Datazone level Namibian Index of Multiple Deprivation 2001

Khomas Report

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PREFACE

This report is the result of collaborative work between the Government of the Republic of Namibia (GRN), the United Nations Development Programme (UNDP) and the Centre for the Analysis of South African Social Policy at the Oxford Institute of Social Policy at the University of Oxford.

In November 2009, the Khomas Regional Council requested UNDP to assist in designing an objective criterion or set of criteria, devoid of political and other considerations, which the Council could use in allocating development resources. Subsequent discussions led to an agreement that other stakeholders, especially the Central Bureau of Statistics needed to be involved and that the criterion or set of criteria needed to go beyond income poverty considerations. It was also agreed that rather than focus on Khomas region alone, the criterion or set of criteria needed to be applicable to, or cover the entire country. Specifically, it was agreed that a composite index of multiple deprivation, the Namibia Index of Multiple Deprivation (NIMD), be constructed at both national and regional levels. Since the scope and depth of analysis needed for the development of the NIMD required very detailed and reliable data and information, it was agreed that the 2001 census data, though 'outdated', be used as the source of information for preparing the NIMD. Accordingly, the NIMD being presented in this report reflects the situation in Khomas region at the 2001 time-point only. UNDP and the GRN recognize that the report does not speak to possible changes in relative deprivation that may have occurred in the Khomas region since 2001. Nevertheless the 2001 NIMD could serve as a benchmark against which change over the last decade could be measured when the 2011 Census becomes available and is subsequently used for carrying out a similar analysis.

This report presents, using tables, charts and digital maps, a profile of multiple deprivation in Khomas region at data zone level, which is a relatively new statistical geography developed for purposes of measuring deprivation at a small area level. This technique of profiling deprivation at datazone level, each with approximately 1000 people only, enables the identification and targeting of pockets of deprivation within Khomas region for possible use in panning for and implementation of development interventions. The aim of the exercise was to produce a profile of relative deprivation across Khomas region in order for the most deprived areas to be identified and clearly delineated. In this way, it would be possible for regional and constituency level policy and decision makers, as well development practitioners, to consider a particular domain of deprivation, or to refer to the overarching NIMD for each constituency or datazone, in inter alia, allocating and applying development resources and interventions. The NIMD can also be used as a platform for effecting a paradigm shift in development planning towards increased focus

on and targeting of deprived areas and sectors; as well as interrogating the causes of inequality in access to basic services within the region. The NIMD at datazone level should be viewed as adding to the existing body of information and knowledge, including local knowledge systems, about poverty and deprivation in Khomas region and the large family of existing planning and resource allocation tools and methodologies already in use at the regional and constituency levels.

This project was undertaken by Professor Michael Noble, Dr Gemma Wright, Ms Joanna Davies, Dr Helen Barnes and Dr Phakama Ntshongwana of the Centre for the Analysis of South African Social Policy at the Oxford Institute of Social Policy at the University of Oxford, under the leadership and guidance a national steering committee chaired by Mr Sylvester Mbangu, Director of the Central Bureau of Statistics, with the participation of representatives of the thirteen Regional Councils. In addition to providing the funds for carrying out the project, UNDP provided overall oversight and technical backstopping to the project through Ojijo Odhiambo, Senior Economist and Johannes Ashipala, National Economist. David Avenell is thanked for his assistance with producing the datazones.

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SECTION 1: INTRODUCTION

This report presents the datazone level Namibian Index of Multiple Deprivation 2001 (NIMD 2001) for the Khomas region.

The NIMD is a composite index reflecting five dimensions of deprivation: income and material deprivation; employment deprivation; education deprivation; health deprivation; and living environment deprivation. The NIMD and the component domains of deprivation were produced at datazone level using data from the 2001 Population Census. Datazones are small areas containing approximately the same number of people (average 1,000). The datazone level NIMD therefore provides a fine-grained picture of deprivation and enables pockets of deprivation to be identified in Khomas region.

The report is structured as follows: The background information and the conceptual framework which underpins the model of multiple deprivation is described in this introductory section. In Section 2 the rationale for and process of constructing datazones are described. Section 3 introduces the domains and indicators that were included in the NIMD and summarises the methodological approach that was used in constructing the NIMD. In Section 4 datazone level results for Khomas region are presented, while conclusions and some general policy recommendations are presented in Section 5.

1.1 Background

Initially a NIMD was created at constituency level for the Khomas Region, but applicable to other regions of the country as well, using data from the 2001 Population Census at constituency level after a two-day consultative process on the domains and indicators with members of the Central Bureau of Statistics, civil servants from the Council and staff members of UNDP. The objective of this phase of the project was to construct measures of multiple deprivation at constituency level in order to provide a more detailed analysis of deprivation which would enable Khomas Regional Council, and other regional councils across Namibia, to rank their areas in order of deprivation, and also to set them in the context of all other areas in Namibia. The datazone level index presented in this report draws from the previous constituency index, and covers, in detail, the entire country including Khomas region. In constructing the NIMD at datazone level however, it became necessary to make some small changes to some of the domains and indicators initially used in the constituency level study. These changes are explained in detail in Section 3 of this report. As such, the constituency level index has also been revised to give a comparable measure. The initial

results of the work at the datazone level were presented to, and validated by, representatives of all the 13 Regional Councils at a workshop held in Ondangwa in November 2011.

1.2 Defining poverty and deprivation

Townsend (1979) sets out the case for defining poverty in terms of relative deprivation as follows: 'Individuals, families and groups can be said to be in poverty if they lack the resources to obtain the types of diet, participate in the activities and have the living conditions and amenities which are customary or at least widely encouraged or approved in the societies to which they belong' (Townsend, 1979, p31).

Though 'poverty' and 'deprivation' have often been used interchangeably, many have argued that a clear distinction should be made between them (see for example the discussion in Nolan and Whelan, 1996). Based on this line of thought, it can be argued that the condition of poverty means not having enough financial resources to meet a need, whereas deprivation refers to an unmet need, which is caused by a lack of resources of all kinds, not just financial.

1.3 The concept of multiple deprivation

The starting point for the NIMD is a conceptual model of multiple deprivation. The model of multiple deprivation is underpinned by the idea that there exists separate dimensions of deprivation which can be recognised and measured, and are experienced by individuals living in an area. Multiple deprivation is therefore conceptualised as a weighted combination of distinct dimensions or domains of deprivation. An area level score for each domain is produced and these are then combined to form an overall Index of Multiple Deprivation.

Although the area itself is not deprived, it can nonetheless be characterised as deprived relative to other areas, in a particular dimension of deprivation, on the basis of the proportion of people in the area experiencing the type of deprivation in question. In other words, the experiences of the people in an area give the area its deprivation characteristics. It is important to emphasize that the area itself is not deprived, though the presence of a concentration of people experiencing deprivation in an area may give rise to a compounding deprivation effect, but this is still measured by reference to those individuals. Having attributed the aggregate of individual experience of deprivation to the area however, it is possible to say that an area is deprived in that particular dimension. And having measured specific dimensions of deprivation, these can be understood as domains of multiple deprivation. In his article 'Deprivation' Townsend also lays down the foundation for articulating multiple deprivation as an aggregation of several types of deprivation (Townsend, 1987). Townsend's formulation of multiple deprivation is the starting point for the model of small area deprivation which is presented in this report.

SECTION 2: DATAZONES

Datazones are a new statistical geography for Namibia created especially for this version of the NIMD 2001. This section provides a non-technical overview of the process of creating the datazones and summarises their characteristics.

The methodology adopted is based on a similar process undertaken in South Africa (Avenell et al., 2009) which in turn was adapted from techniques developed in the United Kingdom (see, for example, Martin et al., 2001). Datazones were built up from Census Enumeration Areas (EAs) to create a standard uniform geography across Khomas region based on the existing EA geography which nest within the ten constituency boundaries. Though a datazone may be created from a single EA, it is usually created by merging one or more contiguous EAs which share common characteristics in accordance with a set of pre-defined rules. The actual creation of datazones was undertaken using a variety of geographical programming techniques (see Avenell et al., 2009). A set of rules governing the merging process was drawn up to ensure that the datazones had, as close as was possible, the following characteristics:

Population size: Datazones are designed to have a similar resident population size - this allows comparability across the region. The target population size was 1,000 with a minimum of 500 and maximum of 1,500. A total 252 datazones were created for the Khomas region.

Population density: Datazones should comprise EAs of similar population density. This is important to ensure that urban areas become distinct from rural areas. The datazone algorithm incorporated thresholds to ensure that, wherever possible, urban areas became tightly bounded.

Internal homogeneity: It is important that datazones comprise EAs of similar characteristics. This helps to ensure that the datazone geography created is 'meaningful' in that, for example, in urban areas housing of a similar type are grouped together within one datazone and that those living in EAs within a single datazone share similar socio-economic characteristics. In order to achieve this all EAs were analysed using a technique known as cluster analysis. This technique groups EAs across the country and the region into a small number of 'families' based on a variety of relevant characteristics. The datazones were checked and validated by obtaining aerial photography underlays for the mapping software and visually inspecting boundary positions.

> "The NIMD and the component domains of deprivation were produced at datazone level using data from the 2001 Population Census."

SECTION 3: METHODOLOGY

3.1 An introduction to the domains and indicators

Domains

The NIMD was produced using the 2001 Namibian Population Census which was supplied by the Namibian Central Bureau of Statistics for the purposes of this project. Whilst the intention should always to be concept-led rather than 'data-driven', the project team was restricted to selecting indicators from the range of questions included within the 2001 Census. The NIMD was produced at datazone level (and also at constituency level on a comparable basis). There are 252 datazones and ten constituencies in Khomas region.

The NIMD contains five domains of deprivation:

- Material Deprivation
- Employment Deprivation
- Health Deprivation
- Education Deprivation
- Living Environment Deprivation

Each domain is presented as a separate domain index reflecting a particular aspect of deprivation. Each domain seeks to measure only one dimension of deprivation, avoiding overlaps between the domains and providing a direct measure of the deprivation in question. Individuals can however, experience more than one type of deprivation at any given time and it is therefore conceivable that the same person can be captured in more than one domain. So, for example, if someone was unemployed, had no qualifications and had no access to basic material goods they would be captured in the Employment Deprivation, Education Deprivation and Material Deprivation domains. The indicators were chosen following an extensive consultation process with representatives of the Central Bureau of Statistics, Khomas Regional Council and UNDP .

> "The NIMD was produced using the 2001 Namibian Population Census which was supplied by the Namibian Central Bureau of Statistics for the purposes of this project."

Indicators

Each domain index contains a number of indicators. There are 11 indicators in total in the NIMD. The aim for each domain was to include a parsimonious (i.e. economical in number) collection of indicators that comprehensively captured the deprivation for each domain, but within the constraints of the data available from the 2001 Census. When identifying

1 This refers to material goods, that is, assets or possessions.
During the consultation process a number of other domains were discussed. These included: access to recreation facilities, level of participation in community activities, crime, food security, provision of emergency services, and availability of affordable transport. Unfortunately data relating to these issues were not available within the Census. These issues could be incorporated into further iterations of the NIMD if appropriate administrative or geographical data becomes available.

2 Because the direct method of standardisation makes use of individual age/gender death rates it is often associated with small numbers. An empirical Bayes or 'shrinkage' technique is therefore used to smooth the individual age/gender death rates in order to reduce the impact of small number problems on the YPLL.

indicators for the domains, it was important to ensure that they are direct measures of the domain of deprivation in question and specific to that domain.

In the construction of that index the indicators were discussed at length during the consultation process and every effort was made to ensure that they were appropriate for the Namibian context. The domains need to allow different geographical areas to be distinguished from one another; therefore it would be unhelpful to identify a deprivation which is experienced by most people in most areas as this would not enable the areas to be ranked relative to each other in terms of deprivation.

In the following sub-sections the domains and indicators which make up the NIMD 2001 are described.

3.2 Material Deprivation Domain

> "In any event, the 2001 Census did not have an income question and so an income poverty indicator, if included, would need to be modelled from a different data source such as the Namibian Household Income and Expenditure Survey"

Purpose of the domain

This domain measures the proportion of the population experiencing material deprivation in an area by reference to the percentage of the population who are deprived of access to basic material possessions.

Background

In other indices that have followed this model (e.g. UK indices), an Income Deprivation Domain was created. However, there is an argument that such a domain is inappropriate within an Index of Multiple Deprivation, because - as explained above - deprivation can be regarded as the outcome of lack of income rather than the lack of income itself. To follow Townsend, within a multiple deprivation measure, only the deprivations resulting from a low income would be included so low income itself would not be a component, but lack of material possessions would be included. In any event, the 2001 Census did not have an income question and so an income poverty indicator, if included, would need to be modelled from a different data source such as the Namibian Household Income and Expenditure Survey. Such modelling work is being undertaken separately for the Central Bureau of Statistics (now Namibia Statistics Agency) by Lux Development and will provide a complementary small area measure of income poverty. For these reasons, a material deprivation domain was produced. A lack of access to basic material goods can be understood as a proxy for low income. The 2001 Census included questions about access to material goods (e.g. television, radio, newspaper, telephone and computer) which are internationally accepted and widely used as measures of variations in living standards.

Of the possible material goods that could be included as indicators, access to a television/radio and telephone/cell phone were selected as they represent important modes of communication and a means of accessing information crucial to one's life and livelihood. The quality of the services provided however, were not be taken into account.

Indicators

- Number of people living in a household with no access to a television or a radio; or
- Number of people living in a household with no access to a telephone/cell phone.

Combining the indicators

A simple proportion of people living in households experiencing either one or both of the deprivations was calculated (i.e. the number of people living in a household with no access to a television/radio and/or with no access to a telephone/cell phone divided by the total population).

3.3 Employment Deprivation Domain

Purpose of the domain

This domain measures employment deprivation conceptualised as involuntary exclusion of the working age population from the world of work by reference to the percentage of the working age population who are unemployed.

Background

The 2001 Census recorded employment status in line with the International Labour Organisation (ILO) 'labour force framework' and the 'priority rules' which give precedence to employment over all other activities 'regardless of the amount of time devoted to it, which in extreme cases may be only one hour' (Hussmanns, 2007, p6). Therefore a person was considered to be employed if during the seven days prior to the Census night they worked for at least one hour for pay, profit or family gain. It follows that unemployment was defined as a situation of a total lack of work. The definition of unemployment adopted by the 13th International Conference of Labour Statistics (ICLS) stipulates three criteria which must be simultaneously met for a person to be considered unemployed. According to this official definition, the unemployed are those persons within the economically active population (aged 15-65 inclusive) who during the reference period (for the 2001 Census this is the seven days prior to Census night) were:

1. Without work, i.e. in a situation of total lack of work; and
2. Currently available for work, i.e. not a student or homemaker or otherwise unavailable for work; and
3. Seeking work, i.e. taking steps to seek employment or self-employment.

Using the 2001 Census however, it was not possible to measure whether unemployed people were available for work and seeking work. Though other indices have also included people of working age who cannot work because of illness or disability, as they are involuntarily excluded from the world of work and internationally are regarded as the 'hidden unemployed' (Beatty et al., 2000), the consultation group wanted to limit this domain to the economically active population and therefore disabled or long-term sick people were not included. The age band was modified to 15-59 inclusive to reflect a concept of working age relevant to Namibia.

Indicator

- Number of people aged 15-59 inclusive who are unemployed.

Combining the indicators

The domain was calculated as those identified as unemployed and aged 15 to 59 inclusive divided by the number of people who are economically active in that age group.

3.4 Health Deprivation Domain

Purpose of the domain

This domain identifies areas with relatively high rates of people who die prematurely. The domain measures premature mortality but not aspects of behaviour or environment that may be predictive of forthcoming health deprivation.

Background

Although the consultation process raised the importance of measuring people's health status; and access to health facilities and healthcare, these issues could not be measured using the 2001 Census data. It was therefore not possible to include any measures of morbidity or access to health services. Instead a form of standardised mortality ratio known as Years of Potential Life Lost (YPLL) was used. An internationally recognised measure of poor health, the YPLL measure is the level of unexpected mortality weighted by the age of the individual who has died (for details about how this indicator was constructed see Blane and Drever, 1998). An area with a relatively high death rate in a young age group (including areas with high levels of infant mortality) will therefore ceteris paribus, have a higher overall YPLL score than an area with a similarly relatively high death rate for an older age group.

> "The YPLL measure is related to life expectancy in an area. Areas with low life expectancy will have YPLL scores"

The YPLL indicator is a directly age and gender standardised measure of premature death (i.e. death under the age of 75) . The YPLL measure is related to life expectancy in an area. Areas with low life expectancy will have high YPLL scores. Equally high levels of infant mortality and perinatal mortality as well as high levels of serious illness such as HIV/AIDS and tuberculosis will all contribute to reduced life expectancy in an area and therefore high YPLL scores. Thus, although the YPLL is a mortality measure, it does, implicitly, reflect the extent of serious ill-health in an area. And although it would have been possible to use infant mortality, under-five mortality, and life expectancy as indicators, YPLL in effect combines all these issues into a single indicator and is therefore a broader and more useful overview of health deprivation in an area.

Indicator

- Years of potential life lost

3.5 Education Deprivation Domain

Purpose of the domain

This domain measures deprivation in educational attainment for people aged 15 to 59 inclusive.

Background

Elsewhere in the Southern Africa Development Community (SADC) region it has been shown that the level of educational attainment in the working age adult population is closely linked to an individual's employment status and future opportunities for those individuals and their dependants (Bhorat et al., 2004).

The 2001 Census includes a record of the level of education completed and a record of illiteracy. These two questions provide the best available measures of educational attainment and make up the indicators for this domain. The consultation process additionally raised the importance of affordable education and availability of tertiary education opportunities, but again, these could not be adequately captured using the 2001 Census.

Indicators

- Number of 15-59 year olds inclusive with no schooling completed at secondary level or above; or
- Number of 15-59 year olds inclusive who are illiterate.

Combining the indicators

A simple proportion of the working age population (aged 15 to 59 years old inclusive) who had not completed schooling at secondary level or who are illiterate was calculated (i.e. the number of people with no schooling completed at secondary level or above or who are illiterate divided by the population aged 15 to 59 inclusive).

3.6 Living Environment Deprivation Domain

Purpose of the domain

This domain measures both inadequacy in housing conditions and a lack of basic services to the home.

Background

The 2001 Census questionnaire provides indicators on households' access to basic amenities. These aspects of the immediate environment in which people live impact on the quality of their life and provide good measures of deprivation in terms of access to services.

Measuring access to electricity as a basic amenity is a useful indicator of living environment deprivation. Three Census indicators were considered: main source of energy for cooking, lighting and heating. Although cost, availability and effectiveness are factors in the consumption of all energy supplies, it has been argued that in certain instances, the choice of fuel for cooking may be influenced by cultural preference rather than availability alone, whereas the use of electricity for lighting would generally be the preferred choice, if available, and therefore provides a more valid measure of deprivation in terms of access to energy for lighting (Bhorat et al., 2004). This was the measure used in the previous constituency level index. However, at datazone level, all individuals in a high proportion of datazones were found to lack electricity for lighting. These datazones would all be given the same overall score for this domain, and so it would not be possible to discriminate between datazones in terms of their level of deprivation.

For this reason the indicator was altered slightly to include paraffin alongside electricity (and solar power) as the measure of access to energy for lighting. The inclusion of paraffin however, does not imply any judgement about its suitability for lighting purposes, but is rather a means of enabling datazones to be properly ranked on this domain.

Access to clean drinking water and sanitation facilities is essential for the good health of the population and thus an important indicator to include in this domain. An indicator of no access to piped water within the home or within 200 metres of the home was included. The threshold of 200 metres was regarded by the consultation group as preferable to a threshold of 400 metres (the MDG measure). Though in the previous (constituency) index people without flush toilets or ventilated pit latrines were regarded as deprived, investigation of this indicator at datazone level revealed that again, a high proportion of datazones scored 100 percent. Therefore, as with the access to energy indicator, an additional criterion was added: long drop pit latrines were included alongside flush toilets and ventilated pit latrines. Again, the inclusion of long drop pit latrines does not imply adequacy, but is included simply as a means of discriminating between datazones.

The quality of housing construction provides an important indicator for the quality of day-to-day life and vulnerability to shocks such as adverse weather conditions (Bhorat et al., 2004; Programme of Action Chapter 2 World Summit for Social Development Copenhagen 1995). There was much discussion during the consultation process about traditional dwellings and their adequacy. Though the 2001 Census contains fairly precise information about materials used in the construction process, there is no way of identifying whether the resultant buildings were of a high quality or not. It was therefore agreed that only shacks could be reliably identified as constituting inadequate housing.

The crowding indicator is calculated by dividing the number of people in the household by the number of rooms excluding bathrooms, toilets, kitchens, stoops and verandas. Different versions of the crowding indicator were considered. It was felt that the most appropriate measure of crowding was to classify three or more people per room as a deprivation. Setting the capacity cut-off at two or more people per room was considered. However, it was felt that this lower capacity would capture too many non-deprived people, for example relatively well-off couples sharing a one room urban apartment.

Indicators

- Number of people living in a household without the use of electricity, paraffin or solar power for lighting; or
- Number of people living in a household without access to a flush toilet or pit latrine (ventilated or long drop); or
- Number of people living in a household without piped water/borehole/borehole with covered tank (but not open tank)/ protected well inside their dwelling or yard or within 200 metres; or
- Number of people living in a household that is a shack; or
- Number of people living in a household with three or more people per room.

Combining the indicators

A simple proportion of people living in households experiencing one or more of the deprivations was calculated (i.e. the number of people living in a household without electricity, paraffin or solar power for lighting and/or without adequate toilet facilities and/or without adequate water provision and/or living in a shack and/or in overcrowded conditions divided by the total population).

3.7 Constructing the domain indices

In all domains apart from the Health Deprivation Domain, the overall score is a simple proportion of the relevant population, and so can be easily interpreted. As Censuses can be regarded as a sample from a super-population, it is important to consider and deal with large standard errors. A technique that takes standard errors into account but still enables one to then combine the domains into an overall index of multiple deprivation is called Bayesian shrinkage estimation. Specifically, the scores for datazones can be unreliable when the deprived population is small and so the shrinkage technique was applied to each of the domains. The 'shrunk' estimate is the weighted average of the original datazone level estimate and an appropriate larger spatial unit. The weight is based on the standard error of the original datazone estimate and the amount of variation within the constituency. For further details about this technique see Annex 2 of the 2001 NIMD National Report available at http://www.undp.org.na/publications.aspx and also Noble et al. (2006b).

3.8 Standardising and transforming the domain indices

Having obtained a set of domain indices, these needed to be combined into an overall Namibia Index of Multiple Deprivation and in order to combine domain indices which are each based on different metrics there needed to be some way to standardise the scores before any combination could take place. A form of standardisation and transformation is required that meets the following criteria. First it must ensure that each domain has a common distribution; second, it must not be scale dependent (i.e. conflate size with level of deprivation); third, it must have an appropriate degree of cancellation built into it; and fourth, it must facilitate the identification of the most deprived datazones. The exponential transformation of the ranks best meets these criteria and was applied in the NIMD 2001. For further details about this technique see Annex 3 of the 2001 NIMD National Report available at http://www.undp.org.na/publications.aspx and also Noble et al. (2006b).

3.9 Weights for the domain indices when combining into an overall Index of Multiple Deprivation

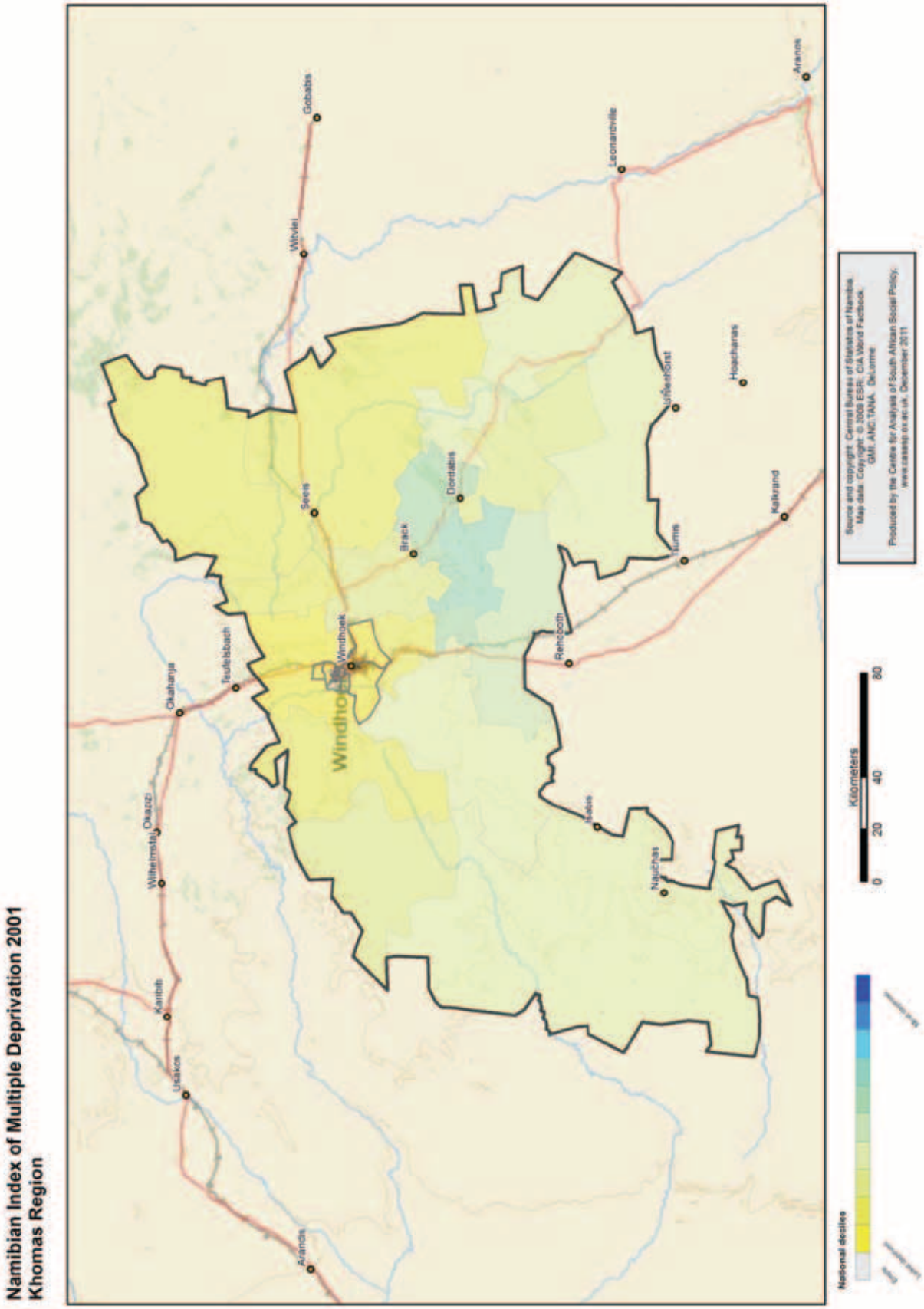
Domains are conceived as independent dimensions of multiple deprivation, each with their own additive impact on multiple deprivation. The strength of this impact, though, may vary between domains depending on their relative importance. As a starting point, equal weights for the domains were recommended and this was supported by the consultation group. Each domain was therefore assigned a weight of 1. The NIMD was therefore constructed by adding the standardised and transformed domain indices with equal weights.

SECTION 4: DATAZONE LEVEL NAMIBIAN INDEX OF MULTIPLE DEPRIVATION 2001: KHOMAS REGION

4.1 Multiple Deprivation

In this section a profile of multiple deprivation in Khomas region, at both constituency and datazone levels, is presented. Using the data from the NIMD it is possible to compare the 252 datazones and ten constituencies within Khomas. Map 1 shows the datazones in Khomas in relation to the overall NIMD (i.e. the five separate domains of deprivation combined together). The lightest shading relates to the least deprived datazones. Map 2 is a zoom-in of Map 1, showing the datazones within the Windhoek area (as these are small in physical size and therefore hard to distinguish on Map 1). These maps provide an easy to interpret picture of the pattern of multiple deprivation in the Khomas region.

Map 1


Namibian Index of Multiple Deprivation 2001
Khomas Region
Gobabis
Witvlei
Leonardville
Aranos
Hoachanas
Seeis
Dordabis
Brack
Windhoek
Rehoboth
Okahanja
Rehoboth
Kalkrand
Okazizi
Wilhelmstal
Karibib
Usakos
Aranos
Naukluft
National deciles
Kilometers
0
20
40
80

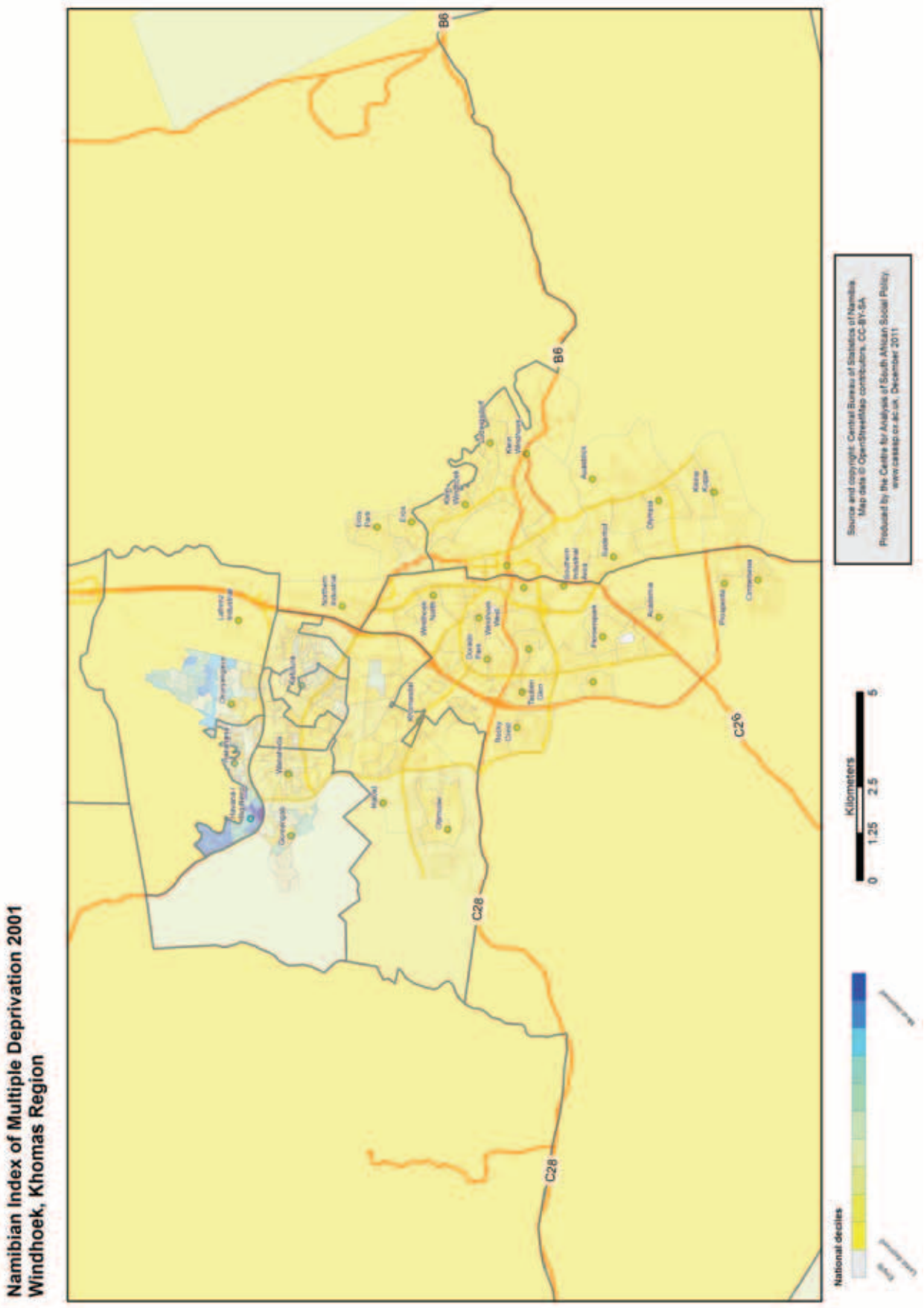

Namibian Index of Multiple Deprivation 2001
Windhoek, Khomas Region
B6
C28
C26
Kilometers
0
1.25
2.5
5
National deciles
Source and copyright: Central Bureau of Statistics of Namibia
Map data © OpenStreetMap contributors, CC-BY-SA
Produced by the Centre for Analysis of South African Social Policy
www.casasp.co.za uk, December 2011

Table 1 shows some of the data underlying these maps. The NIMD 2001 score, national rank (where 1=most deprived and 1,871=least deprived) and Khomas rank (where 1=most deprived and 252=least deprived) for the 20 most deprived datazones in Khomas are shown. Appendix 2 provides this information for all of the datazones in Khomas.

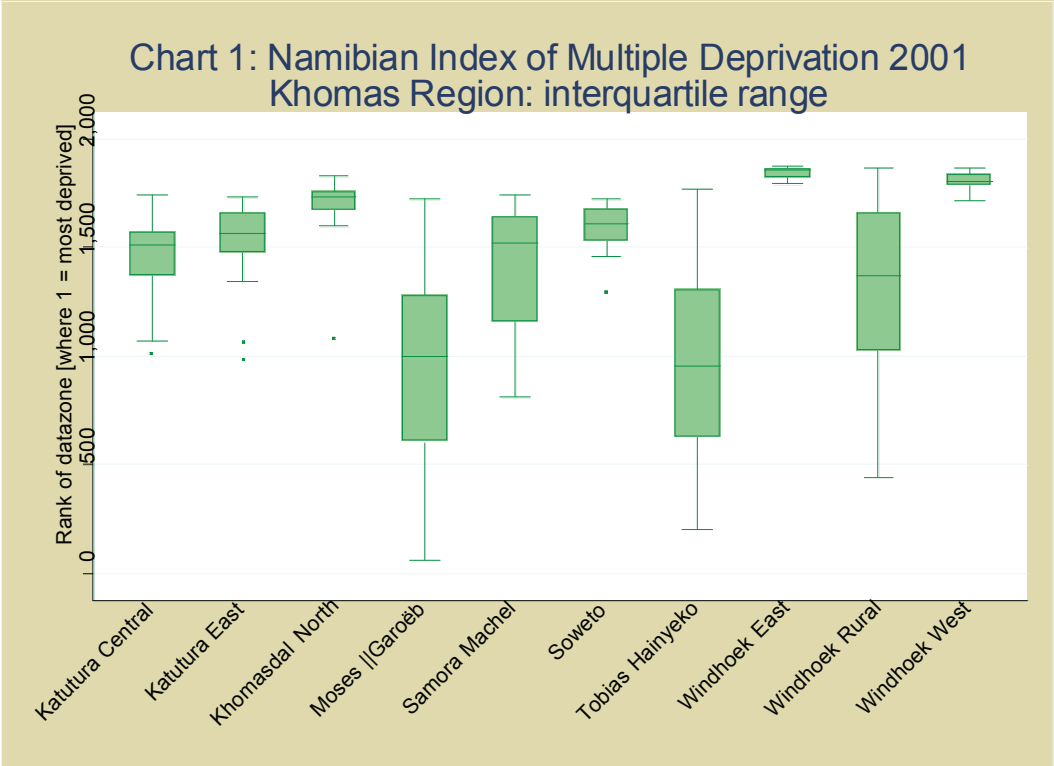
The most deprived datazone in Khomas is in Moses ||Garoëb constituency, and is therefore given a rank of 1 among the datazones in Khomas. If ranked alongside all datazones in Namibia, it ranks at 62. This datazone and one other in Moses ||Garoëb constituency are in the most deprived 10 percent of datazones in Namibia in terms of multiple deprivation (the cut-off for the 10 percent most deprived is a rank of 187). The least deprived datazone in Khomas – and in Namibia as a whole – is located in Windhoek East.

Table 1: The 20 most deprived datazones in the Khomas Region

Datazone	Constituency	NIMD score	NIMD rank – national	NIMD rank – within Khomas
790	Moses ||Garoëb	300.2	62	1
788	Moses ||Garoëb	268.6	166	2
560	Tobias Hainyeko	260.1	206	3
796	Moses ||Garoëb	252.4	251	4
793	Moses ||Garoëb	247.8	282	5
797	Moses ||Garoëb	242.2	322	6
561	Tobias Hainyeko	240.0	337	7
556	Tobias Hainyeko	239.9	338	8
574	Tobias Hainyeko	234.7	377	9
792	Moses ||Garoëb	231.0	403	10
789	Moses ||Garoëb	230.9	404	11
557	Tobias Hainyeko	230.1	414	12
555	Tobias Hainyeko	227.5	438	13
712	Windhoek Rural	226.6	442	14
551	Tobias Hainyeko	211.5	567	15
717	Windhoek Rural	210.1	580	16
794	Moses ||Garoëb	206.8	605	17
559	Tobias Hainyeko	204.0	622	18
566	Tobias Hainyeko	203.1	631	19
562	Tobias Hainyeko	199.9	659	20

The ten constituencies in Khomas vary in terms of the range of deprivation of their datazones. Chart 1 shows the minimum, maximum and median rank of datazones in each constituency, and the interquartile range for the overall NIMD. This is based on the *national* ranks (i.e. where the most deprived datazone in Namibia is ranked 1, and the least deprived datazone is ranked 1,871).

Interpreting the Charts: For details on how to interpret the chart please see the 'How to interpret interquartile range charts' description in section 4.1 of the national report available at http://www.undp.org.na/publications.aspx



The vertical green line for each constituency shows the range of the ranks of the datazones in a constituency (including the dots which for some constituencies, like Katutura East and Khomasdal North, appear at either end of the line). Moses ||Garoëb, Tobias Hainyeko and Windhoek Rural have a larger range of deprivation than the other constituencies.

The green box for each constituency shows the range of the NIMD ranks of the middle 50 percent of datazones in the constituency (the interquartile range). The horizontal line within the box for each constituency represents the rank of the median datazone within that constituency. The median ranks in Moses ||Garoëb and Tobias Hainyeko are lower (more deprived) than in the other constituencies. If the box is relatively short this indicates that datazones are ranked in a narrow range, with similar NIMD ranks (and therefore similar levels of multiple deprivation). Windhoek East and Windhoek West have a particularly narrow range for the middle 50 percent of datazones. If the box sits towards the bottom of the chart it tells us that datazones in the constituency are concentrated in the most deprived part of the national distribution of the NIMD. If the box sits towards the top of the chart it tells us that the datazones in the constituency are concentrated in the least deprived part of the national distribution. Datazones in all the constituencies in Khomas

region, especially Windhoek East, Windhoek West and Khomasdal North are concentrated at the least deprived end of the distribution. Datazones in Moses ||Garoëb and Tobias Hainyeko are concentrated more towards the middle of the national distribution and the most deprived and of the regional distribution.

Further analysis shows that the datazones in the most deprived 10 percent of datazones *within Khomas* on the overall NIMD are located in four constituencies. These constituencies and the number that are in the most deprived 10 percent of datazones *within* Khomas are as follows: Moses ||Garoëb (8 in 29), Samora Machel (3 in 31), Tobias Hainyeko (12 in 32) and Windhoek Rural (2 in 22).

4.2 Domains of deprivation

Although it is not possible to calculate multiple deprivation rates as such, each of the individual domains of deprivation can be presented at constituency level, and for all domains except health the domain scores can be compared.

Table 2 provides the domain scores for each constituency in Khomas, excluding health as the health score is not calculated as a rate. The other four domains are in the form of simple deprivation rates. So for example, 63.5 percent of the population in Tobias Hainyeko constituency experienced material deprivation in 2001. The within Khomas ranks are shown as well as the domain scores, for each constituency in Khomas (where 1=most deprived).

In terms of material deprivation, the most deprived constituency in Khomas is Tobias Hainyeko (with 64 percent of the population experiencing material deprivation), followed by Moses ||Garoëb (56 percent). In relation to employment deprivation, the most deprived constituency is Katutura Central (with 39 percent of the relevant population being employment deprived), followed by Moses ||Garoëb and Tobias Hainyeko (both at 38 percent). These same three constituencies are also the three most deprived in terms of education deprivation: Moses ||Garoëb is the most deprived (with 69 percent of the relevant population being education deprived), followed by Tobias Hainyeko (68 percent) and Katutura Central (61 percent). In terms of living environment deprivation, Tobias Hainyeko is the most deprived constituency (with 88 percent of the total population experiencing living environment deprivation), followed by Moses ||Garoëb (84 percent).
Windhoek East and Windhoek West are the two least deprived constituencies on all four of the domains.

The domain scores and ranks for each of the datazones in Khomas are presented in Appendix 2. As in Table 2, four of the five domains are

expressed as rates. Health deprivation is expressed as the years of potential life lost in that datazone. A datazone with a relatively high death rate in a young age group (including areas with high levels of infant mortality) will have a higher score than an area with a similarly relatively high death rate for an older age group, all else being equal. The measure is related to life expectancy in an area, so datazones with low life expectancy will have high scores on this domain.

Table 2: Domain scores and ranks for each constituency in the Khomas Region

Constituency	Material deprivation rate (%)	Material deprivation rank (within Khomas)	Employment deprivation rate (%)	Employment deprivation rank (within Khomas)	Education deprivation rate (%)	Education deprivation rank (within Khomas)	Living environment deprivation rate (%)	Living environment deprivation rank (within Khomas)
Katutura Central	49.6	3	38.5	1	61.3	3	50.8	5
Katutura East	35.4	6	37.1	4	57.3	6	46.1	6
Khomasdal North	26.5	8	24.0	7	44.8	8	35.2	8
Moses ||Garoëb	56.4	2	38.1	2	69.1	1	84.3	2
Samora Machel	46.4	5	36.6	5	61.2	4	68.2	4
Soweto	31.5	7	32.7	6	49.2	7	38.4	7
Tobias Hainyeko	63.5	1	38.0	3	67.9	2	87.9	1
Windhoek East	6.3	10	8.6	10	15.9	10	12.1	10
Windhoek Rural	48.3	4	23.7	8	60.3	5	69.5	3
Windhoek West	11.0	9	14.0	9	26.1	9	16.1	9

Table 3 shows the percentage of each constituency's datazones that are in the most deprived 10percent of datazones *nationally* for each domain. Only Moses ||Garoëb, Tobias Hainyeko and Windhoek Rural feature amongst the most deprived 10 percent of datazones *nationally* on any of the domains. None of the constituencies in Khomas are in the most deprived 10 percent nationally in terms of material deprivation or for employment deprivation. Windhoek Rural does not have any datazones in the most deprived 10 percent nationally in terms of health deprivation or living environment deprivation. Approximately one quarter of the datazones in both Moses ||Garoëb and Tobias Hainyeko are in the most 10 percent deprived datazones nationally for living environment deprivation. For the other domains (and also for Windhoek Rural) the percentage is much lower than this.

Table 3: Percentage of datazones in most deprived 10% of datazones in the Khomas Region

Constituency	Number of datazones	Material deprivation	Employment deprivation	Health deprivation	Education deprivation	Living env. deprivation
Katutura Central	21	0.0	0.0	0.0	0.0	0.0
Katutura East	18	0.0	0.0	0.0	0.0	0.0
Khomasdal North	27	0.0	0.0	0.0	0.0	0.0
Moses ||Garoëb	29	0.0	0.0	3.4	6.9	24.1
Samora Machel	31	0.0	0.0	0.0	0.0	0.0
Soweto	16	0.0	0.0	0.0	0.0	0.0
Tobias Hainyeko	32	0.0	0.0	3.1	3.1	25.0
Windhoek East	18	0.0	0.0	0.0	0.0	0.0
Windhoek Rural	22	0.0	0.0	0.0	9.1	0.0
Windhoek West	38	0.0	0.0	0.0	0.0	0.0

Table 4 shows the percentage of each constituency's datazones that are in the most deprived 10 percent of datazones *within Khomas* for each domain. Moses ||Garoëb, Samora Machel and Tobias Hainyeko are the only constituencies that have at least one datazone in the most deprived 10 percent for each domain. Moses ||Garoëb has fewer datazones in the most deprived 10 percentin terms of employment deprivation than the other domains of deprivation, whereas Tobias Hainyeko has fewer datazones in the most deprived 10 percent in terms of health deprivation. Samora Machel has just one datazone in the most deprived 10 percent for three of the domains: health, education and living environment. Windhoek East and Windhoek West do not have any datazones in the most deprived 10 percent on any domain. 46 percent of Windhoek Rural's datazones are in the most deprived 10 percent in terms of education deprivation, the highest percentage of any constituency. Soweto does not have any datazones in the most deprived 10 percent for four of the five domains, however a quarter of Soweto's datazones are in the most deprived datazone in terms of health deprivation.

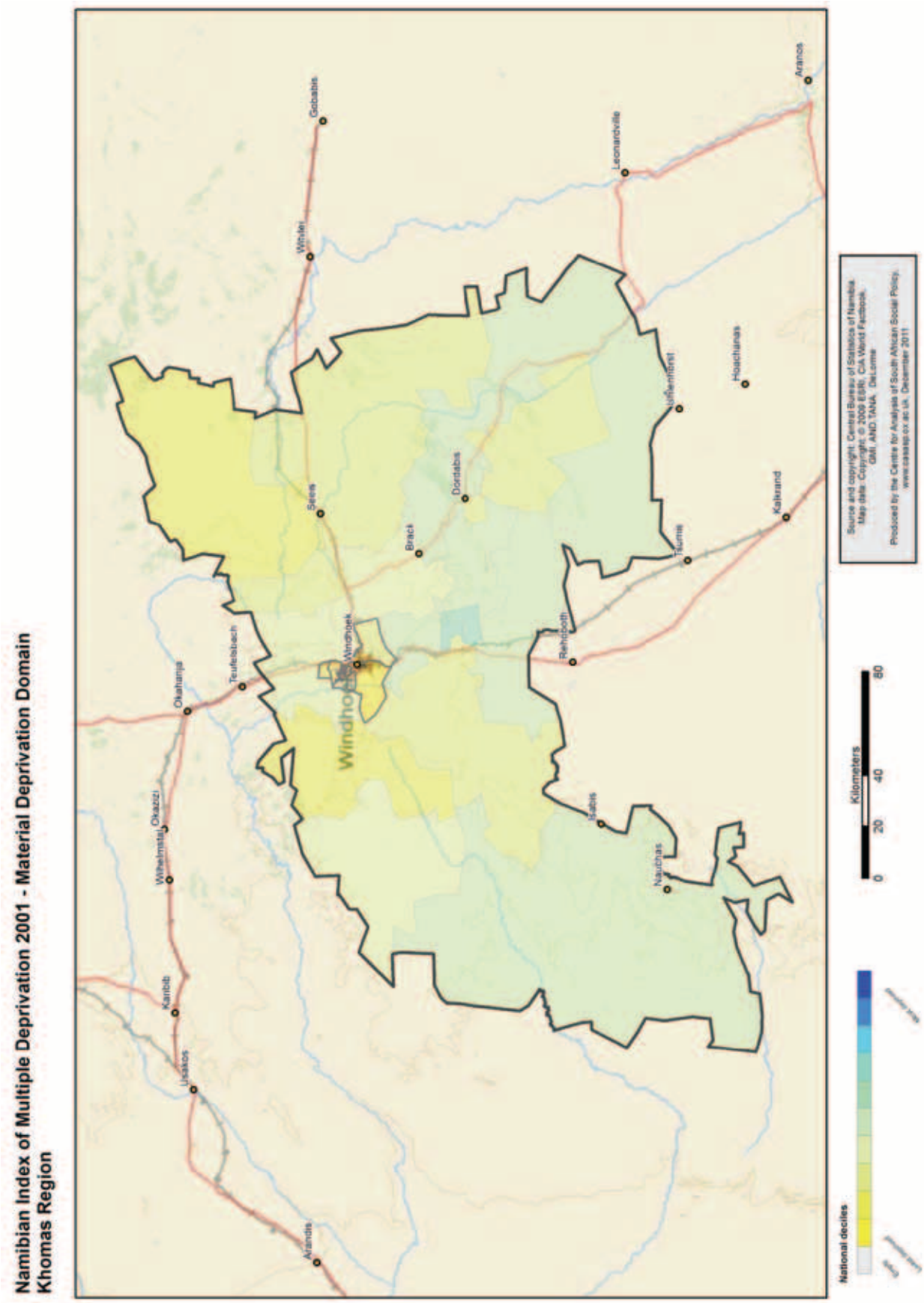
Table 4: Percentage of datazones in most deprived 10% of datazones in the Khomas Region

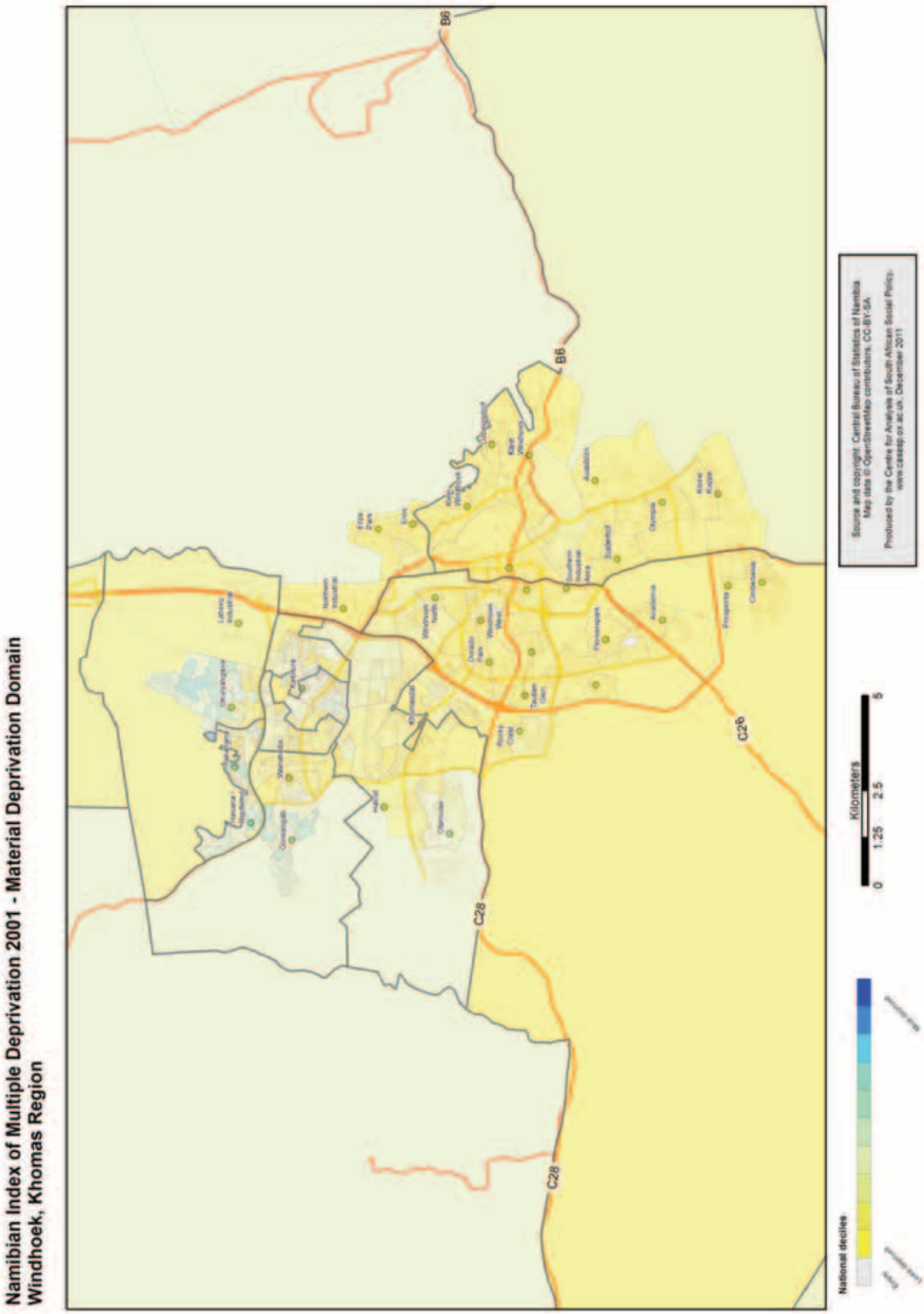
Constituency	Number of datazones	Material deprivation	Employment deprivation	Health deprivation	Education deprivation	Living env. deprivation
Katutura Central	21	0.0	23.8	14.3	0.0	0.0
Katutura East	18	0.0	5.6	11.1	0.0	0.0
Khomasdal North	27	0.0	0.0	3.7	0.0	0.0
Moses ||Garoëb	29	24.1	17.2	41.4	31.0	34.5
Samora Machel	31	16.1	19.4	3.2	3.2	3.2
Soweto	16	0.0	0.0	25.0	0.0	0.0
Tobias Hainyeko	32	34.4	15.6	6.3	15.6	40.6
Windhoek East	18	0.0	0.0	0.0	0.0	0.0
Windhoek Rural	22	9.1	13.6	0.0	45.5	4.5
Windhoek West	38	0.0	0.0	0.0	0.0	0.0

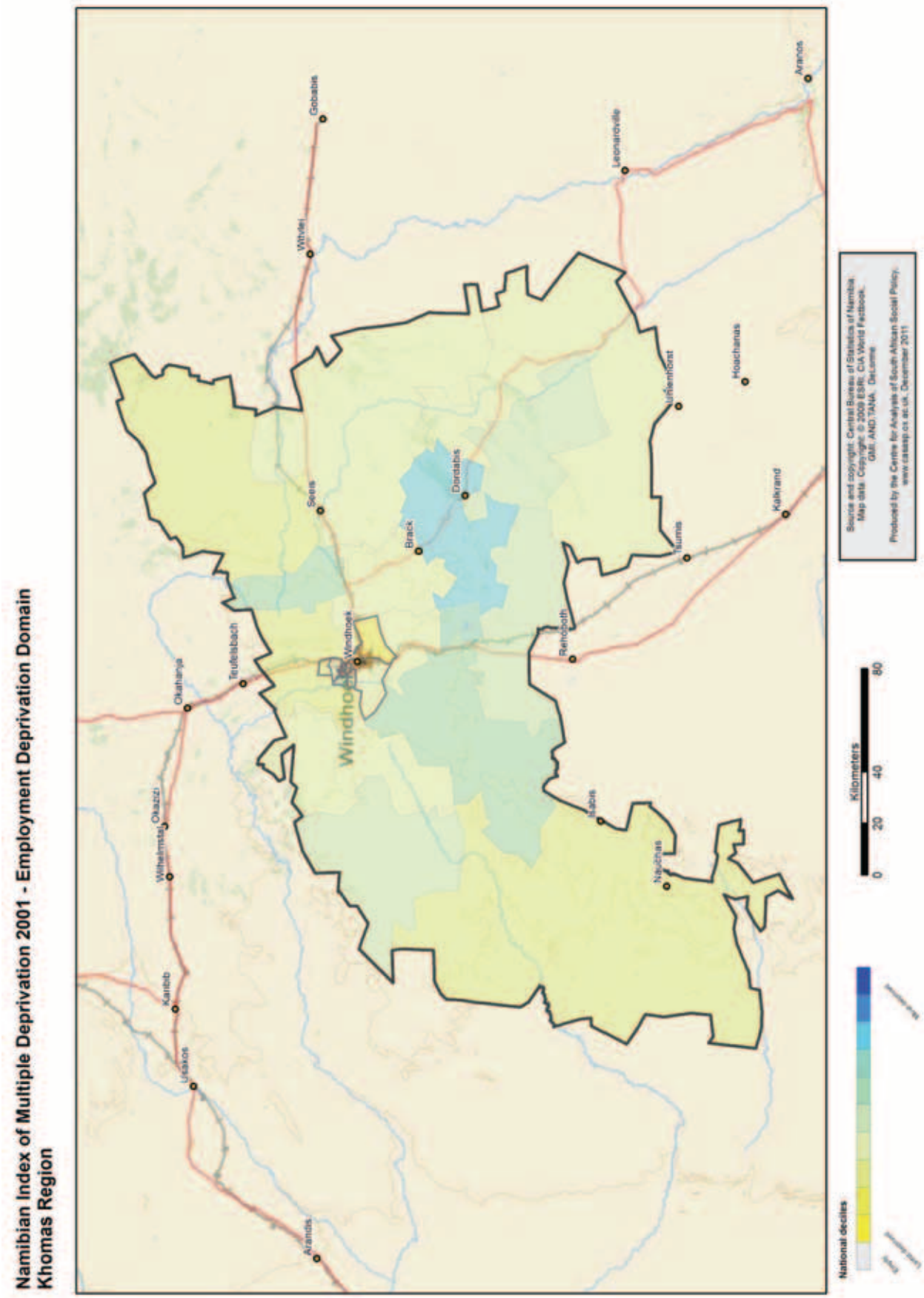
The following maps present each of the five domains at datazone level for Khomas and for the Windhoek area. As with Maps 1 and 2, the lightest shading relates to the least deprived datazones. It is intended that these maps should provide accessible profiles of the domains of deprivation in the Khomas Region.

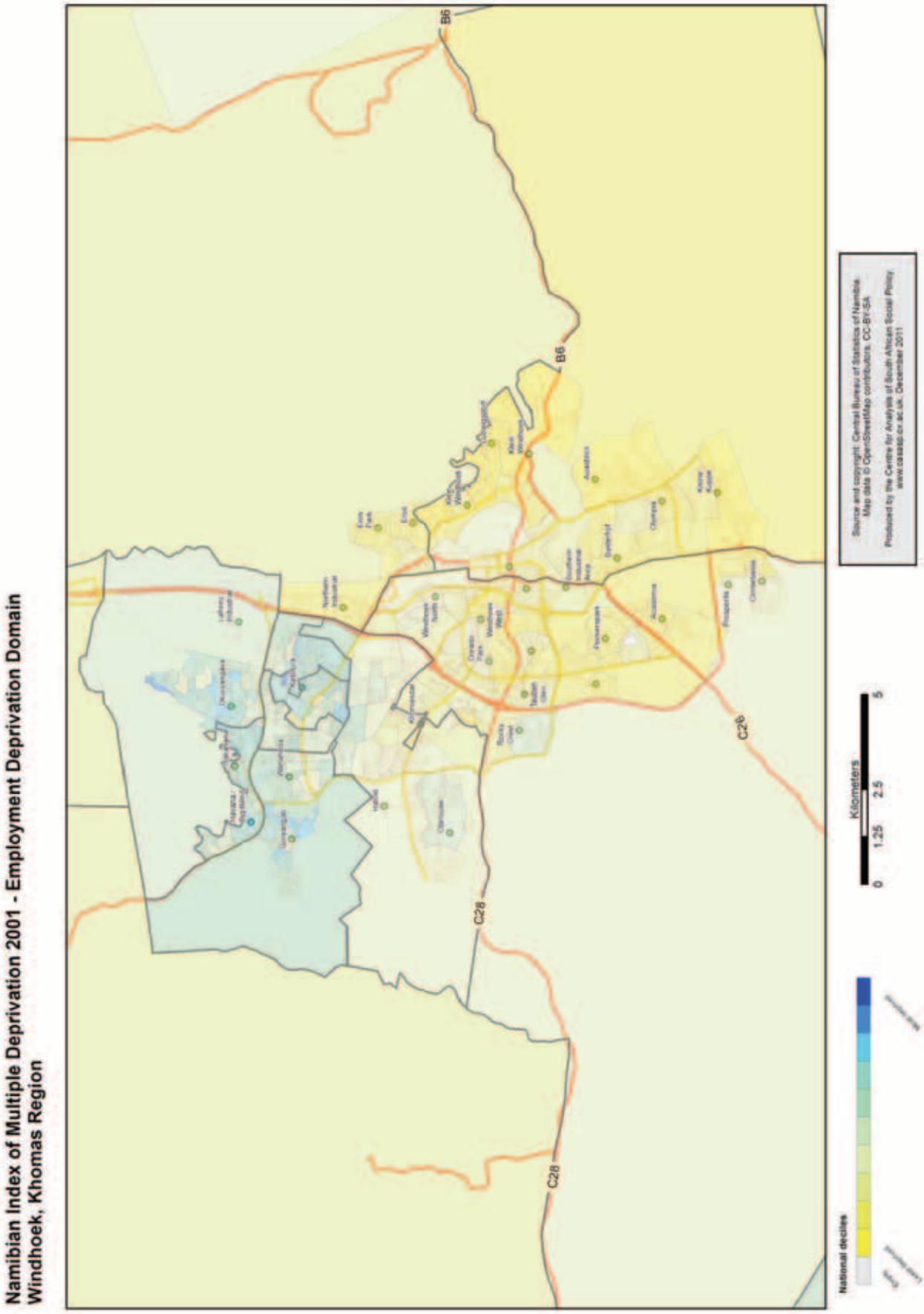
> "Some datazones do not have a score for the overall NIMD or separate domains and are therefore shaded in grey. Using Google Earth Historical Imagery it was possible to investigate these datazones and confirm that they did not have anyone living in them in 2001"

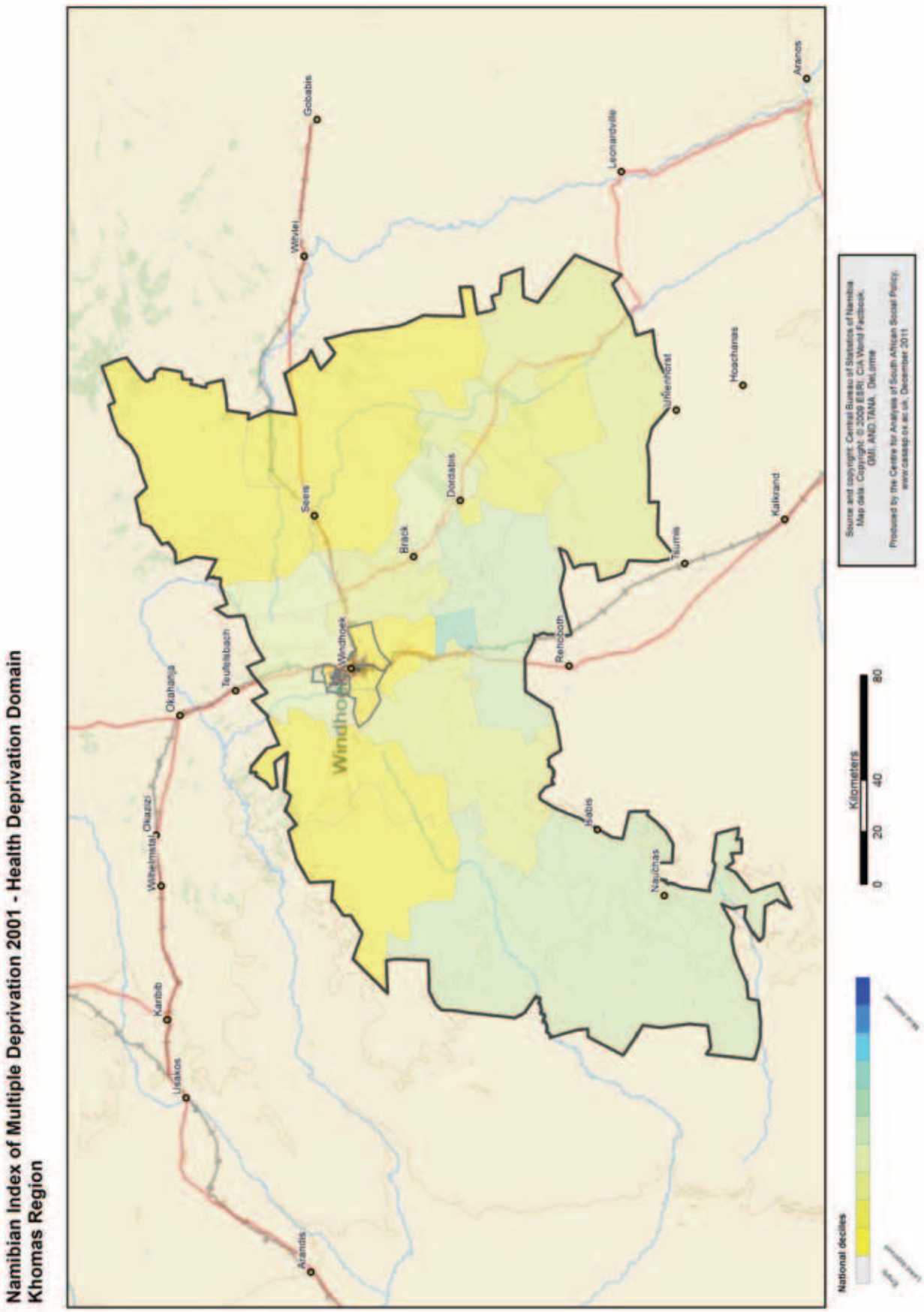
Map 3

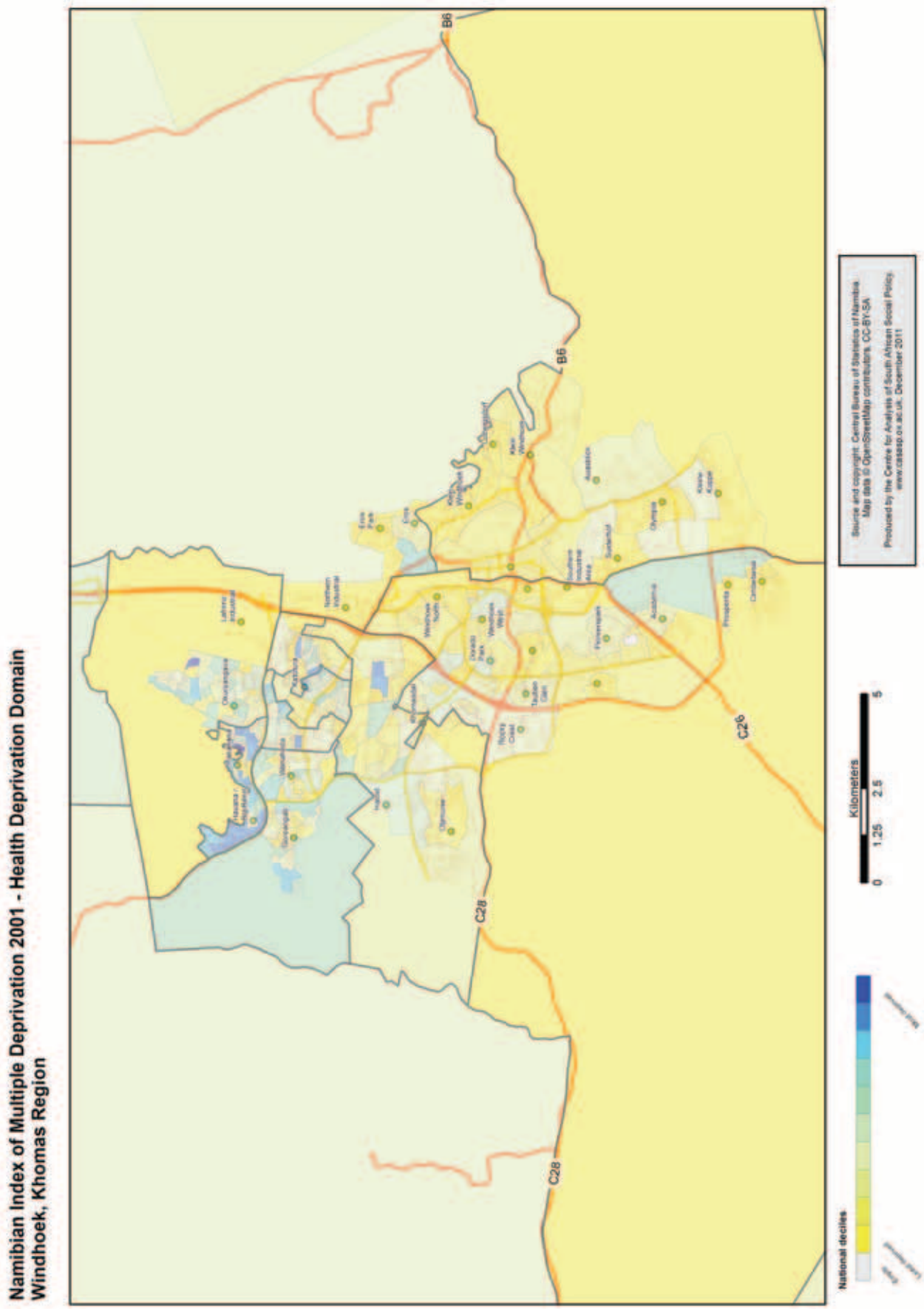

Namibian Index of Multiple Deprivation 2001 - Material Deprivation Domain
Khomas Region
Gobabis
Winkel
Leonardville
Aranos
Hoachanas
Witkleinfontein
Dordabis
Seeis
Brack
Kalkrand
Tsumis
Rehoboth
Windhoek
Teufelsbach
Okahanja
Okazizi
Wilhelmstal
Karibib
Usakos
Arandis
Stalis
Naukluft
Kilometers
0
20
40
80
National deciles
Source and copyright: Central Bureau of Statistics of Namibia
Map data: Copyright: © 2009 ESRI, CIA World Factbook,
GMI, AND TANA, DeLorme
Produced by the Centre for Analysis of South African Social Policy,
www.caasp.ox.ac.uk, December 2011

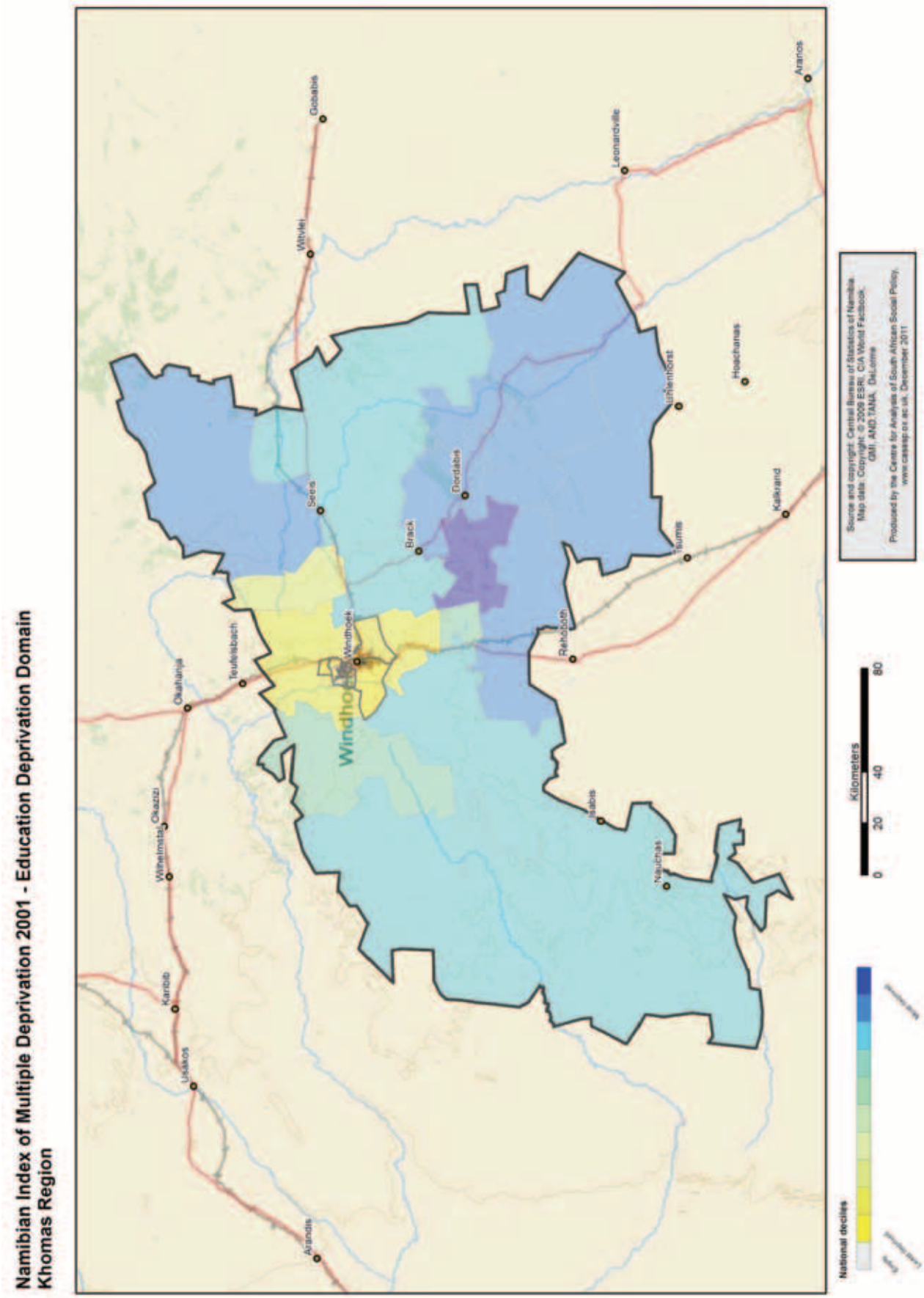

Namibian Index of Multiple Deprivation 2001 - Material Deprivation Domain
Windhoek, Khomas Region
B6
C28
C26
Kilometers
0 1.25 2.5 5
National deciles
Source and copyright: Central Bureau of Statistics of Namibia
Map data © OpenStreetMap contributors, CC-BY-SA
Produced by the Centre for Analysis of South African Social Policy
www.cassp.ox.ac.uk, December 2011


Namibian Index of Multiple Deprivation 2001 - Employment Deprivation Domain
Khomas Region
Gobabis
Witvlei
Leonardville
Aranos
Hoachanas
Junienhöst
Dordabis
Seeis
Brack
Tsumis
Kalkrand
Rehoboth
Windhoek
Okahanja
Teufelsbach
Okatozi
Wilhelmstal
Karibib
Usakos
Arandis
Mariental
Naukluft
National deciles
Kilometers
0
20
40
80
Source and copyright: Central Bureau of Statistics of Namibia.
Map data. Copyright: © 2009 ESRI, CIA World Factbook,
GAE, AND TANA. DeLorme.
Produced by the Centre for Analysis of South African Social Policy.
www.casasp.co.za.uk. December 2011


Namibian Index of Multiple Deprivation 2001 - Employment Deprivation Domain
Windhoek, Khomas Region
B6
C28
C26
Kilometers
0
1.25
2.5
5
National deciles
Source and copyright: Central Bureau of Statistics of Namibia
Map data © OpenStreetMap contributors, CC-BY-SA
Produced by the Centre for Analysis of South African Social Policy
www.casasp.ox.ac.uk, December 2011


Namibian Index of Multiple Deprivation 2001 - Health Deprivation Domain
Khomas Region
Windhoek
Okahanja
Teufelsbach
Okazizi
Wilhelmstal
Karibib
Usakos
Arandis
Seeis
Brack
Dordabis
Rehoboth
Isabis
Naukluft
Tsumis
Kalkrand
Hosuchanas
Leonardville
Witvlei
Gobabis
Aranos
Kilometers
0
20
40
80
National deciles


Namibian Index of Multiple Deprivation 2001 - Health Deprivation Domain
Windhoek, Khomas Region
B6
B6
C28
C28
C26
Kilometers
0
1.25
2.5
5
National deciles
Source and copyright: Central Bureau of Statistics of Namibia
Map data © OpenStreetMap contributors, CC-BY-SA
Produced by the Centre for Analysis of South African Social Policy
www.casasp.ox.ac.uk, December 2011


Namibian Index of Multiple Deprivation 2001 - Education Deprivation Domain
Khomas Region
Windhoek
Aranos
Okahandja
Karibib
Usakos
Okazizi
Wilhelmstal
Teufelsbach
Arandis
Gobabis
Witvlei
Seeis
Leonardville
Dordabis
Brack
Rehoboth
Tsumis
Hoachanas
Kalkrand
Aranos
Kilometers
0
20
40
80
National deciles
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Map data: Copyright: © 2009 ESRI, CIA World Factbook,
GMI, AND TANA, DeLorme
Produced by the Centre for Analysis of South African Social Policy,
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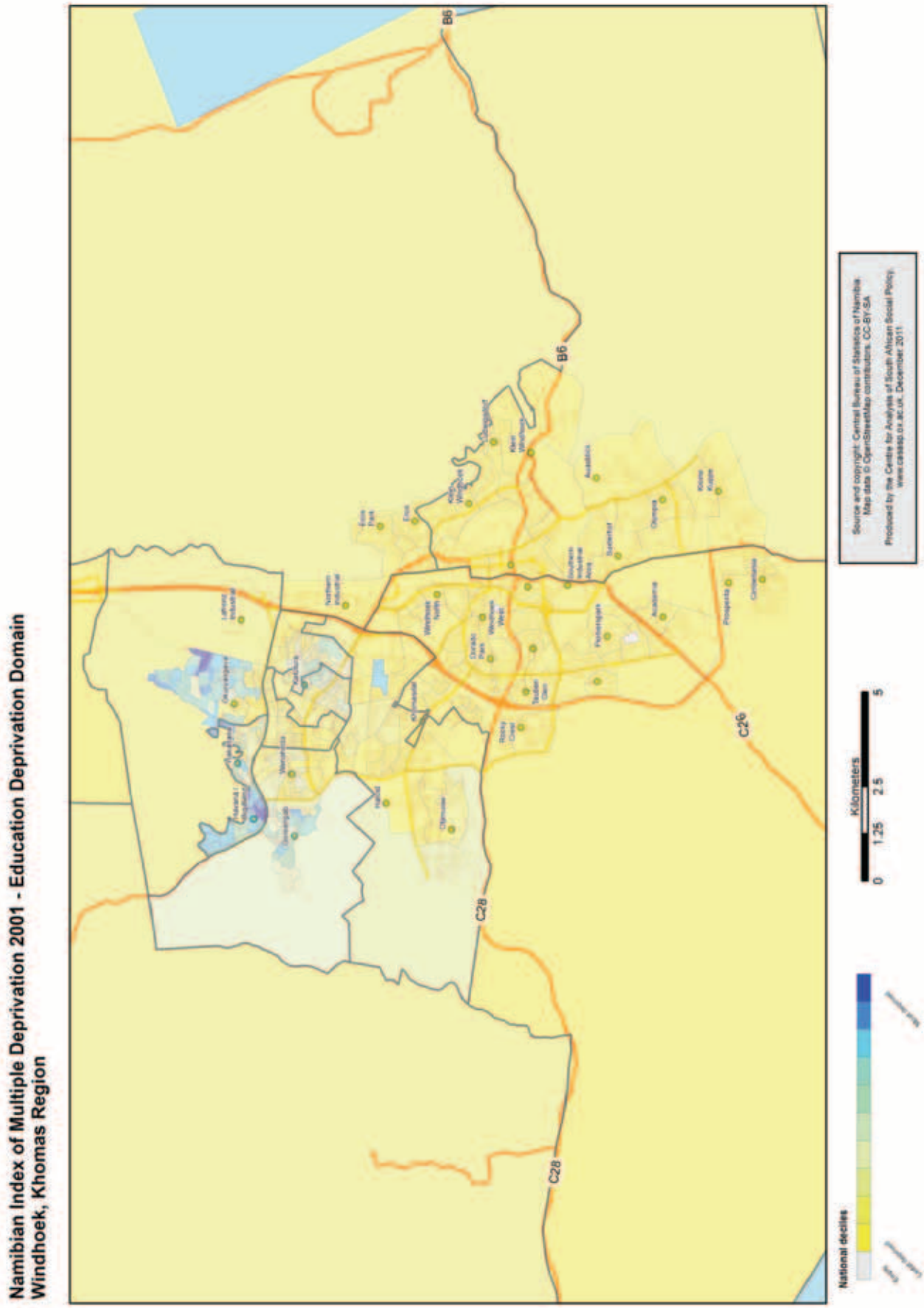
Namibian Index of Multiple Deprivation 2001 - Education Deprivation Domain
Windhoek, Khomas Region
B6
B6
C28
C28
C26
Kilometers
0
1.25
2.5
5
National deciles
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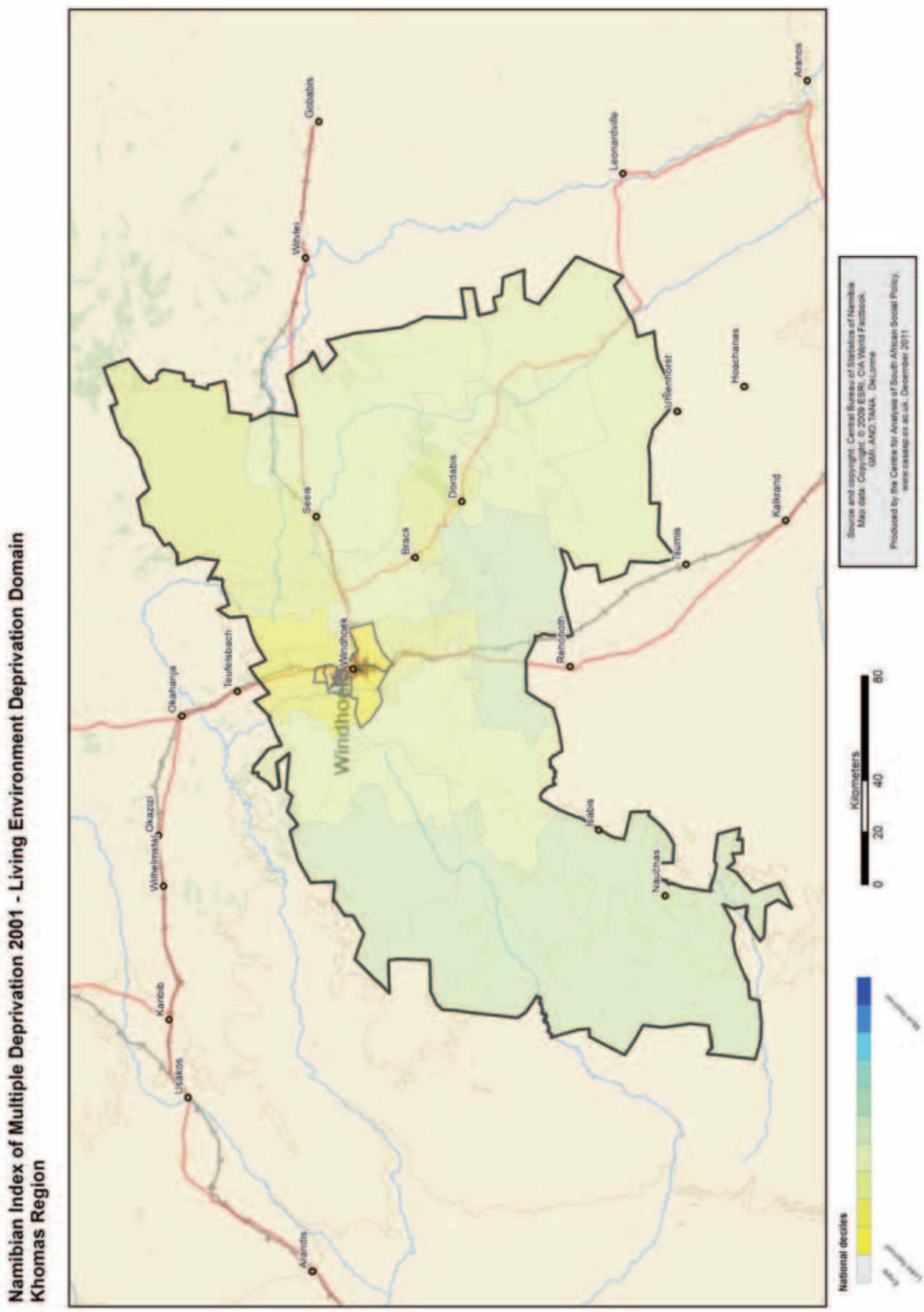
Namibian Index of Multiple Deprivation 2001 - Living Environment Deprivation Domain
Khomas Region
Gobabis
Witvlei
Leonardville
Aranos
Seeis
Dordabis
Brack
Hoachanas
Kalkrand
Windhoek
Rehoboth
Okahandja
Teufelsbach
Okazizi
Wilhelmstal
Karibib
Usakos
Arandis
Ilabia
Naukluft
Kilometers
0
20
40
60
National deciles
Source and copyright: Central Bureau of Statistics of Namibia
Map data Copyright: © 2009 ESRI; CIA World Factbook
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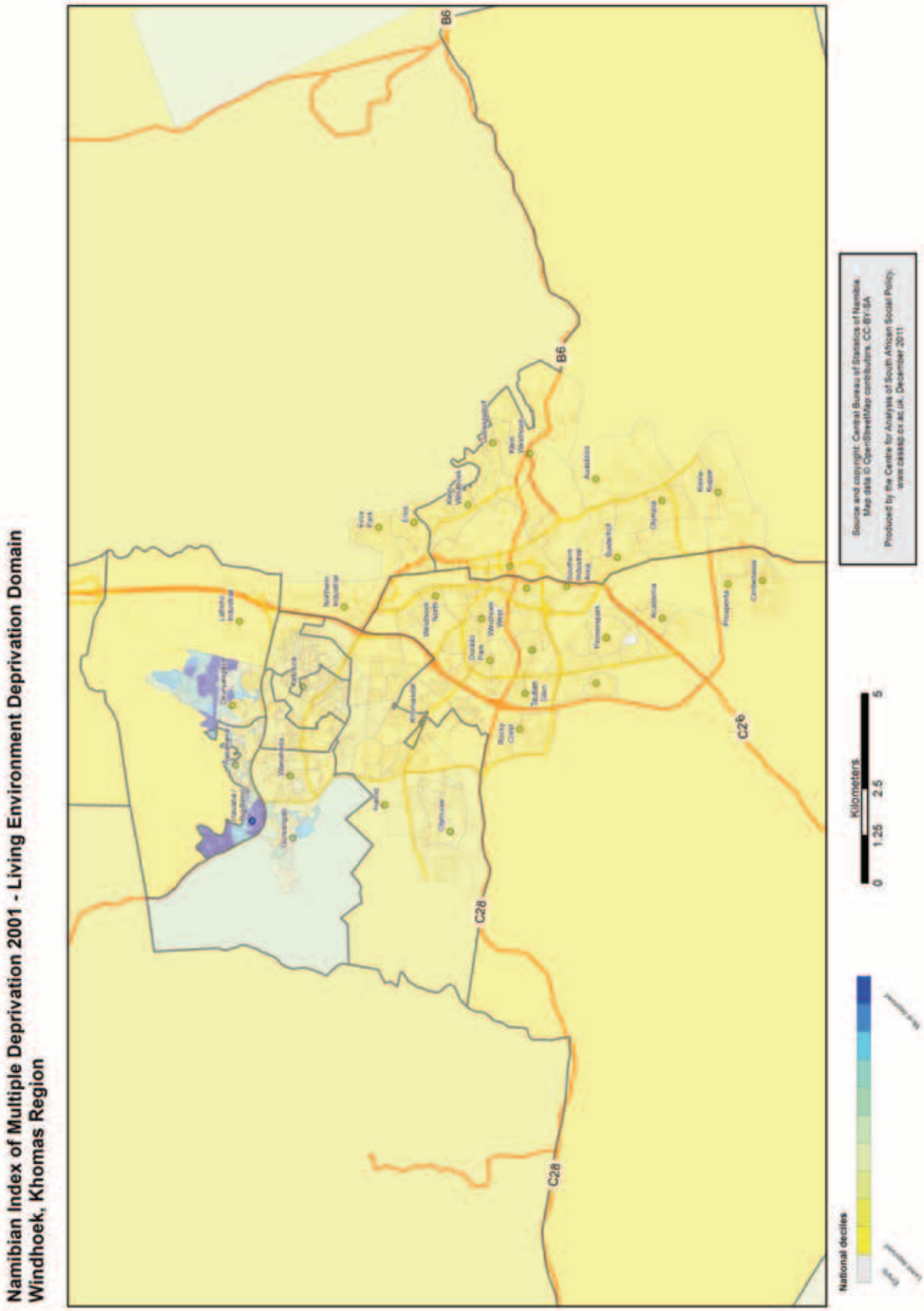
www.casasp.co.za, December 2011


Namibian Index of Multiple Deprivation 2001 - Living Environment Deprivation Domain
Windhoek, Khomas Region
B6
B6
C28
C28
C26
Kilometers
0 1.25 2.5 5
National deciles
Source and copyright: Central Bureau of Statistics of Namibia
Map data © OpenStreetMap contributors, CC-BY-SA
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SECTION 5: CONCLUSIONS AND SOME POLICY RECOMMENDATIONS

The analysis presented in this report has identified particular areas – both datazones and constituencies – where deprivation is high relative to other areas in Khomas region. This analysis can support pro-poor policy formulation processes and programmatic interventions in many ways. By providing reliable and objective information on, and profiling the distribution of, multiple deprivation and the distribution of the individual domains of deprivation across the region, the analysis presented in this report can provide planners; policy and decision makers at the regional level with the evidence base on which to plan and make decisions regarding resource allocation and the geographic areas (constituencies and datazones) and sectors in which to prioritise public investments, government support and service delivery. Specifically, the analysis can be useful in the following ways:

Temporal analysis of nature, scope and effects of poverty reduction programmes: By describing the geographical distribution and extent of individual dimensions of deprivation and overall multiple deprivation at constituency and datazone levels, this report provides a baseline map of deprivation against which progress in poverty reduction in these areas can be measured over time, that is between successive censuses (2001 and 2011 censusses). The NIMD is based on data relating to 2001 time- line and significant changes may have taken place since then. It will thus be necessary to conduct further analyses using the 2011 Census data and information in order to shed light on the extent to which changes have occurred in the region and possible reasons for any noted changes.
Interrogating the causes of inequality: The report could be used by the regional authorities to initiate the process of interrogating the causal factors of such wide inter- and intra-constituency (datazone level) variations with respect to specific domains

> "There are many ways on which the NIMD profiles presented in this report can support pro-poor policy formulation processes and pragrammatic interventions. By providing reliable and objective information on, and profiling the distribution of multiple deprivation and the individual domains of deprivation across the country"

and the overall combined and weighted index of deprivation.

Better planning and targeting of development resources: Regional Councils have two distinct sources of development revenue – transfers from central government and locally generated resources. The NIMD allows for better planning for and targeting of such resources on the basis of relative deprivation to the datazone level. Priorities can then be identified at the constituency and datazone levels that could be addressed through integrated development approaches. Importantly, funds could be targeted to and ring-fenced for those sectors/domains in which specific constituencies and datazones are particularly deprived or to the most deprived constituencies and datazones within a constituency. It is also conceivable that constituencies and datazones characterised by severe multiple deprivation could be targeted for integrated development projects and programmes. The most deprived areas vary by domain, and not all areas show a uniform degree of deprivation across the domains. This should be taken into account when selecting a measure of deprivation to use as it is important to choose the most appropriate measure for the particular policy purpose.

It should be noted however, that the NIMD, as presented in this report, provides a profile of *relative* deprivation in Khomas region and even the least deprived areas, such as Windhoek East constituency, contain pockets of deprivation. They are simply less deprived than other areas with higher levels of deprivation such as Moses //Garoeb and Tobias Hainyeko constituencies. As such, spatially targeted policy initiatives should be regarded as a complement to, rather than a substitution for, mainstream pro-poor policies and strategies that the Regional Council and National Government are already implementing in Khomas region.

ANNEX 1: INDICATORS INCLUDED IN THE NIMD 2001

Material Deprivation Domain

Numerator
- Number of people living in a household with no access to a television or a radio; or
- Number of people living in a household with no access to a telephone/cell phone

Denominator
Total population

Employment Deprivation Domain

Numerator
- Number of people aged 15-59 who are unemployed

Denominator
Total economically active population aged 15-59 inclusive

Health Deprivation Domain
Numerator
- Years of potential life lost

Education Deprivation Domain
Numerator
- Number of 15-59 year olds (inclusive) with no schooling completed at secondary level or above; or
- Number of 15-59 year olds (inclusive) who are illiterate

Denominator
Population aged 15-59 (inclusive)

Living Environment Deprivation Domain
Numerator

- Number of people living in a household without the use of electricity, paraffin or solar power for lighting; or
- Number of people living in a household without access to a flush toilet or pit latrine (ventilated or long drop); or
- Number of people living in a household without piped water/borehole/borehole with covered tank (but not open tank)/protected well inside their dwelling or yard or within 200 metres; or
- Number of people living in a household that is a shack; or
- Number of people living in a household with three or more people per room

Denominator
Total population

ANNEX 2: THE SHRINKAGE TECHNIQUE[4]

This table presents the scores and ranks for every datazone in Khomas for the five domains and the overall NIMD. For all domains except health the score is calculated as a rate. So for example, 65.1% of the population in datazone 547 in Tobias Hainyeko constituency experienced material deprivation in 2001. Health is expressed as the years of potential life lost (a measure of premature mortality) in that datazone, and a higher score indicates greater health deprivation. The within Khomas ranks are shown for each datazone (where 1=most deprived).

Datazone	Constituency	Material deprivation score	Material deprivation rank	Employment deprivation score	Employment deprivation rank	Health deprivation score	Health deprivation rank	Education deprivation score	Education deprivation rank	Living environment deprivation score	Living environment deprivation rank	NIMD score	NIMD rank
547	Tobias Hainyeko	65.1	44	36.6	78	398.5	70	68.3	59	96.8	36	142.3	56
548	Tobias Hainyeko	63.8	48	42.5	35	181.2	163	70.3	47	99.7	19	167.0	36
549	Tobias Hainyeko	64.8	46	45.9	19	196.6	154	68.3	60	92.9	50	133.4	63
550	Tobias Hainyeko	49.8	86	44.2	24	561.7	37	73.8	24	87.3	57	163.3	39
551	Tobias Hainyeko	71.2	35	43.0	30	434.4	61	65.7	78	99.9	5	211.5	15
552	Tobias Hainyeko	80.8	15	40.8	47	199.3	152	71.4	40	96.9	35	156.7	49
553	Tobias Hainyeko	43.3	101	38.2	66	463.7	56	51.2	149	49.2	125	86.9	109
554	Tobias Hainyeko	58.1	66	32.7	109	349.9	96	68.1	63	92.0	52	119.4	78
555	Tobias Hainyeko	74.6	25	46.7	16	243.2	133	71.4	39	99.9	4	227.5	13
556	Tobias Hainyeko	90.8	2	21.6	173	402.8	67	77.8	9	99.9	10	239.9	8
557	Tobias Hainyeko	81.4	13	32.5	113	493.2	47	71.6	36	99.9	3	230.1	12
558	Tobias Hainyeko	57.4	67	31.9	120	262.6	122	80.8	4	98.2	31	181.6	23
559	Tobias Hainyeko	87.9	4	17.9	193	408.2	66	70.0	49	99.9	9	204.0	18
560	Tobias Hainyeko	67.8	38	42.9	33	517.4	43	78.6	6	99.9	8	260.1	3
561	Tobias Hainyeko	84.3	7	37.9	68	1280.9	2	67.4	69	99.9	16	240.0	7
562	Tobias Hainyeko	75.5	23	32.8	105	28.9	233	72.5	29	99.9	6	199.9	20
563	Tobias Hainyeko	86.7	5	24.3	161	460.1	58	70.5	45	98.0	32	162.0	40
564	Tobias Hainyeko	63.8	49	37.2	74	301.5	109	71.6	34	99.0	25	163.6	37
565	Tobias Hainyeko	65.7	41	41.2	42	353.1	93	71.1	43	99.4	22	175.5	29
566	Tobias Hainyeko	66.3	40	55.2	2	609.0	33	76.0	12	94.2	48	203.1	19
567	Tobias Hainyeko	18.6	182	30.2	134	437.1	60	56.0	127	49.8	120	69.3	132
568	Tobias Hainyeko	72.6	29	40.0	52	661.4	28	71.5	38	97.4	34	183.0	21
569	Tobias Hainyeko	85.9	6	43.6	28	799.5	21	62.9	92	97.8	33	180.9	26
570	Tobias Hainyeko	36.3	123	35.6	89	77.5	213	71.4	41	61.6	89	98.0	94
571	Tobias Hainyeko	51.0	85	32.6	111	171.9	168	70.3	46	98.2	30	131.4	64
572	Tobias Hainyeko	83.6	9	41.1	44	480.0	50	65.3	80	99.3	23	173.8	30
573	Tobias Hainyeko	82.0	12	45.0	21	164.4	174	57.1	123	95.4	42	121.6	75
574	Tobias Hainyeko	71.7	33	39.7	54	479.1	51	71.6	35	99.9	1	234.7	9
575	Tobias Hainyeko	46.8	96	37.5	71	396.2	71	69.0	53	82.6	63	121.0	76
576	Tobias Hainyeko	16.8	189	24.8	160	0.0	241	57.7	121	3.2	250	33.7	196
577	Tobias Hainyeko	31.6	135	28.7	143	233.4	138	47.3	164	37.5	160	53.4	164

578	Tobias Hainyeko	20.0	175	30.5	132	402.7	68	52.4	144	30.2	184	62.7	142
579	Katutura C.	68.0	37	44.0	26	730.1	23	68.8	55	45.9	136	151.0	51
580	Katutura C.	53.8	78	36.4	79	420.4	64	68.2	62	48.9	126	112.1	83
581	Katutura C.	53.3	79	43.7	27	372.7	87	66.0	76	54.0	105	112.9	82
582	Katutura C.	27.7	147	34.0	95	273.9	116	65.8	77	72.0	78	87.7	106
583	Katutura C.	54.6	76	34.1	94	117.8	195	60.0	109	46.3	134	69.9	130
584	Katutura C.	55.3	74	40.5	49	475.9	52	62.0	96	49.7	121	105.1	88
585	Katutura C.	47.8	90	20.1	182	658.3	29	60.5	107	49.6	122	87.3	107
586	Katutura C.	61.1	57	35.4	91	206.8	151	61.0	105	50.2	118	82.1	116
587	Katutura C.	63.2	52	29.5	138	396.1	72	59.4	114	50.8	115	85.3	113
588	Katutura C.	39.9	115	38.0	67	489.1	49	59.1	115	44.1	141	89.9	102
589	Katutura C.	59.5	62	44.1	25	325.0	99	58.2	118	50.5	116	96.6	95
590	Katutura C.	45.0	99	46.0	18	450.3	59	61.8	100	40.7	150	104.6	89
591	Katutura C.	60.1	59	48.1	9	383.0	82	65.0	82	71.6	79	123.3	74
592	Katutura C.	67.3	39	62.7	1	240.5	135	60.4	108	58.3	93	124.9	70
593	Katutura C.	41.6	109	14.5	207	156.4	178	54.0	137	40.2	152	41.4	183
594	Katutura C.	29.7	141	29.0	141	228.7	140	55.6	128	32.8	174	55.0	159
595	Katutura C.	51.3	82	39.5	55	100.7	203	55.1	131	50.2	117	71.9	125
596	Katutura C.	47.6	91	32.6	110	389.6	78	58.1	119	54.3	104	80.8	118
597	Katutura C.	42.2	104	38.8	62	952.4	12	71.5	37	51.0	114	158.2	47
598	Katutura C.	3.1	241	38.9	59	183.1	162	57.0	125	46.9	132	60.4	148
599	Katutura C.	63.4	50	49.3	6	711.8	24	63.2	90	56.9	97	140.3	59
600	Katutura E.	16.7	190	40.1	51	286.4	112	43.4	181	42.9	145	66.6	135
601	Katutura E.	18.7	180	39.3	56	128.0	189	53.0	140	44.1	139	59.9	151
602	Katutura E.	33.9	127	40.5	50	523.6	41	48.2	160	36.5	164	87.1	108
603	Katutura E.	46.9	94	42.5	36	387.4	79	61.9	97	48.0	129	98.1	93
604	Katutura E.	13.4	201	32.7	108	506.3	46	61.8	99	43.1	143	80.1	120
605	Katutura E.	55.6	71	41.9	41	380.8	83	67.3	70	60.5	91	117.4	79
606	Katutura E.	60.8	58	36.8	77	1088.6	5	68.3	61	63.8	85	161.2	42
607	Katutura E.	8.0	216	40.9	46	123.9	192	59.5	113	44.1	140	62.7	143
608	Katutura E.	51.0	84	38.9	60	166.0	173	65.2	81	56.9	98	90.4	100
609	Katutura E.	27.8	146	38.3	64	352.2	94	62.5	95	52.4	112	85.4	112

610	Katutura E.	52.2	80	40.0	53	124.1	191	68.6	57	53.2	108	101.4	90
611	Katutura E.	32.6	133	28.6	144	308.7	107	49.3	156	40.7	151	59.0	153
612	Katutura E.	14.3	198	33.7	97	75.9	214	41.9	183	30.2	183	43.6	177
613	Katutura E.	27.7	148	33.4	101	358.1	91	46.3	169	17.1	209	62.4	144
614	Katutura E.	32.7	132	32.7	107	177.0	164	49.0	157	16.1	210	52.8	166
615	Katutura E.	39.6	116	22.5	170	72.2	218	51.2	148	52.5	111	44.7	174
616	Katutura E.	31.2	137	38.4	63	460.2	57	62.7	93	54.4	102	94.1	97
617	Katutura E.	51.0	83	45.2	20	1070.9	6	63.0	91	62.5	88	151.7	50
618	Khomasdal N.	29.2	142	26.9	152	65.3	220	43.8	179	25.9	188	39.7	186
619	Khomasdal N.	42.3	103	26.7	153	1063.8	7	72.5	28	29.2	187	150.0	52
620	Khomasdal N.	34.9	126	19.9	185	215.2	147	43.4	180	30.7	181	42.8	181
621	Khomasdal N.	18.3	184	21.2	175	74.3	216	41.6	185	36.4	165	32.2	198
622	Khomasdal N.	30.4	139	24.0	162	137.9	185	45.9	172	35.0	171	42.4	182
623	Khomasdal N.	23.4	167	16.6	200	126.2	190	50.1	154	21.7	197	32.7	197
624	Khomasdal N.	15.9	194	28.0	148	0.0	241	46.2	170	24.8	190	34.7	195
625	Khomasdal N.	24.5	164	15.2	205	270.6	118	41.7	184	31.2	179	39.3	189
626	Khomasdal N.	13.6	200	20.0	183	168.4	172	30.6	202	22.2	196	31.2	201
627	Khomasdal N.	27.5	149	23.9	165	94.7	204	40.8	186	35.2	170	38.6	190
628	Khomasdal N.	19.4	178	22.7	167	213.5	148	32.9	199	12.6	219	37.4	191
629	Khomasdal N.	23.7	166	21.6	172	432.4	62	44.2	178	44.4	138	57.7	156
630	Khomasdal N.	25.3	161	18.3	190	467.7	54	28.2	208	20.6	202	52.2	167
631	Khomasdal N.	32.9	131	27.0	151	75.8	215	44.4	175	41.6	148	43.5	179
632	Khomasdal N.	34.9	125	28.2	146	0.0	241	48.1	161	43.1	144	43.6	176
633	Khomasdal N.	47.1	93	25.4	159	132.5	186	46.7	167	61.4	90	54.9	160
634	Khomasdal N.	25.5	159	28.2	147	362.5	90	44.2	177	54.3	103	61.4	145
635	Khomasdal N.	8.8	215	19.9	184	297.1	110	27.4	210	15.6	213	36.9	192
636	Khomasdal N.	16.0	193	17.7	194	20.8	234	34.1	196	5.5	243	22.4	224
637	Khomasdal N.	24.6	163	20.2	181	175.4	166	47.3	165	35.4	166	39.3	188
638	Khomasdal N.	28.4	144	37.3	72	253.8	127	50.1	153	46.7	133	66.3	137
639	Khomasdal N.	25.8	158	32.3	117	158.6	177	54.5	134	54.0	106	56.4	157
640	Khomasdal N.	33.8	128	26.1	157	15.1	236	54.3	135	39.6	153	43.6	178

641	Khomasdal N.	16.1	192	31.3	127	538.2	39	46.8	166	56.1	99	73.8	122
642	Khomasdal N.	47.2	92	22.5	169	195.3	157	59.8	110	49.2	124	58.9	154
643	Khomasdal N.	41.2	110	33.5	99	142.5	183	55.4	129	39.5	154	60.1	150
644	Khomasdal N.	27.2	151	21.2	176	521.3	42	52.9	141	49.5	123	66.7	134
645	Soweto	37.4	120	31.3	125	624.4	32	54.6	132	41.6	149	85.5	111
646	Soweto	4.3	230	32.0	119	863.7	17	45.9	171	37.8	159	90.0	101
647	Soweto	33.2	130	30.7	131	311.5	106	50.3	152	24.6	192	59.1	152
648	Soweto	49.5	87	26.4	155	701.7	25	51.8	147	39.1	155	89.3	103
649	Soweto	41.8	107	32.4	115	812.8	20	51.1	150	38.9	156	99.8	91
650	Soweto	42.0	105	36.1	82	250.2	128	53.6	138	46.1	135	69.7	131
651	Soweto	22.6	170	26.3	156	211.6	149	52.3	145	35.2	168	47.9	172
652	Soweto	41.9	106	37.1	75	102.4	202	49.3	155	43.7	142	61.2	146
653	Soweto	20.2	174	30.7	130	271.1	117	36.8	191	32.0	176	52.1	168
654	Soweto	17.5	186	28.4	145	317.3	101	35.3	192	35.4	167	51.9	169
655	Soweto	26.0	156	38.8	61	259.9	124	54.1	136	52.7	110	71.0	127
656	Soweto	37.3	121	40.5	48	1053.0	8	48.8	158	48.1	128	124.0	73
657	Soweto	28.6	143	33.2	103	249.2	129	45.6	173	37.2	162	58.4	155
658	Soweto	20.4	173	33.8	96	216.3	146	52.2	146	25.2	189	54.5	162
659	Soweto	35.8	124	36.4	80	321.4	100	53.5	139	38.6	157	70.8	128
660	Soweto	40.4	113	30.9	129	401.0	69	55.3	130	38.4	158	71.7	126
661	Samora Machel	79.9	18	42.4	37	313.9	104	67.6	66	92.3	51	141.3	58
662	Samora Machel	65.5	43	42.3	38	219.3	144	63.9	87	75.6	71	105.9	87
663	Samora Machel	55.4	73	47.6	13	393.4	74	68.0	64	95.8	40	147.3	53
664	Samora Machel	80.9	14	37.8	69	174.4	167	76.6	10	98.4	28	180.9	25
665	Samora Machel	62.8	54	48.0	11	139.1	184	69.0	52	73.1	76	124.4	71
666	Samora Machel	78.1	21	46.5	17	313.4	105	69.1	51	98.6	27	170.6	33
667	Samora Machel	74.3	26	47.2	15	154.1	180	71.3	42	99.7	18	181.8	22
668	Samora Machel	54.1	77	35.6	87	635.4	31	61.7	101	70.0	81	111.6	84
669	Samora Machel	78.8	19	52.0	4	94.3	205	66.2	75	96.2	39	143.1	55
670	Samora Machel	26.0	157	35.7	85	0.0	241	47.9	162	49.9	119	51.0	170
671	Samora Machel	10.8	210	32.5	114	608.0	34	61.9	98	58.0	96	88.8	104

672	Samora Machel	40.7	112	32.3	116	374.4	86	46.6	168	55.9	100	72.4	124
673	Samora Machel	37.8	119	35.6	86	184.7	160	57.1	122	47.4	130	65.9	138
674	Samora Machel	55.5	72	29.4	139	89.3	208	58.4	117	55.7	101	63.2	141
675	Samora Machel	36.9	122	28.8	142	159.0	176	63.9	88	63.7	86	69.0	133
676	Samora Machel	19.9	176	23.9	164	393.5	73	37.9	189	36.7	163	53.9	163
677	Samora Machel	15.2	195	31.8	122	73.8	217	32.9	197	29.9	185	40.0	185
678	Samora Machel	27.2	153	36.4	81	582.7	35	61.1	104	58.3	95	95.7	96
679	Samora Machel	16.5	191	33.5	100	169.2	170	52.9	142	42.1	146	53.1	165
680	Samora Machel	25.0	162	37.7	70	183.6	161	57.8	120	53.3	107	66.4	136
681	Samora Machel	23.9	165	36.9	76	514.4	44	50.4	151	45.7	137	80.5	119
682	Samora Machel	26.3	154	32.6	112	147.9	181	61.3	103	58.9	92	64.1	140
683	Samora Machel	17.4	187	35.5	90	339.3	97	59.7	112	41.7	147	70.0	129
684	Samora Machel	30.5	138	29.9	136	223.6	143	60.7	106	53.1	109	64.3	139
685	Samora Machel	17.1	188	30.0	135	331.8	98	47.8	163	37.2	161	56.0	158
686	Samora Machel	63.1	53	39.0	57	314.2	103	68.4	58	94.8	44	133.8	62
687	Samora Machel	80.4	16	48.1	10	466.2	55	71.8	32	95.6	41	181.5	24
688	Samora Machel	58.3	65	23.9	163	226.2	141	67.6	67	89.9	56	99.6	92
689	Samora Machel	56.3	70	33.6	98	538.2	38	64.8	85	94.4	45	124.2	72
690	Samora Machel	65.0	45	31.8	121	927.8	14	64.6	86	82.5	64	141.4	57
691	Samora Machel	57.3	68	31.4	123	114.7	198	65.0	83	72.5	77	83.1	115
692	Windhoek E.	1.9	250	4.3	249	54.3	225	10.3	250	9.1	229	6.8	248
693	Windhoek E.	3.5	237	4.8	247	44.4	228	10.6	249	5.0	245	6.9	247
694	Windhoek E.	4.9	228	3.7	251	46.5	227	11.8	246	3.9	248	6.7	249
695	Windhoek E.	2.7	242	4.6	248	116.5	197	11.6	247	2.5	251	9.8	245
696	Windhoek E.	3.5	238	3.9	250	236.7	136	16.6	233	5.8	240	17.0	232
697	Windhoek E.	6.5	222	9.8	229	293.6	111	21.9	223	12.0	221	26.8	212
698	Windhoek E.	7.9	218	11.0	225	39.1	230	21.5	224	21.6	198	15.6	235
699	Windhoek E.	4.0	233	15.2	204	6.3	240	14.1	241	4.5	247	14.3	236
700	Windhoek E.	1.9	249	6.3	244	0.0	241	10.1	251	8.7	232	6.2	250
701	Windhoek E.	4.4	229	6.4	243	278.6	115	14.0	242	8.9	230	21.9	226
702	Windhoek E.	2.1	247	5.0	246	0.0	241	12.0	245	5.0	246	5.0	251

703	Windhoek E.	12.0	206	17.9	192	171.3	169	15.9	235	24.3	193	28.5	208
704	Windhoek E.	8.8	214	9.0	233	13.9	237	14.9	239	8.3	233	11.4	242
705	Windhoek E.	10.9	209	12.6	217	117.2	196	27.0	211	35.2	169	23.4	221
706	Windhoek E.	18.7	181	15.7	202	113.9	199	24.5	213	15.9	211	25.2	216
707	Windhoek E.	39.0	118	6.9	242	0.0	241	48.5	159	30.9	180	24.5	217
708	Windhoek E.	3.8	235	8.4	235	35.8	231	15.6	236	14.8	215	11.1	243
709	Windhoek E.	3.1	240	3.5	252	10.8	239	9.8	252	2.2	252	4.9	252
710	Windhoek R.	1.2	252	6.1	245	70.7	219	11.4	248	5.7	242	8.2	246
711	Windhoek R.	2.2	245	9.5	231	88.8	209	12.8	244	6.2	238	12.4	241
712	Windhoek R.	59.8	61	35.0	92	695.4	26	81.2	3	99.3	24	226.6	14
713	Windhoek R.	45.8	98	26.0	158	90.4	207	76.2	11	81.5	65	116.8	80
714	Windhoek R.	61.9	55	48.4	8	281.0	114	78.4	7	73.1	75	170.6	32
715	Windhoek R.	46.8	95	32.1	118	267.4	120	61.7	102	73.9	74	81.7	117
716	Windhoek R.	29.8	140	13.7	212	79.0	212	74.9	15	78.4	68	93.5	98
717	Windhoek R.	71.6	34	48.0	12	385.3	81	82.9	1	94.2	47	210.1	16
718	Windhoek R.	61.5	56	29.8	137	369.8	89	78.0	8	90.2	54	157.4	48
719	Windhoek R.	84.0	8	42.9	32	635.4	30	70.8	44	77.5	69	170.6	34
720	Windhoek R.	80.1	17	49.0	7	473.0	53	72.0	31	85.8	58	173.0	31
721	Windhoek R.	71.1	36	20.4	179	29.2	232	56.3	126	66.4	84	60.9	147
722	Windhoek R.	59.8	60	19.4	188	224.4	142	72.4	30	84.7	60	110.3	85
723	Windhoek R.	48.5	88	13.4	214	316.4	102	54.6	133	51.3	113	54.8	161
724	Windhoek R.	41.7	108	20.7	178	13.3	238	71.7	33	85.6	59	91.8	99
725	Windhoek R.	44.7	100	32.7	106	258.8	126	74.3	19	80.4	66	125.9	67
726	Windhoek R.	32.3	134	21.3	174	0.0	241	69.7	50	79.9	67	77.8	121
727	Windhoek R.	59.0	63	26.5	154	16.7	235	74.5	18	91.0	53	120.4	77
728	Windhoek R.	72.4	30	15.2	203	418.1	65	74.1	21	90.1	55	136.4	61
729	Windhoek R.	64.8	47	22.6	168	260.4	123	74.6	17	83.2	61	127.1	65
730	Windhoek R.	20.4	172	12.5	218	682.5	27	24.3	214	29.3	186	60.3	149
731	Windhoek R.	6.4	223	7.3	240	191.2	159	19.4	227	12.6	218	18.4	230
732	Windhoek W.	33.7	129	14.8	206	94.0	206	44.8	174	20.7	199	30.9	202
733	Windhoek W.	10.4	211	16.6	198	211.1	150	28.9	207	10.1	224	28.5	209
734	Windhoek W.	19.0	179	19.6	187	118.6	194	34.3	195	30.5	182	31.5	200
735	Windhoek W.	18.2	185	17.2	196	370.6	88	39.7	188	17.9	206	43.3	180

736	Windhoek W.	1.7	251	17.1	197	57.4	223	23.6	216	3.4	249	17.5	231
737	Windhoek W.	7.1	220	13.6	213	387.1	80	23.1	217	14.0	216	36.2	194
738	Windhoek W.	10.2	212	18.3	189	143.4	182	26.5	212	17.2	208	27.1	211
739	Windhoek W.	12.7	204	12.2	219	163.6	175	27.6	209	20.7	200	24.0	219
740	Windhoek W.	25.4	160	18.1	191	57.0	224	40.6	187	32.6	175	30.6	204
741	Windhoek W.	18.5	183	9.4	232	392.8	75	17.7	231	22.6	195	36.9	193
743	Windhoek W.	4.1	231	8.8	234	216.6	145	17.7	230	9.7	225	20.1	227
744	Windhoek W.	12.8	203	22.9	166	112.1	200	34.6	193	23.0	194	31.8	199
745	Windhoek W.	11.3	208	20.4	180	380.7	84	22.2	221	7.8	234	41.2	184
746	Windhoek W.	7.2	219	14.0	209	198.1	153	30.9	201	17.8	207	26.4	213
747	Windhoek W.	27.4	150	21.6	171	241.4	134	37.2	190	31.9	177	44.0	175
748	Windhoek W.	12.4	205	11.5	222	270.4	119	31.9	200	15.8	212	29.7	205
749	Windhoek W.	12.0	207	13.1	215	266.3	121	29.2	206	20.6	201	30.9	203
750	Windhoek W.	23.3	168	27.1	150	284.5	113	30.6	203	24.6	191	48.6	171
751	Windhoek W.	6.2	224	10.6	226	156.1	179	20.5	226	8.8	231	18.4	229
752	Windhoek W.	2.2	246	13.7	211	87.2	210	13.1	243	9.2	228	16.0	234
753	Windhoek W.	22.9	169	13.7	210	169.1	171	22.0	222	18.3	205	27.8	210
754	Windhoek W.	2.0	248	8.1	236	41.7	229	29.7	205	9.4	226	10.9	244
755	Windhoek W.	2.6	244	16.6	199	247.3	131	23.7	215	13.7	217	29.0	206
756	Windhoek W.	3.1	239	12.0	220	248.9	130	22.4	220	15.1	214	25.5	214
757	Windhoek W.	5.8	226	7.1	241	131.8	187	14.8	240	6.9	236	14.0	237
758	Windhoek W.	22.1	171	19.8	186	0.0	241	42.7	182	31.2	178	28.5	207
759	Windhoek W.	4.0	234	7.3	239	176.4	165	17.6	232	9.2	227	16.3	233
760	Windhoek W.	2.7	243	11.1	223	83.1	211	15.1	238	5.7	241	13.5	238
761	Windhoek W.	7.0	221	9.8	230	229.1	139	18.7	229	12.4	220	22.7	222
762	Windhoek W.	6.0	225	8.1	237	259.3	125	22.5	218	5.3	244	22.6	223
763	Windhoek W.	14.4	197	12.7	216	47.9	226	34.5	194	33.3	173	22.0	225
765	Windhoek W.	3.7	236	14.2	208	122.8	193	15.5	237	6.0	239	18.6	228
766	Windhoek W.	5.6	227	11.0	224	246.1	132	21.2	225	6.8	237	24.0	220
767	Windhoek W.	4.1	232	10.2	228	64.4	221	18.8	228	7.8	235	12.7	240
768	Windhoek W.	13.9	199	10.4	227	0.0	241	16.1	234	10.7	223	13.2	239

769	Windhoek W.	13.3	202	21.1	177	0.0	241	30.1	204	19.3	203	24.2	218
770	Windhoek W.	7.9	217	8.1	238	510.1	45	22.5	219	10.7	222	39.4	187
771	Windhoek W.	9.2	213	17.7	195	59.4	222	32.9	198	34.9	172	25.2	215
772	Moses ||Garoëb	26.0	155	41.1	43	523.7	40	66.5	72	93.5	49	126.7	66
773	Moses ||Garoëb	14.6	196	41.0	45	380.2	85	58.7	116	76.4	70	86.0	110
774	Moses ||Garoëb	75.2	24	27.9	149	356.5	92	70.2	48	99.5	21	161.9	41
775	Moses ||Garoëb	19.4	177	30.4	133	826.8	19	66.4	73	99.7	20	160.7	44
776	Moses ||Garoëb	28.4	145	44.8	23	1437.1	1	69.0	54	66.7	83	179.6	27
777	Moses ||Garoëb	52.1	81	38.3	65	350.5	95	52.6	143	48.1	127	83.4	114
778	Moses ||Garoëb	57.0	69	33.3	102	235.8	137	57.1	124	47.4	131	73.8	123
779	Moses ||Garoëb	45.9	97	35.6	88	422.4	63	67.6	68	63.6	87	108.6	86
780	Moses ||Garoëb	89.8	3	31.4	124	763.6	22	62.6	94	96.3	38	159.1	45
781	Moses ||Garoëb	82.4	11	49.7	5	196.4	155	67.7	65	98.2	29	163.5	38
782	Moses ||Garoëb	74.1	27	34.5	93	111.6	201	73.5	26	67.4	82	125.9	68
783	Moses ||Garoëb	72.8	28	36.0	83	129.4	188	65.7	79	95.4	43	115.7	81
784	Moses ||Garoëb	47.9	89	41.9	40	1010.9	10	63.2	89	74.6	72	145.8	54
785	Moses ||Garoëb	63.2	51	43.0	31	899.4	15	67.0	71	74.4	73	158.9	46
786	Moses ||Garoëb	42.5	102	33.1	104	852.2	18	74.0	22	96.7	37	179.0	28
787	Moses ||Garoëb	77.9	22	44.9	22	192.2	158	66.4	74	83.0	62	125.6	69
788	Moses ||Garoëb	65.5	42	35.9	84	490.0	48	82.8	2	99.9	2	268.6	2
789	Moses ||Garoëb	71.8	32	31.2	128	571.2	36	75.8	13	99.9	12	230.9	11
790	Moses ||Garoëb	82.6	10	42.6	34	934.3	13	80.7	5	99.9	11	300.2	1
791	Moses ||Garoëb	31.3	136	31.3	126	392.3	76	64.9	84	70.2	80	88.3	105
792	Moses ||Garoëb	78.8	20	47.5	14	303.6	108	73.7	25	99.9	13	231.0	10
793	Moses ||Garoëb	39.2	117	39.0	58	1037.8	9	74.3	20	99.9	15	247.8	5
794	Moses ||Garoëb	55.1	75	43.5	29	1111.9	3	68.7	56	98.9	26	206.8	17
795	Moses ||Garoëb	41.0	111	52.9	3	196.2	156	75.3	14	94.4	46	161.1	43
796	Moses ||Garoëb	72.2	31	29.3	140	982.6	11	72.8	27	99.9	7	252.4	4
797	Moses ||Garoëb	58.8	64	37.2	73	876.9	16	73.9	23	99.9	14	242.2	6
798	Moses ||Garoëb	27.2	152	15.9	201	390.0	77	44.2	176	19.2	204	47.1	173
799	Moses ||Garoëb	93.1	1	11.8	221	0.0	241	74.6	16	99.8	17	169.9	35
800	Moses ||Garoëb	40.3	114	42.1	39	1099.2	4	59.8	111	58.3	94	138.0	60

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