text"/>
Emptiness of landscape	<input type="text"/>

SECTION D: PERSONAL INFORMATION

D1) Your gender is:

Male	<input type="text"/>	Female	<input type="text"/>
------	----------------------	--------	----------------------

D2) Your age group is:

≤ 18 yrs	<input type="text"/>
19-40 yrs	<input type="text"/>
41-60 yrs	<input type="text"/>
> 60 yrs	<input type="text"/>

D3) What is the highest level of formal education you have completed?

None	<input type="text"/>	Primary (Grade 7)	<input type="text"/>	Secondary (Grade 12)	<input type="text"/>	Tertiary (Degree/Diploma)	<input type="text"/>
Postgraduate	<input type="text"/>						

D4) What is your current occupation? _____

D5) Which category best describes your home life?

Live alone	<input type="text"/>	Couple with children	<input type="text"/>	Couple (no children)	<input type="text"/>	Other _____	<input type="text"/>
------------	----------------------	----------------------	----------------------	----------------------	----------------------	-------------	----------------------

SECTION E: MAPPING PLACES IN THE ROUTE 27/WEST COAST REGION

PLEASE CONSULT ATTACHED MAPS

Thank you for your time and effort.

Please provide your contact details if you wish to receive a copy of the results of the survey.

Name & surname _____

Email address _____

Postal address _____

E1) Consult the three “Special place” dots marked P1 to P3. These dots represent your favourite or “special places” in the Route 27/West Coast region. They can be special for any reason. Place up to three dots on Map no. 1.



Please provide reasons why each place is special to you.

Special place #1 _____

Special place #2 _____

Special place #3 _____



E2) Consult Map 2 of Route 27/West Coast region and set of sticker dots. There are four sets of dots that identify different values for places in the West Coast, such as scenic value or recreational value. Stick the dots on the map where you consider these values to be located. The dots have importance ratings from 1 to 3 with, 1 = little value; 2 = more value; and 3 = exceptional value. Use as many or few dots as you like.

* Aesthetic/scenic value



* Biological diversity



* Economic value



* Recreational value





E3) Please indicate on Map 3 a maximum of five places where you would NOT like a wind farm to be situated in the Route 27/West Coast region. Use red sticker dots provided.



Please provide reason(s) why you believe these places to be inappropriate for wind farm development:

Place 1: _____

Place 2: _____

Place 3: _____

Place 4: _____

Place 5: _____



E4) Please indicate on Map 4 a maximum of five you consider to be appropriate for wind farm development in the Route 27/West Coast region. Use the green dots provided.



Please provide reason(s) why you believe these places to be appropriate for wind farm development:

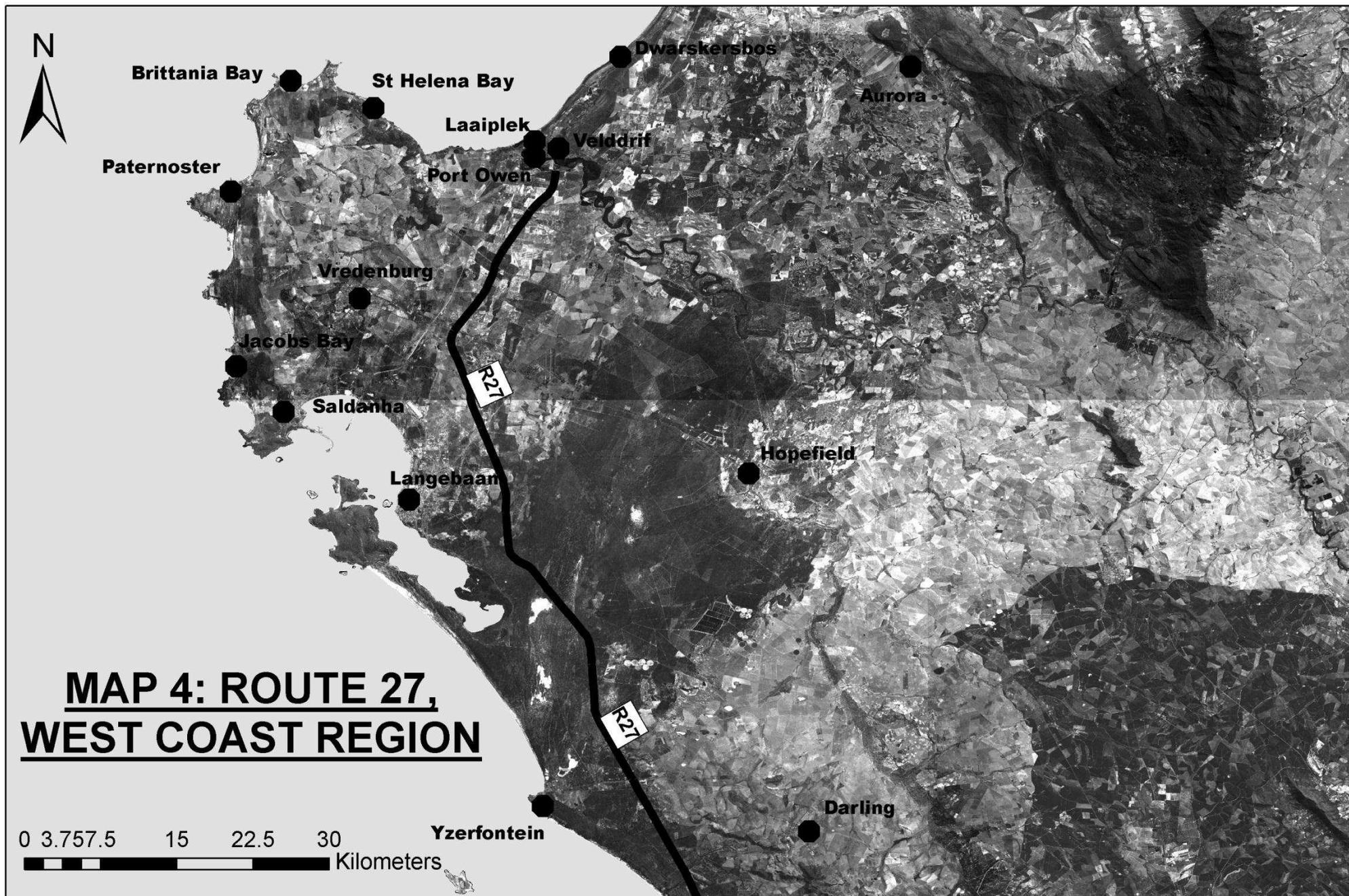
Place 1: _____

Place 2: _____

Place 3: _____

Place 4: _____

Place 5: _____





Caen, France

(Source: http://commons.wikimedia.org/wiki/File:%C3%89oliennes_Caen.jpg)



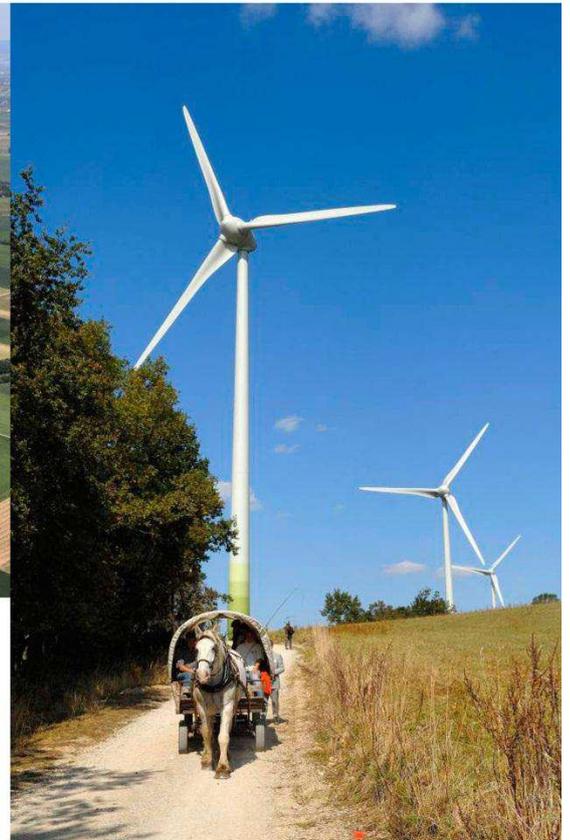
Guanacaste, Costa Rica

Source: Juwi Renewable energies



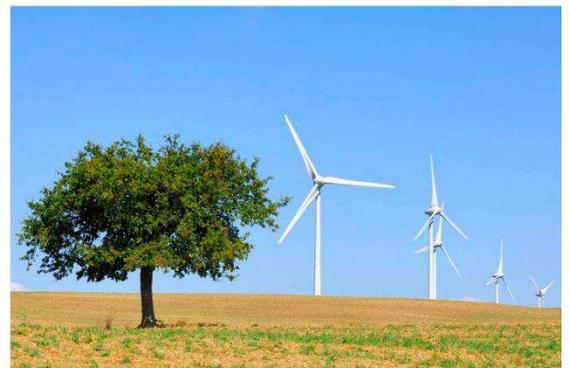
Wörrstadt, Germany

Source: Juwi Renewable energies



Lestrade, France

Source: Juwi Renewable energies



Lestrade, France

APPENDIX D: AFRIKAANS QUESTIONNAIRE FOR RESIDENTS



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Beste Deelnemer

Ek is 'n nagraadse student in Geografie en Omgewingstudie by Stellenbosch Universiteit. Ek is tans besig met 'n opname vir my Meesters studie. Die opname ondersoek die verwantskap tussen windenergie-landskappe, die gehegtheid aan 'n streek en toerisme in die Weskus-streek.

Die vraelys behoort u nie langer as 15-20 minute te neem om te voltooi nie. U antwoorde sal as anoniem beskou word en word ook vertroulik hanteer. U hulp met hierdie opname is streng vrywillig en u hoef geen vrae te beantwoord wat u nie wil beantwoord nie.

Indien u enige vrae of redes tot kommer het, kontak my, Andrea Lombard, gerus by 15080242@sun.ac.za. U kan ook my studieleier, Professor Sanette Ferreira kontak by slaf@sun.ac.za.

Ons waardeer u tyd en moeite.

Opregte dank,



Andrea Lombard

Stellenbosch Universiteit Student



Professor Sanette Ferreira

Professor, Departement van Geografie en Omgewingstudie



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**OPNAME OOR DIE WIND ENERGIE LANDSKAP EN IMPAK OP TOERISME OP
ROETE 27, WESKUS-STREEK
VRAELYS VIR INWONERS**

**AFDELING A: VERTROUDHEID MET EN GEHEGTHEID AAN ROETE 27,
WESKUS-STREEK**

A1) Hoeveel jaar lank woon u al in die Weskus-streek? _____

A2) Hoe goed is u kennis oor die Weskus-streek? (Merk asseblief een antwoord).

Uitstekend	<input type="checkbox"/>	Goed	<input type="checkbox"/>	Gemiddeld	<input type="checkbox"/>	Beperk	<input type="checkbox"/>	Swak	<input type="checkbox"/>
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A3) Hieronder is 'n aantal stellings rakende u persoonlike gehegtheid aan die Weskus-streek. Dui asseblief u graad van ooreenstemming of nie saamstem met elke stelling aan. (Merk asseblief een antwoord by elkeen).

STELLING	STEM STERK SAAM	STEM SAAM	NEUTRAAL	STEM NIE SAAM NIE	STEM GLAD NIE SAAM NIE
Die Weskus-streek deel is van my	1	2	3	4	5
Die Weskus-streek is baie spesiaal vir my	1	2	3	4	5
Ek is baie geheg aan die Weskus-streek	1	2	3	4	5
Omdat ek in die Weskus-streek woon sê dit baie van my as person	1	2	3	4	5
Die Weskus-streek is die beste plek om te doen waarvan ek hou	1	2	3	4	5
Ek kry meer bevrediging deur in die Weskus te bly as enige ander streek	1	2	3	4	5
Ek mis regtig die Weskus-streek as ek te lank weg is daarvan	1	2	3	4	5

A4) In watter dorp woon u in die Weskus? _____

A4.1) Is u 'n huiseienaar in hierdie dorp?

JA	<input type="checkbox"/>	NEE	<input type="checkbox"/>
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A4.2) Hoeveel jaar woon u al in hierdie dorp? _____

A4.3) Wat geniet u die meeste daarvan om in hierdie dorp te woon? _____

A5) Gedurende die tydperk wat u al die in die Weskus-streek woon, watter een van die volgende stellings beskryf die beste hoe toerisme die streek beïnvloed het?

Meer bekoorlik gemaak om in die streek te woon	<input type="checkbox"/>
Minder bekoorlik gemaak om in die streek te woon	<input type="checkbox"/>
Het min of meer dieselfde gebly	<input type="checkbox"/>
Bly nog nie lank genoeg hier om 'n mening te gee	<input type="checkbox"/>

A6) As u die geleentheid gehad het om iewers elders te gaan woon, in of buite die Weskus-streek, met dieselfde lewensgehalte, wat sou u doen?

Ek sou steeds in hierdie Weskus-dorp woon	<input type="checkbox"/>
Ek sal na 'n ander plek of gemeenskap in die Weskus verskuif	<input type="checkbox"/>
Ek sal wegtrek van die Weskus-streek	<input type="checkbox"/>

AFDELING B: ENERGIE-VERWANTE SAKE

B1) Is sake rakende die volhoubaarheid van die natuurlike omgewing vir u belangrik?

JA	<input type="checkbox"/>	NEE	<input type="checkbox"/>	ONSEKER	<input type="checkbox"/>
----	--------------------------	-----	--------------------------	---------	--------------------------

B1.1) Indien u 'JA' geantwoord het, op 'n skaal van 1 tot 5, hoe werklik dink u is die volgende sake? (1 = baie werklik; 2 = ietwat werklik; 3 = neutraal; 4 = ietwat onwerklik; 5 = glad nie werklik nie)

Besoedeling deur nie-hernieubare energiebronne	1	2	3	4	5
Uitputting van fossielbrandstowwe	1	2	3	4	5
Styging in die produksie van koolstofdiksied	1	2	3	4	5
Klimaatsverandering	1	2	3	4	5

B1.2) Wat doen u om u impak op die omgewing te verminder?

B2) Dui asseblief aan watter van die volgende energiebronne geklassifiseer/oorweeg word as hernieubaar (H) en as nie-hernieubaar (NH):

Steenkool energie	H	NH
Wind energie	H	NH
Sonkrag	H	NH
Olie bronne	H	NH
Kernkrag	H	NH
Aardgas	H	NH
Hidro energie	H	NH

B3) Weet u wat 'n 'windplaas' is?

JA	<input type="checkbox"/>	NEE	<input type="checkbox"/>	ONSEKER	<input type="checkbox"/>
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B3.1) Indien 'JA', verduidelik asseblief wat u sê dit is.

B4) Beoordeel die volgende voordele van windenergie volgens hul belangrikheid (1 = onbelangrik; 2 = baie min belangrikheid; 3 = neutraal; 4 = belangrik; 5 = baie belangrik)

Produseer geen atmosferiese vrystellings	1	2	3	4	5
Toename in elektrisiteitsvoorsiening	1	2	3	4	5
Verskaf nuwe werksgeleenthede	1	2	3	4	5
Bewaar fossielbrandstowwe vir toekomstige geslagte	1	2	3	4	5
Toename in toerisme-aktiwiteite (as attraksies)	1	2	3	4	5
Wind turbines is simbole van toewyding aan hernieubare energie	1	2	3	4	5
Geen lugbesoedeling	1	2	3	4	5
Grond wat gebruik word vir die installering van turbines kan steeds vir aktiwiteite soos landbou gebruik word	1	2	3	4	5
Produseer ekonomiese vooruitgang vir gemeenskappe	1	2	3	4	5
Die hulpbron(wind) wat gebruik word om energie op te wek is verniet	1	2	3	4	5
Ander (spesifiseer asseblief) _____ _____	1	2	3	4	5

B5) Ondersteun u die ontwikkeling van windplase in die algemeen in Suid-Afrika?

JA	<input type="checkbox"/>	NEE	<input type="checkbox"/>	ONSEKER	<input type="checkbox"/>
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B6) Beoordeel die volgende verontrustende nadele van windenergie (1 = glad nie verontrustend nie; 2 = ietwat verontrustend; 3 = neutraal; 4 = verontrustend; 5 = baie verontrustend)

Turbines se lemme kan vlieënde diere benadeel	1	2	3	4	5
Wind turbines veroorsaak geraasbesoedeling	1	2	3	4	5
Wind turbines word as onaantreklik beskou en doen afbreek aan die skoonheid van die landskap	1	2	3	4	5
Wind energie kan duurder wees as ander energie bronne	1	2	3	4	5
Wind energie potensiaal wissel seisoenaal en daaglik	1	2	3	4	5
Wind turbines kan radio- en televisie seine beïnvloed	1	2	3	4	5
Wind turbines kan toeriste ontmoedig om sekere gebiede te besoek	1	2	3	4	5

B7) Sou u die ontwikkeling van 'n windplaas in die Roete 27, Weskus-streek ondersteun?

JA	<input type="checkbox"/>	NEE	<input type="checkbox"/>	ONSEKER	<input type="checkbox"/>
----	--------------------------	-----	--------------------------	---------	--------------------------

B7.1) Verskaf asseblief rede(s) vir u antwoord:

B8) Sal u die ontwikkeling van 'n windplaas in of naby (op omliggende plase of oop grond) die dorp waarin u woon, ondersteun?

JA	<input type="checkbox"/>	NEE	<input type="checkbox"/>	ONSEKER	<input type="checkbox"/>
----	--------------------------	-----	--------------------------	---------	--------------------------

B8.1) Verskaf asseblief rede(s) vir u antwoord:

B9) Nadat u die foto's van 'n windplaas aanskou het, sal u die antwoorde op Vrae B7 en B8 verander, en indien wel, hoekom?

B10) Glo u dat die installering van wind turbines in die Roete 27, Weskus- toerisme besoeke aan die streek sal laat afneem?

JA	<input type="checkbox"/>	NEE	<input type="checkbox"/>	ONSEKER	<input type="checkbox"/>
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B10.1) Verskaf asseblief rede(s) vir u antwoord:

AFDELING C: LANDSKAP WAARDES GEASSOSIEER MET DIE WESKUS

C1) Hoe spesiaal is die Weskus-streek se fisiese landskap vir u?

Uniek	<input type="checkbox"/>	Is opmerklik	<input type="checkbox"/>	Glad nie uniek nie	<input type="checkbox"/>
Verskil nie regtig van ander landskappe in Suid-Afrika nie			<input type="checkbox"/>		

C1.1) Verskaf asseblief rede(s) vir u antwoord:

C2) Dui asseblief die drie belangrikste eienskappe van die Weskus-streek, volgens u, aan deur 'n nommer 1 tot 3 in die blokkie langsaan te plaas:

Strande	<input type="checkbox"/>	Berge	<input type="checkbox"/>	Fynbos plantegroei	<input type="checkbox"/>
Oop spasie/Rustigheid	<input type="checkbox"/>	Wildlewe	<input type="checkbox"/>	Kwaliteit van die lug	<input type="checkbox"/>
Hartlike, vriendelike mense	<input type="checkbox"/>	Mediterreense klimaat	<input type="checkbox"/>		

C3) Watter van die volgende kenmerke van die fisiese landskap van die Roete 27, Weskus-streek vind u die mees aantreklikste? Rangskik asseblief die drie aantreklikste deur 'n 1 tot 3 te nommer in die blokkie langs.

Ongerepte strande	<input type="checkbox"/>
Toestand van die Fynbos plantegroei	<input type="checkbox"/>
Onontwikkelde kuslyne	<input type="checkbox"/>
Wye, oop vlaktes	<input type="checkbox"/>
Algehele tekort aan stedelike ontwikkeling	<input type="checkbox"/>
Kulturele natuurlikheid/uniekheid	<input type="checkbox"/>
Leegheid van die landskap	<input type="checkbox"/>

AFDELING D: PERSOONLIKE INLIGTING

D1) U geslag is:

Manlik	<input type="checkbox"/>	Vroulik	<input type="checkbox"/>
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D2) U ouderdomsgroep is:

≤ 18 jr	<input type="checkbox"/>
19-40 jr	<input type="checkbox"/>
41-60 jr	<input type="checkbox"/>
> 60 jr	<input type="checkbox"/>

D3) Wat is die hoogste vlak van formele opvoeding wat u voltooi het?

Geen	<input type="checkbox"/>	Primêr (Graad 7)	<input type="checkbox"/>	Sekondêr (Graad 12)	<input type="checkbox"/>	Tersiêr (Graad/Diploma)	<input type="checkbox"/>
Nagraads	<input type="checkbox"/>						

D4) Wat is u huidige beroep? _____

D5) Watter kategorie beskryf u lewe by die huis die beste?

Woon alleen	<input type="checkbox"/>	Paartjie met kinders	<input type="checkbox"/>	Paartjie (geen kinders)	<input type="checkbox"/>	Ander _____	<input type="checkbox"/>
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AFDELING E: KARTERING VAN PLEKKE RONDOM ROETE 27

SIEN ASSEBLIEF KAARTE AANGEHEG

Baie dankie vir u tyd en gewaardeerde pogings.

Verskaf asseblief u kontakbesonderhede indien u 'n kopie van die uitslae van die opname wil ontvang.

Naam & Van _____

E-pos adres _____

Pos adres _____

E1) Raadpleeg die drie wit “Spesiale plek” plakkers gemerk P1 tot P3. Hierdie kolle verteenwoordig u gunsteling of ‘spesiale plekke’ langs Roete 27. Hierdie plekke kan spesiaal wees vir enige rede. Plak tot drie kolle op Kaart 1.

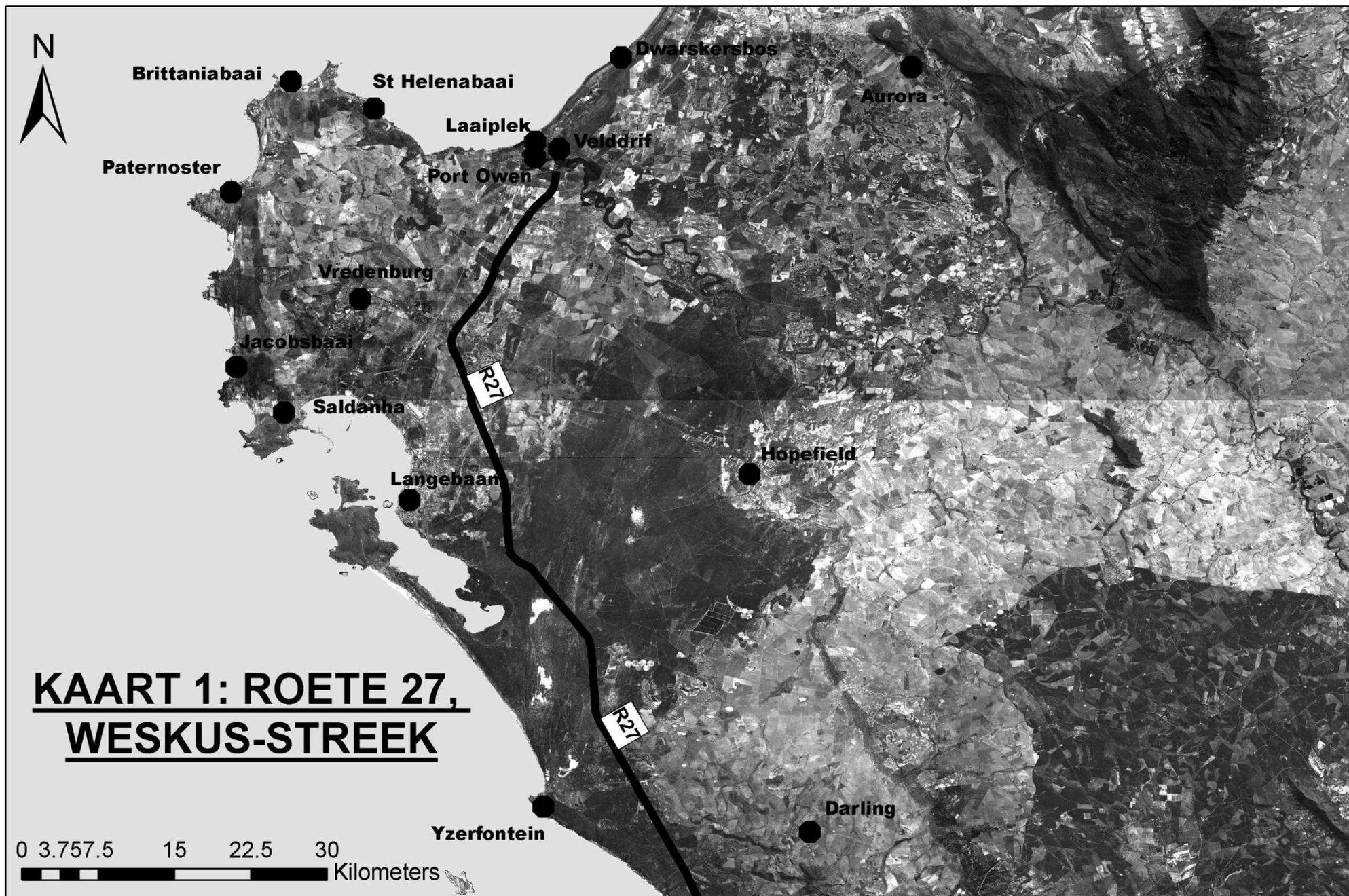
P₁ P₂ P₃

In die spasie hieronder, dui asseblief redes aan vir u keuse.

Spesiale plek #1 _____

Spesiale plek #2 _____

Spesiale plek #3 _____



E2) Raadpleeg Kaart 2 van die Roete 27, Weskusstreek en die stel plakker kolle. Daar is vier stelle kolle wat verskillende waardes vir plekke in die Weskus soos by. astetiese waarde of ontspannings waarde identifiseer. Plaas die kolle op die kaart waar volgens u dit die meeste gepas is. Die kolle het belangrikheids grade van 1 tot 3 waar 1 = min waarde; 2 = meer waarde; en 3 = uitsonderlike waarde. Gebruik soveel kolle as wat u verlang.

* Astetiese/'skilderagtige' waarde



* Biologiese diversiteit



* Ekonomiese waarde



* Ontspannings waarde





E3) Dui asseblief op Kaart 3 'n maksimum van vyfplekke aan waar u NIE 'n windplaas opgerig wil hê nie



Gee asseblief redes waarom u glo hierdie plekke ongeskik is vir die oprigting:

Plek 1: _____

Plek 2: _____

Plek 3: _____

Plek 4: _____

Plek 5: _____



E4) Dui asseblief op Kaart 4 'n maksimum van vyf plekke aan waar u dink dit geskik is vir die oprigting van windplase in die Roete 27, Weskus-streek.



Gee asseblief redes waarom u glo hierdie plekke sal geskik sal wees vir die ontwikkeling van windplase:

Plek 1: _____

Plek 2: _____

Plek 3: _____

Plek 4: _____

Plek 5: _____





Caen, France

(Source: http://commons.wikimedia.org/wiki/File:%C3%89oliennes_Caen.jpg)



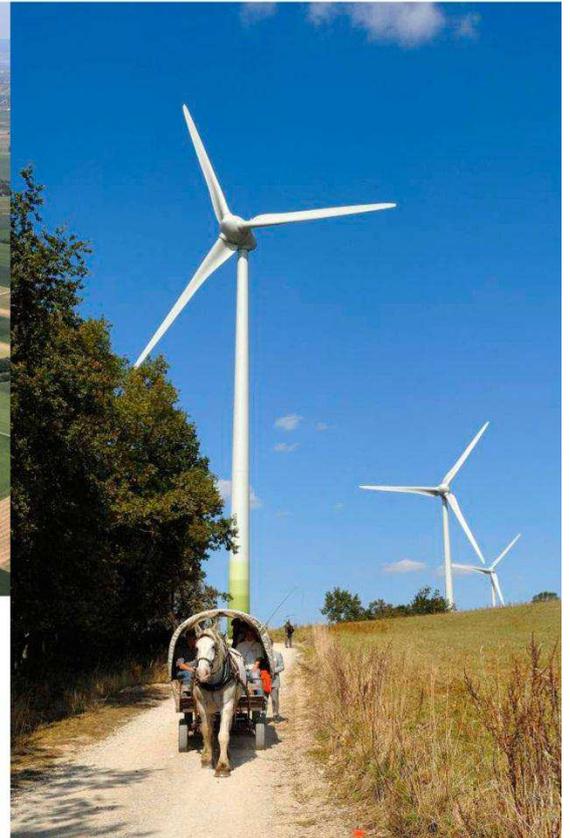
Guanacaste, Costa Rica

Source: Juwi Renewable energies



Wörrstadt, Germany

Source: Juwi Renewable energies



Lestrade, France

Source: Juwi Renewable energies



Lestrade, France

APPENDIX E: ENGLISH QUESTIONNAIRE FOR VISITORS



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Dear Participant

I am a postgraduate student in Geography and Environmental Studies at Stellenbosch University. I am conducting a survey for my Master's studies on the relationship between wind energy landscapes, place attachment and tourism in the Route 27, West Coast region.

This survey should only take about 15-20 minutes of your time. Your answers will be regarded as anonymous and will be kept confidential. Your help with this research is strictly voluntary. You don't have to answer any questions you don't wish to.

If you have questions or concerns, please contact me, Andrea Lombard at:
15080242@sun.ac.za. You may also contact my supervisor, Prof Sanette Ferreira:
slaf@sun.ac.za.

Thank you for your time and consideration.

Sincerely,



Andrea Lombard
Stellenbosch University Student



Prof Sanette Ferreira
Associate Professor, Department of Geography and Environmental Studies



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**ROUTE 27 (WEST COAST) SURVEY OF THE WIND ENERGY LANDSCAPE AND
IMPACT ON TOURISM
QUESTIONNAIRE FOR VISITORS**

**SECTION A: FAMILIARITY WITH AND ATTACHMENT TO ROUTE 27, WEST
COAST REGION**

A1) Where is your permanent residence? _____

A2) How many times have you visited the West Coast region? _____

A3) Please indicate which of the following towns you have visited before:

Darling	<input type="checkbox"/>	Yzerfontein	<input type="checkbox"/>	Aurora	<input type="checkbox"/>	Hopefield	<input type="checkbox"/>	Langebaan	<input type="checkbox"/>	Paternoster	<input type="checkbox"/>
Jacobs Bay	<input type="checkbox"/>	Port Owen	<input type="checkbox"/>	Dwarskersbos	<input type="checkbox"/>	Saldanha	<input type="checkbox"/>	St Helena Bay	<input type="checkbox"/>		
Brittania Bay	<input type="checkbox"/>	Velddrif	<input type="checkbox"/>	Laaiplek	<input type="checkbox"/>	Vredenburg	<input type="checkbox"/>				

A4) Rate your knowledge of the West Coast region? (Please mark one option).

Excellent	<input type="checkbox"/>	Good	<input type="checkbox"/>	Fair	<input type="checkbox"/>	Limited	<input type="checkbox"/>	Poor	<input type="checkbox"/>
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A5) What do you enjoy most about visiting the West Coast (Route 27)?

A6) Over the period you have been visiting the West Coast region, which one of the following statements best describes how tourism has affected the region?

Made it a more desirable region to visit	<input type="checkbox"/>
Made it a less desirable region to visit	<input type="checkbox"/>
Stayed about the same	<input type="checkbox"/>
Have not visited enough to form an opinion	<input type="checkbox"/>

SECTION B: ENERGY-RELATED ISSUES

B1) Are issues about the sustainability of the natural environment important to you?

YES	<input type="checkbox"/>	NO	<input type="checkbox"/>	Unsure	<input type="checkbox"/>
-----	--------------------------	----	--------------------------	--------	--------------------------

B1.1) How real do you consider the following issues to be? (1 = very real; 2 = somewhat real; 3 = neutral; 4 = imagined; 5 = non-existent)

Pollution caused by non-renewable energy sources	1	2	3	4	5
Exhaustion of fossil fuels	1	2	3	4	5
Increases in production of CO ₂	1	2	3	4	5
Climate change	1	2	3	4	5

B1.2) What do you do to reduce your impact on the environment?

B2) Please indicate which of the following energy sources are considered to be renewable and which non-renewable (R = renewable; NR = non-renewable):

Coal-derived energy	R	NR
Wind energy	R	NR
Solar energy	R	NR
Oil-derived energy	R	NR
Nuclear energy	R	NR
Natural gas	R	NR
Hydro energy	R	NR

B3) Do you know what a 'windfarm' is?

YES	<input type="checkbox"/>	NO	<input type="checkbox"/>	Unsure	<input type="checkbox"/>
-----	--------------------------	----	--------------------------	--------	--------------------------

B3.1) If YES, please explain what you consider it to be.

B4) Rate the following advantages of wind energy? (1 = unimportant; 2 = low importance; 3 = neutral; 4 = important; 5 = very important)

Produces no atmospheric emissions	1	2	3	4	5
Increases electricity supply	1	2	3	4	5
Creates new employment opportunities	1	2	3	4	5
Conserves fossil fuels for future generations	1	2	3	4	5
Increases tourism activities (as attractions)	1	2	3	4	5
Wind turbines are symbols of commitment to renewable energy	1	2	3	4	5
No air pollution	1	2	3	4	5
Land parcels used for wind turbine installations can still be used for farming	1	2	3	4	5

Produces economic gain for communities	1	2	3	4	5
Resource (wind) used to generate electricity is free	1	2	3	4	5
Other (please specify) _____ _____	1	2	3	4	5

B5) Do you support the development of windfarms in general in South Africa?

YES NO Unsure

B6) How disturbing do you rate the following disadvantages of wind energy? (1 = not disturbing at all; 2 = somewhat disturbing; 3 = neutral; 4 = disturbing; 5 = very disturbing)

Turbine blades can harm flying wildlife	1	2	3	4	5
Wind turbines may be noisy	1	2	3	4	5
Wind turbines are perceived as ugly and so detract from the scenic value of natural landscapes	1	2	3	4	5
Wind energy can be more expensive than other sources	1	2	3	4	5
Wind energy potential varies seasonally and daily	1	2	3	4	5
Wind turbines may impair radio and television signals	1	2	3	4	5
Wind turbines might deter tourists from visiting certain areas	1	2	3	4	5

B7) Would you support the development of a windfarm in the Route 27, West Coast region?

YES NO Unsure

B7.1) Please provide reason(s) for your answer:

B8) Would you still visit the Route 27, West Coast region if a number of wind turbines were installed in the region?

YES NO Unsure

B8.1) Please provide a reason(s) for your answer:

B9) After observing the photograph of a windfarm, would you change your answers to questions B7 and B8, and if so, why? (Attached at back of questionnaire)

B10) Do you believe that the installation of windfarms in the Route 27/West Coast region would deter tourist visitation to the region?

YES	<input type="checkbox"/>	NO	<input type="checkbox"/>	Unsure	<input type="checkbox"/>
-----	--------------------------	----	--------------------------	--------	--------------------------

B10.1) Please provide reason(s) for your answer:

SECTION C: LANDSCAPE VALUES ASSOCIATED WITH THE WEST COAST

C1) How special is the physical landscape of the West Coast to you?

Very special	<input type="checkbox"/>	Has some significance	<input type="checkbox"/>	Not special at all	<input type="checkbox"/>
Does not really differ from other landscapes across South Africa			<input type="checkbox"/>		

C1.1) Please provide reason(s) for your answer:

C2) Please rank the three top features of the West Coast by placing a 1, 2, or 3 next to it in the block:

Beaches	<input type="checkbox"/>	Mountains	<input type="checkbox"/>	Fynbos vegetation	<input type="checkbox"/>
Open space	<input type="checkbox"/>	Wildlife	<input type="checkbox"/>	Air quality	<input type="checkbox"/>
Warm, friendly people	<input type="checkbox"/>	Mediterranean climate	<input type="checkbox"/>	Tranquility	<input type="checkbox"/>

C3) Which of these characteristics are the most appealing regarding the physical landscape along the Route 27/West Coast region? Please rank the top three appealing most to you by placing a 1, 2, or 3 in the block.

Unspoiled beaches	<input type="checkbox"/>
State of Fynbos vegetation	<input type="checkbox"/>
Undeveloped coastline	<input type="checkbox"/>
Wide open plains	<input type="checkbox"/>
Overall lack of urban development	<input type="checkbox"/>
Cultural naturalness/uniqueness	<input type="checkbox"/>
Emptiness of landscape	<input type="checkbox"/>

SECTION D: PERSONAL INFORMATION

D1) Your gender is:

Male	<input type="checkbox"/>	Female	<input type="checkbox"/>
------	--------------------------	--------	--------------------------

D2) Your age group is:

≤ 18 yrs	<input type="checkbox"/>
19-40 yrs	<input type="checkbox"/>
41-60 yrs	<input type="checkbox"/>
> 60 yrs	<input type="checkbox"/>

D3) What is the highest level of formal education you have completed?

None	<input type="checkbox"/>	Primary (Grade 7)	<input type="checkbox"/>	Secondary (Grade 12)	<input type="checkbox"/>	Tertiary (Degree/Diploma)	<input type="checkbox"/>
Postgraduate	<input type="checkbox"/>						

D4) What is your current occupation? _____

D5) Which category best describes your home life?

Live alone	<input type="checkbox"/>	Couple with children	<input type="checkbox"/>	Couple (no children)	<input type="checkbox"/>	Other _____	<input type="checkbox"/>
------------	--------------------------	----------------------	--------------------------	----------------------	--------------------------	-------------	--------------------------

SECTION E: MAPPING PLACES IN THE ROUTE 27/WEST COAST REGION

PLEASE CONSULT ATTACHED MAPS

Thank you for your time and effort.

Please provide your contact details if you wish to receive a copy of the results of the survey.

Name & surname _____

Email address _____

Postal address _____

E1) Consult the three “Special place” dots marked P1 to P3. These dots represent your favourite or “special places” in the Route 27/West Coast region. They can be special for any reason. Place up to three dots on Map no. 1.

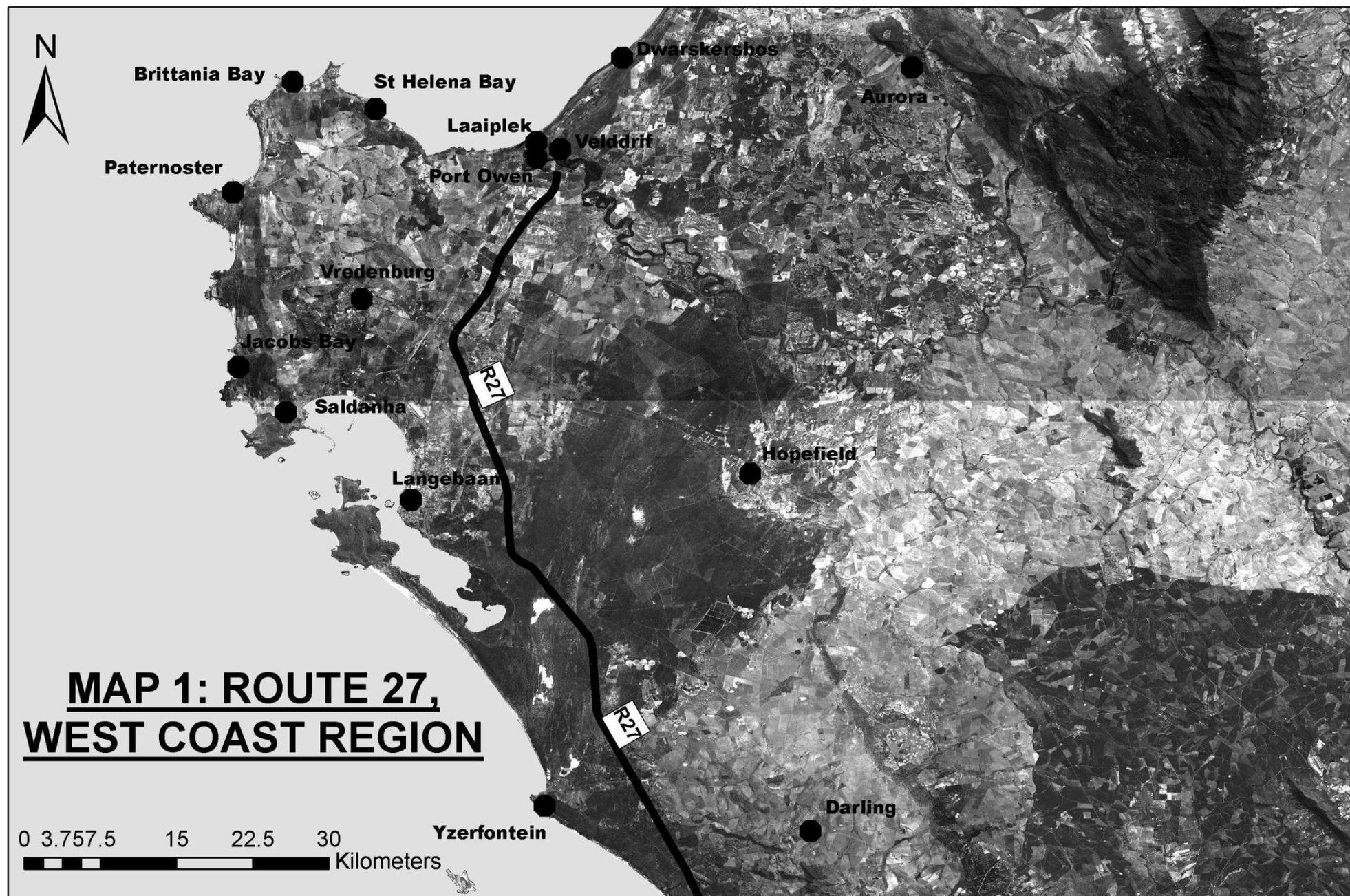


Please provide reasons why each place is special to you.

Special place #1 _____

Special place #2 _____

Special place #3 _____



E2) Consult Map 2 of Route 27/West Coast region and set of sticker dots. There are four sets of dots that identify different values for places in the West Coast, such as scenic value or recreational value. Stick the dots on the map where you consider these values to be located. The dots have importance ratings from 1 to 3 with, 1 = little value; 2 = more value; and 3 = exceptional value. Use as many or few dots as you like.

* Aesthetic/scenic value



* Biological diversity



* Economic value



* Recreational value





MAP 2: ROUTE 27,
WEST COAST REGION

E3) Please indicate on Map 3 a maximum of five places where you would **NOT** like a wind farm to be situated in the Route 27/West Coast region. Use red sticker dots provided.



Please provide reason(s) why you believe these places to be inappropriate for wind farm development:

Place 1: _____

Place 2: _____

Place 3: _____

Place 4: _____

Place 5: _____



E4) Please indicate on Map 4 a maximum of five you consider to be appropriate for wind farm development in the Route 27/West Coast region. Use the green dots provided.



Please provide reason(s) why you believe these places to be appropriate for wind farm development:

Place 1: _____

Place 2: _____

Place 3: _____

Place 4: _____

Place 5: _____





Caen, France

(Source: http://commons.wikimedia.org/wiki/File:%C3%89oliennes_Caen.jpg)



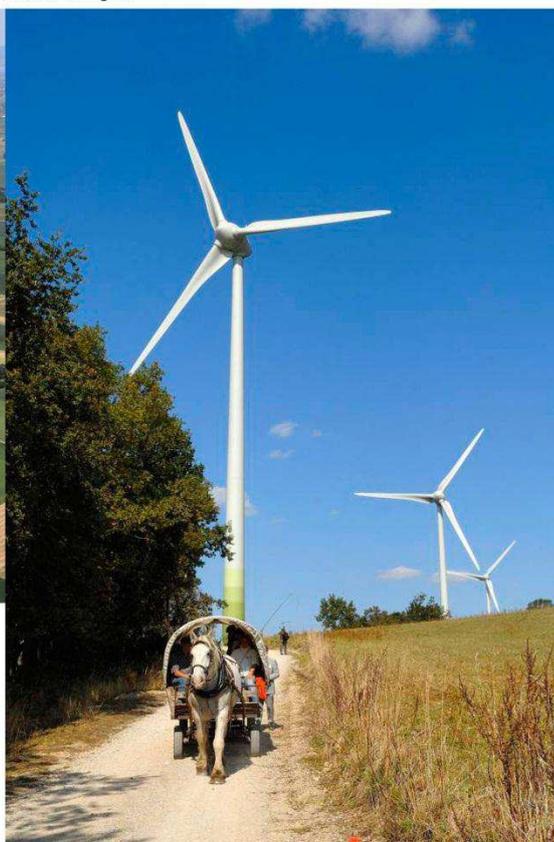
Guanacaste, Costa Rica

Source: Juwi Renewable energies



Wörrstadt, Germany

Source: Juwi Renewable energies



Lestrade, France

Source: Juwi Renewable energies



Lestrade, France



APPENDIX F: AFRIKAANS QUESTIONNAIRE FOR VISITORS



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jou kennisvenoot • your knowledge partner

Beste Deelnemer

Ek is 'n nagraadse student in Geografie en Omgewingstudie by Stellenbosch Universiteit. Ek is tans besig met 'n opname vir my Meesters studie. Die opname ondersoek die verwantskap tussen windenergie-landskappe, die gehegtheid aan 'n streek en toerisme in die Weskus-streek.

Die vraelys behoort u nie langer as 15-20 minute te neem om te voltooi nie. U antwoorde sal as anoniem beskou word en word ook vertroulik hanteer. U hulp met hierdie opname is streng vrywillig en u hoef geen vrae te beantwoord wat u nie wil beantwoord nie.

Indien u enige vrae of redes tot kommer het, kontak my, Andrea Lombard, gerus by 15080242@sun.ac.za. U kan ook my studieleier, Professor Sanette Ferreira kontak by slaf@sun.ac.za.

Ons waardeer u tyd en moeite.

Opregte dank,

Andrea Lombard

Stellenbosch Universiteit Student

Professor Sanette Ferreira

Professor, Departement van Geografie en Omgewingstudie



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**OPNAME OOR DIE WIND ENERGIE LANDSKAP EN IMPAK OP TOERISME OP
ROETE 27, WESKUS-STREEK
VRAELYS VIR BESOEKERS**

**AFDELING A: VERTROUDHEID MET EN GEHEGTHEID AAN ROETE 27,
WESKUS-STREEK**

A1) Waar is u permanente woning? _____

A2) Hoeveel keer het u al die Weskus-streek besoek? _____

A3) Dui asseblief aan watter van die volgende dorpe u al besoek het:

Darling	<input type="checkbox"/>	Yzerfontein	<input type="checkbox"/>	Aurora	<input type="checkbox"/>	Hopefield	<input type="checkbox"/>	Langebaan	<input type="checkbox"/>	Paternoster	<input type="checkbox"/>
Jacobsbaai	<input type="checkbox"/>	Port Owen	<input type="checkbox"/>	Dwarskersbos	<input type="checkbox"/>	Saldanha	<input type="checkbox"/>	St Helenabaai	<input type="checkbox"/>		
Brittaniabaai	<input type="checkbox"/>	Velddrif	<input type="checkbox"/>	Laaipek	<input type="checkbox"/>	Vredenburg	<input type="checkbox"/>				

A4) Op watter vlak is u kennis oor die Weskus-streek? (Merk asseblief een antwoord).

Uitstekend	<input type="checkbox"/>	Goed	<input type="checkbox"/>	Gemiddeld	<input type="checkbox"/>	Beperk	<input type="checkbox"/>	Swak	<input type="checkbox"/>
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A5) Wat geniet u die meeste van besoeke aan die Weskus-streek?

A6) Gedurende die tydperk wat u al die Weskus-streek besoek, watter een van die volgende stellings beskryf die beste hoe toerisme die streek beïnvloed het?

Meer bekoorlik gemaak om streek te besoek	<input type="checkbox"/>
Minder bekoorlik gemaak om streek te besoek	<input type="checkbox"/>
Het min of meer dieselfde gebly	<input type="checkbox"/>
Het nog nie genoeg besoek om 'n mening te gee	<input type="checkbox"/>

AFDELING B: ENERGIE-VERWANTE SAKE

B1) Is sake rakende die volhoubaarheid van die natuurlike omgewing vir u belangrik?

JA	<input type="checkbox"/>	NEE	<input type="checkbox"/>	ONSEKER	<input type="checkbox"/>
----	--------------------------	-----	--------------------------	---------	--------------------------

B1.1) Indien u 'JA' geantwoord het, op 'n skaal van 1 tot 5, hoe werklik dink u is die volgende sake? (1 = baie werklik; 2 = ietwat werklik; 3 = neutraal; 4 = ietwat onwerklik; 5 = glad nie werklik nie)

Besoedeling deur nie-hernieubare energiebronne	1	2	3	4	5
Uitputting van fossielbrandstowwe	1	2	3	4	5
Styging in die produksie van koolstofdioksied	1	2	3	4	5
Klimaatsverandering	1	2	3	4	5

B1.2) Wat doen u om u impak op die omgewing te verminder?

B2) Dui asseblief aan watter van die volgende energiebronne geklassifiseer/oorweeg word as hernieubaar (H) en as nie-hernieubaar (NH):

Steenkool energie	H	NH
Wind energie	H	NH
Sonkrag	H	NH
Olie bronne	H	NH
Kernkrag	H	NH
Aardgas	H	NH
Hidro energie	H	NH

B3) Weet u wat 'n 'windplaas' is?

JA	<input type="checkbox"/>	NEE	<input type="checkbox"/>	ONSEKER	<input type="checkbox"/>
----	--------------------------	-----	--------------------------	---------	--------------------------

V-9.1) Indien 'JA', verduidelik asseblief wat u sê dit is.

B4) Beoordeel die volgende voordele van windenergie volgens hul belangrikheid (1 = onbelangrik; 2 = baie min belangrikheid; 3 = neutraal; 4 = belangrik; 5 = baie belangrik)

Produseer geen atmosferiese vrystellings	1	2	3	4	5
Toename in elektrisiteitsvoorsiening	1	2	3	4	5
Verskaf nuwe werkseleenthede	1	2	3	4	5
Bewaar fossielbrandstowwe vir toekomstige geslagte	1	2	3	4	5
Toename in toerisme-aktiwiteit (as attraksies)	1	2	3	4	5
Wind turbines is simbole van toewyding aan hernieubare energie	1	2	3	4	5
Geen lugbesoedeling	1	2	3	4	5
Grond wat gebruik word vir die installering van turbines	1	2	3	4	5

kan steeds vir aktiwiteite soos landbou gebruik word					
Produseer ekonomiese vooruitgang vir gemeenskappe	1	2	3	4	5
Die hulpbron(wind) wat gebruik word om energie op te wek is verniet	1	2	3	4	5
Ander (spesifiseer asseblief) _____ _____	1	2	3	4	5

B5) Ondersteun u die ontwikkeling van windplase in die algemeen in Suid-Afrika?

JA	<input type="checkbox"/>	NEE	<input type="checkbox"/>	ONSEKER	<input type="checkbox"/>
----	--------------------------	-----	--------------------------	---------	--------------------------

B6) Beoordeel die volgende verontrustende nadele van windenergie (1 = glad nie verontrustend nie; 2 = ietwat verontrustend; 3 = neutraal; 4 = verontrustend; 5 = baie verontrustend)

Turbines se lemme kan vlieënde diere benadeel	1	2	3	4	5
Wind turbines veroorsaak geraasbesoedeling	1	2	3	4	5
Wind turbines word as onaantreklik beskou en doen afbreek aan die skoonheid van die landskap	1	2	3	4	5
Wind energie kan duurder wees as ander energie bronne	1	2	3	4	5
Wind energie potensiaal wissel seisoenaal en daaglik	1	2	3	4	5
Wind turbines kan radio- en televisie seine beïnvloed	1	2	3	4	5
Wind turbines kan toeriste ontmoedig om sekere gebiede te besoek	1	2	3	4	5

B7) Sou u die ontwikkeling van 'n windplaas in die Roete 27, Weskus-streek ondersteun?

JA	<input type="checkbox"/>	NEE	<input type="checkbox"/>	ONSEKER	<input type="checkbox"/>
----	--------------------------	-----	--------------------------	---------	--------------------------

B7.1) Verskaf asseblief rede(s) vir u antwoord:

B8) Sal u steeds die Roete 27, Weskus-streek besoek as daar 'n aantal wind turbines opgerig word?

JA	<input type="checkbox"/>	NEE	<input type="checkbox"/>	ONSEKER	<input type="checkbox"/>
----	--------------------------	-----	--------------------------	---------	--------------------------

B8.1) Verskaf asseblief rede(s) vir u antwoord:

B9) Nadat u die foto's van 'n windplaas aanskou het, sal u die antwoorde op Vrae B7 en B8 verander, en indien wel, hoekom?

B10) Glo u dat die installering van wind turbines in die Roete 27, Weskus-streek toerisme besoeke aan die streek sal laat afneem?

JA	<input type="checkbox"/>	NEE	<input type="checkbox"/>	ONSEKER	<input type="checkbox"/>
----	--------------------------	-----	--------------------------	---------	--------------------------

B10.1) Verskaf asseblief rede(s) vir u antwoord:

AFDELING C: LANDSKAP WAARDES GEASSOSIEER MET DIE WESKUS

C1) Hoe spesiaal is die Weskus-streek se fisiese landskap vir u?

Uniek	<input type="checkbox"/>	Is opmerklik	<input type="checkbox"/>	Glad nie uniek nie	<input type="checkbox"/>
Verskil nie regtig van ander landskappe in Suid-Afrika nie			<input type="checkbox"/>		

C1.1) Verskaf asseblief rede(s) vir u antwoord:

C2) Dui asseblief die drie belangrikste eienskappe van die Weskus-streek, volgens u, aan deur 'n nommer 1 tot 3 in die blokkie langsaan te plaas:

Strande	<input type="checkbox"/>	Berge	<input type="checkbox"/>	Fynbos plantegroei	<input type="checkbox"/>
Oop spasie/Rustigheid	<input type="checkbox"/>	Wildlewe	<input type="checkbox"/>	Kwaliteit van die lug	<input type="checkbox"/>
Hartlike, vriendelike mense	<input type="checkbox"/>	Mediterreense klimaat	<input type="checkbox"/>		

C3) Watter van die volgende kenmerke van die fisiese landskap van die Roete 27, Weskus-streek vind u die mees aanloklikste? Rangskik asseblief die drie aanloklikste deur 'n 1 tot 3 te nommer in die blokkie langsaan.

Ongerepte strande	<input type="checkbox"/>
Toestand van die Fynbos plantegroei	<input type="checkbox"/>
Onontwikkelde kuslyne	<input type="checkbox"/>
Wye, oop vlaktes	<input type="checkbox"/>
Algehele tekort aan stedelike ontwikkeling	<input type="checkbox"/>
Kulturele natuurlikheid/uniciteit	<input type="checkbox"/>
Leegheid van die landskap	<input type="checkbox"/>

AFDELING D: PERSOONLIKE INLIGTING

D1) U geslag is:

Manlik	<input type="checkbox"/>	Vroulik	<input type="checkbox"/>
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D2) U ouderdomsgroep is:

≤ 18 jr	<input type="checkbox"/>
19-40 jr	<input type="checkbox"/>
41-60 jr	<input type="checkbox"/>
> 60 jr	<input type="checkbox"/>

D3) Wat is die hoogste vlak van formele opvoeding wat u voltooi het?

Geen	<input type="checkbox"/>	Primêr (Graad 7)	<input type="checkbox"/>	Sekondêr (Graad 12)	<input type="checkbox"/>	Tersiêr (Graad/Diploma)	<input type="checkbox"/>
Nagraads	<input type="checkbox"/>						

D4) Wat is u huidige beroep? _____

D5) Watter kategorie beskryf u lewe by die huis die beste?

Woon alleen	<input type="checkbox"/>	Paartjie met kinders	<input type="checkbox"/>	Paartjie (geen kinders)	<input type="checkbox"/>	Ander _____	<input type="checkbox"/>
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AFDELING E: KARTERING VAN PLEKKE RONDOM ROETE 27

SIEN ASSEBLIEF KAARTE AANGEHEG

Baie dankie vir u tyd en gewaardeerde pogings.

Verskaf asseblief u kontakbesonderhede indien u 'n kopie van die uitslae van die opname wil ontvang.

Naam & Van _____

E-pos adres _____

Pos adres _____

E1) Raadpleeg die drie wit “Spesiale plek” plakkers gemerk P1 tot P3. Hierdie kolle verteenwoordig u gunsteling of ‘spesiale plekke’ langs Roete 27. Hierdie plekke kan spesiaal wees vir enige rede. Plak tot drie kolle op Kaart 1.

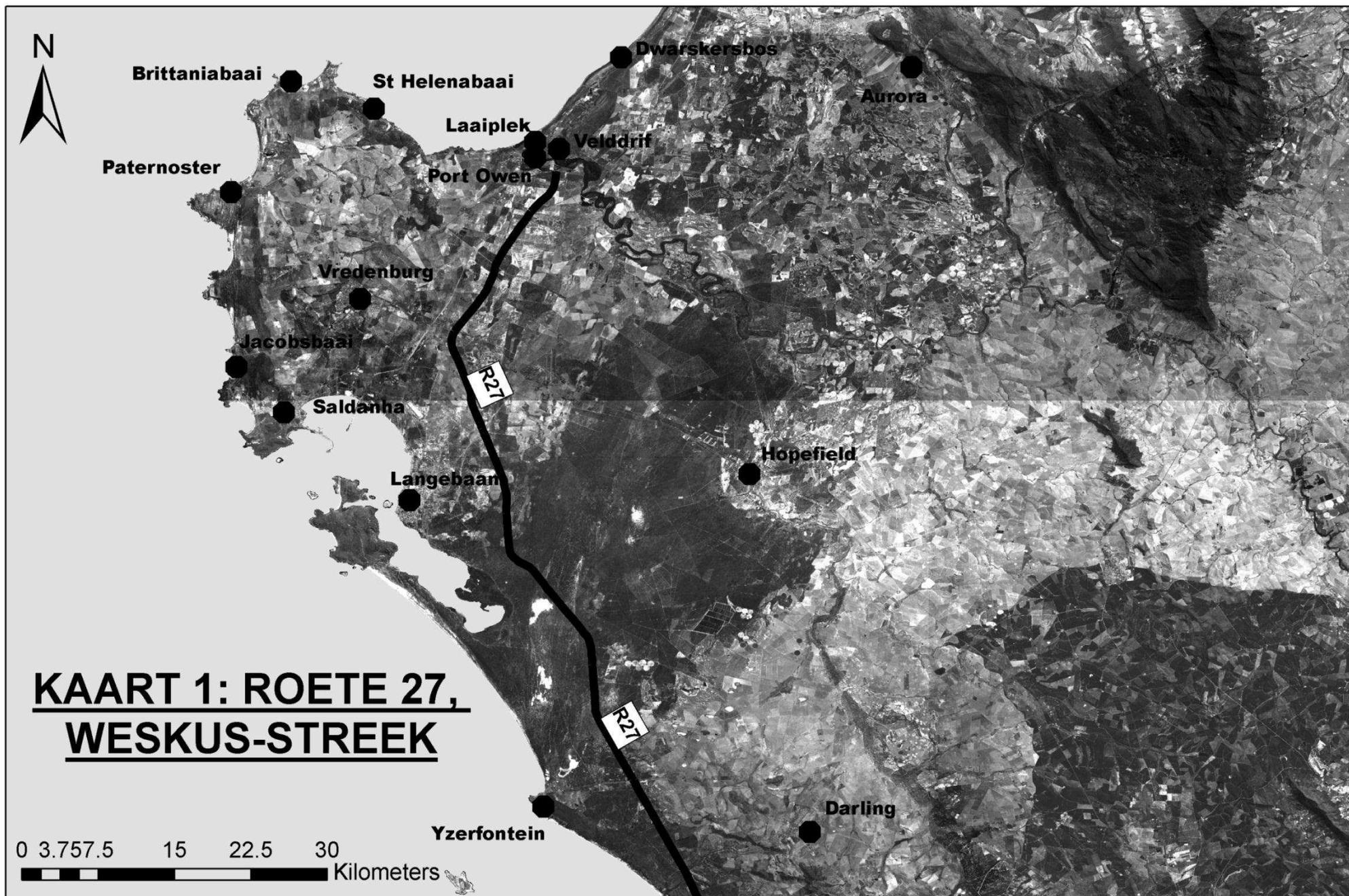
P₁ P₂ P₃

In die spasie hieronder, dui asseblief redes aan vir u keuse.

Spesiale plek #1 _____

Spesiale plek #2 _____

Spesiale plek #3 _____



E2) Raadpleeg Kaart 2 van die Roete 27, Weskusstreek en die stel plakker kolle. Daar is vier stelle kolle wat verskillende waardes vir plekke in die Weskus soos by. astetiese waarde of ontspannings waarde identifiseer. Plaas die kolle op die kaart waar volgens u dit die meeste gepas is. Die kolle het belangrikheids grade van 1 tot 3 waar 1 = min waarde; 2 = meer waarde; en 3 = uitsonderlike waarde. Gebruik soveel kolle as wat u verlang.

* Astetiese/'skilderagtige' waarde



* Biologiese diversiteit



* Ekonomiese waarde



* Ontspannings waarde





E3) Dui asseblief op Kaart 3 'n maksimum van vyf plekke aan waar u NIE 'n windplaas opgerig wil hê nie



Gee asseblief redes waarom u glo hierdie plekke ongeskik is vir die oprigting:

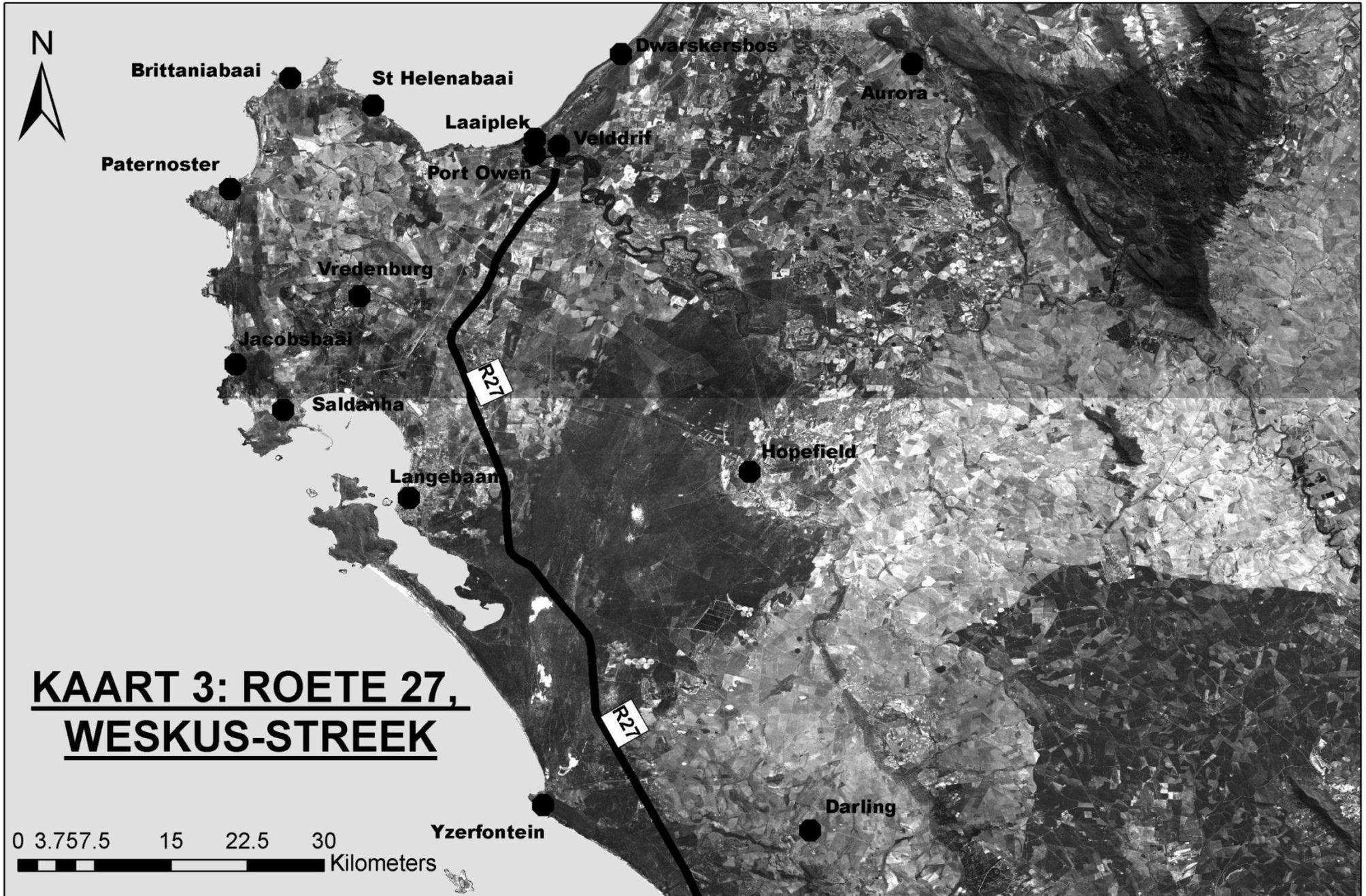
Plek 1: _____

Plek 2: _____

Plek 3: _____

Plek 4: _____

Plek 5: _____



E4) Dui asseblief op Kaart 4 'n maksimum van vyf plekke aan waar u dink dit geskik is vir die oprigting van windplase in die Roete 27, Weskus-streek.



Gee asseblief redes waarom u glo hierdie plekke sal geskik sal wees vir die ontwikkeling van windplase:

Plek 1: _____

Plek 2: _____

Plek 3: _____

Plek 4: _____

Plek 5: _____





Caen, France

(Source: http://commons.wikimedia.org/wiki/File:%C3%89oliennes_Caen.jpg)



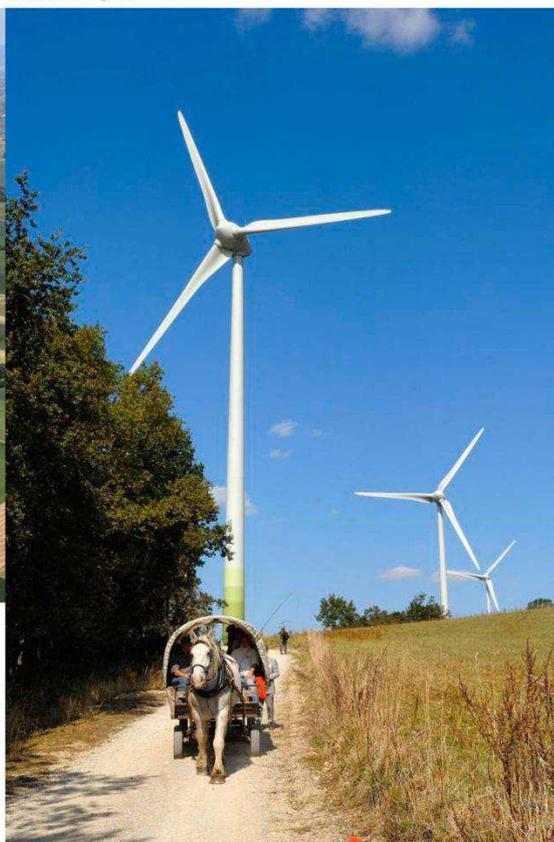
Guanacaste, Costa Rica

Source: Juwi Renewable energies



Wörrstadt, Germany

Source: Juwi Renewable energies



Lestrade, France

Source: Juwi Renewable energies



Lestrade, France

APPENDIX G: GRID FORMAT OF MAPS FOR PGIS ONLINE VERSION OF QUESTIONNAIRES

