Datazone level Namibian Index of Multiple Deprivation 2001

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Oshana 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of the NIMD required very detailed and reliable data and information, it was agreed that the 2001 census data, though 'outdated', be used as the source of information for preparing the NIMD.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 Oshana 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 Oshana 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 Oshana 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 Oshana 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 Oshana 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 Oshana 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.

TABLE OF CONTENTS

SECTION 1: INTRODUCTION

This report presents the datazone level Namibian Index of Multiple Deprivation 2001 (NIMD 2001) for Oshana 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 Oshana 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 Oshana 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 Oshana 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 Oshana 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 167 datazones were created for the Oshana 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 167 datazones and ten constituencies in Oshana 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 or 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

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.

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

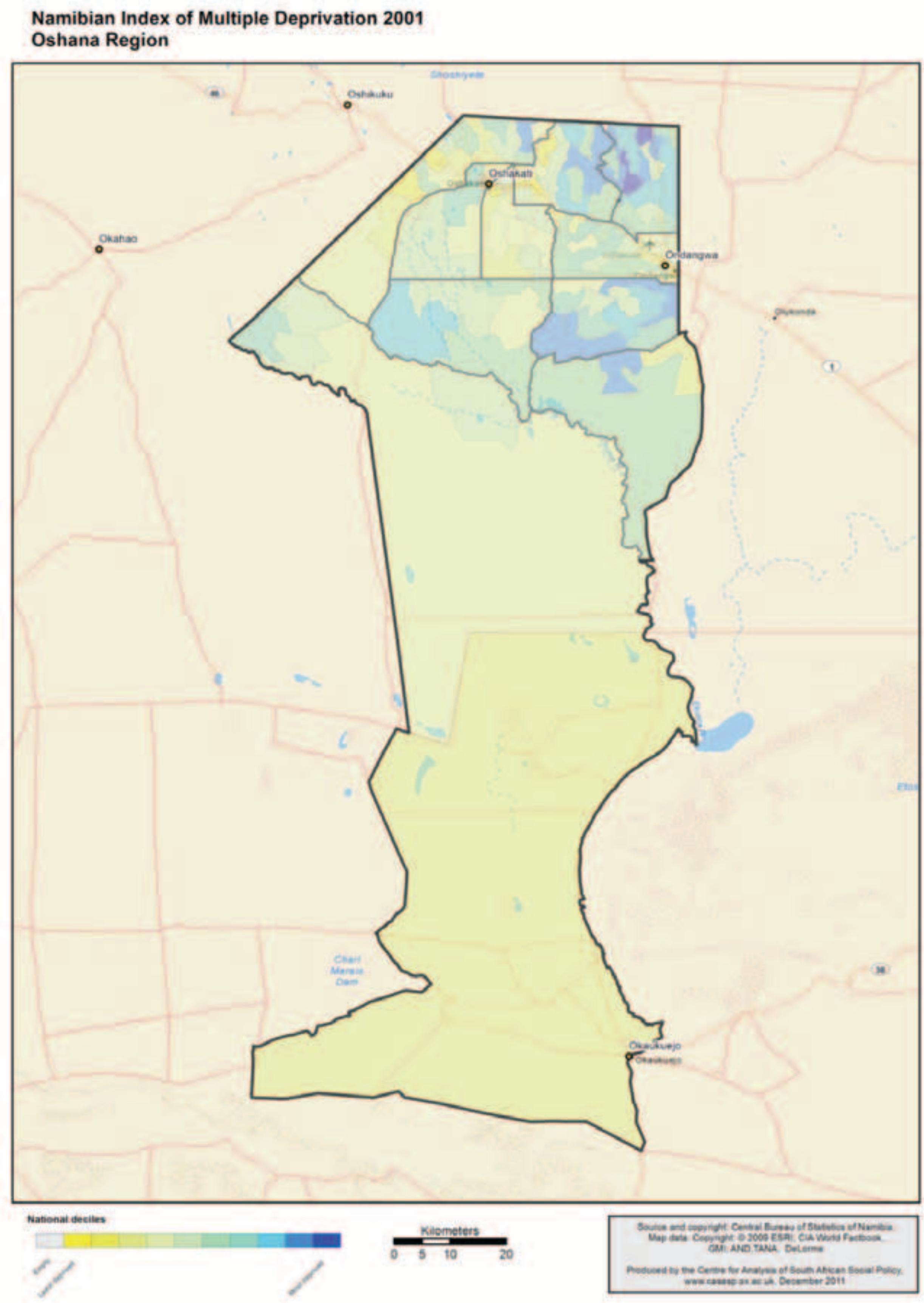
Domains are conceived as independent dimensions of multiple deprivation, each with their own additive impact on multiple deprivation. The strength of this impact, though, may vary between domains depending on their relative importance. As a starting point, equal weights for the domains were recommended 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: OSHANA REGION

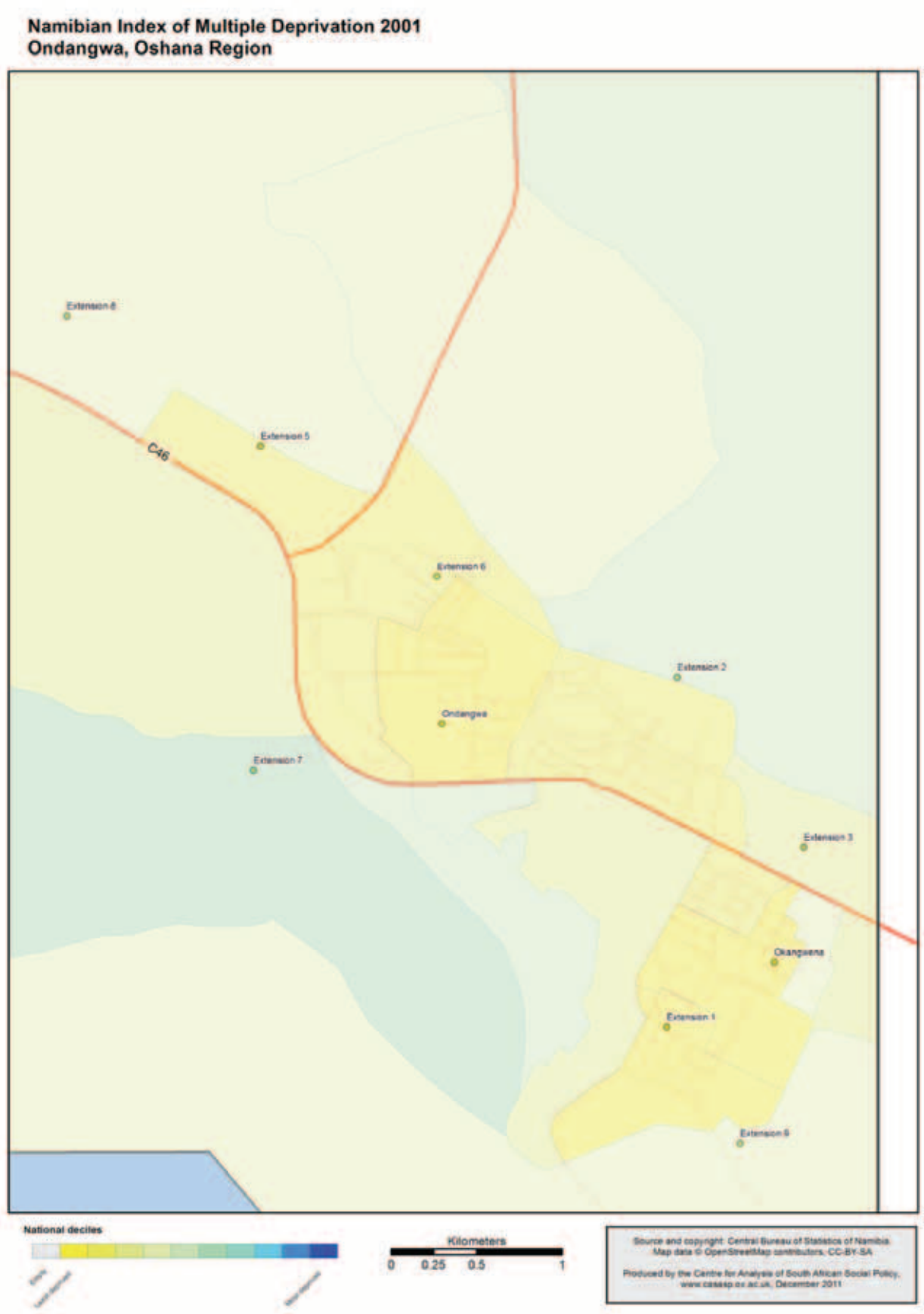
4.1 Multiple Deprivation

In this section a profile of multiple deprivation in Oshana region, at both constituency and datazone levels, is presented. Using the data from the NIMD it is possible to compare the 167 datazones and ten constituencies within Oshana. Map 1 shows the datazones in Oshana 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. Maps 2 and 3 are zoom-ins of Map 1, showing the datazones within the Ondangwa and Oshakati areas (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 Oshana Region.

Map 1


Namibian Index of Multiple Deprivation 2001
Oshana Region
Oshikuku
Oshakati
Okahao
Ondangwa
Okaukuejo
National deciles
Kilometers
0 5 10 20

Map 2


Namibian Index of Multiple Deprivation 2001
Ondangwa, Oshana Region
Extension 8
C46
Extension 5
Extension 6
Extension 2
Ondangwa
Extension 7
Extension 3
Okangwena
Extension 1
Extension 9
National deciles
Kilometers
0 0.25 0.5 1
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.caseap.ox.ac.uk, December 2011

Map 3

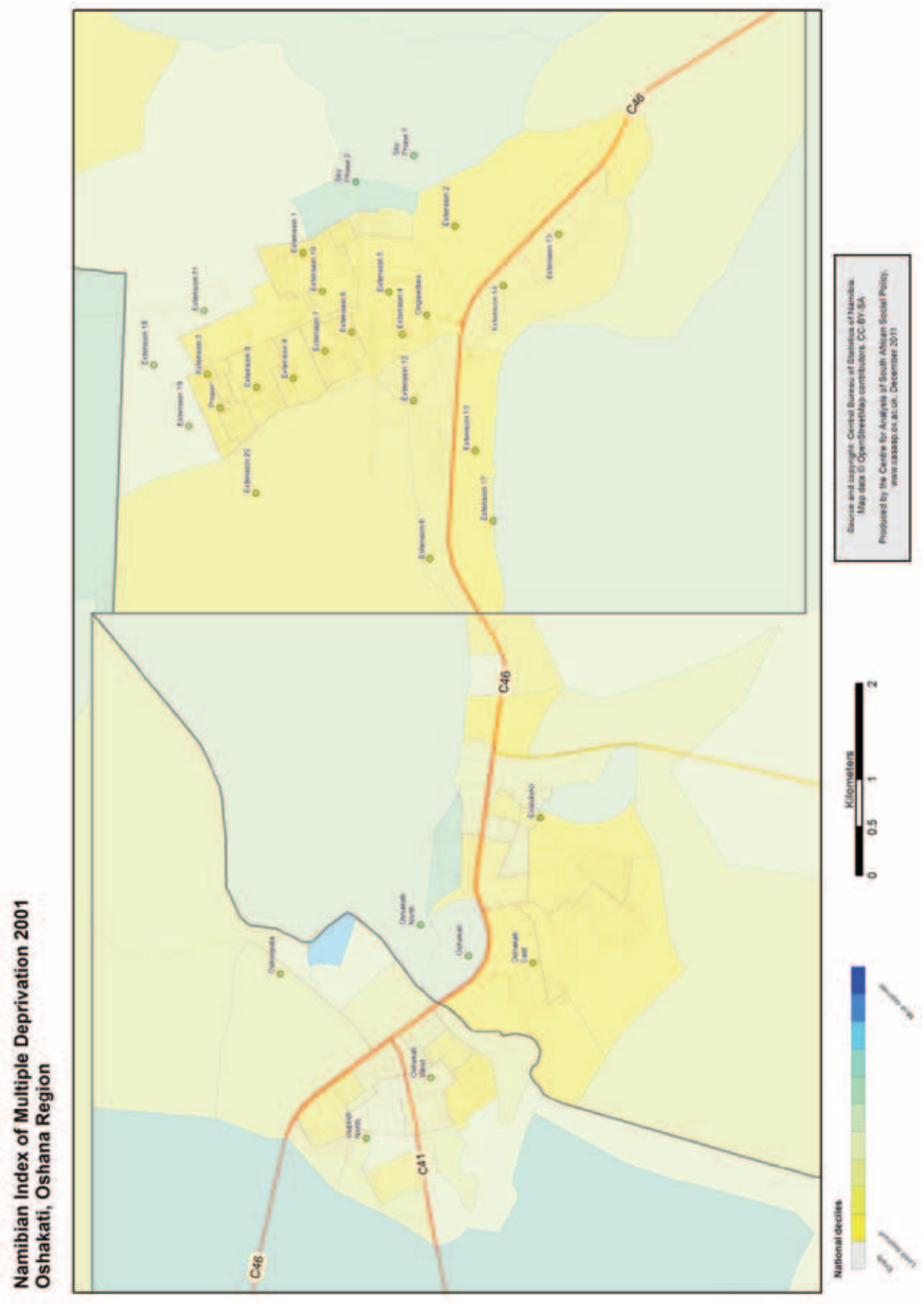

Namibian Index of Multiple Deprivation 2001
Oshakati, Oshana Region
C46
C41
Kilometers
0
0.5
1
2
National deciles

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 Oshana rank (where 1=most deprived and 167=least deprived) for the 20 most deprived datazones in Oshana are shown. Appendix 2 provides this information for all of the datazones in Oshana.

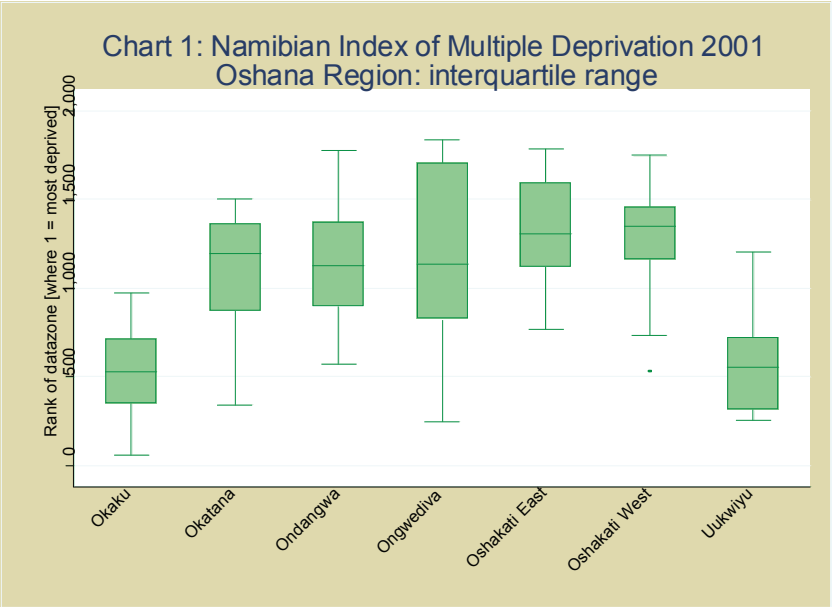
The most deprived datazone in Oshana is in Okaku constituency, and is therefore given a rank of 1 among the datazones in Oshana. If ranked alongside all datazones in Namibia, it ranks at 64. Therefore this datazone and one other in Okaku constituency are in the most deprived 10 percent of datazones in Namibia in terms of multiple deprivation (the cut-off for the 10 percent most deprived is a national rank of 187). The least deprived datazone in Oshana is located in Ongwediva and is ranked at 1,836 in Namibia as a whole.

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

Datazone	Constituency	NIMD score	NIMD rank – national	NIMD rank – within Oshana
1418	Okaku	300.0	64	1
1426	Okaku	292.1	82	2
1420	Okaku	260.5	201	3
1521	Ongwediva	253.1	248	4
1567	Uukwiyu	251.5	256	5
1569	Uukwiyu	250.9	260	6
1438	Okaku	250.8	261	7
1432	Okaku	250.6	264	8
1504	Ongwediva	248.6	278	9
1573	Uukwiyu	247.0	288	10
1578	Uukwiyu	242.7	315	11
1457	Okatyali	242.6	316	12
1446	Okatana	238.4	344	13
1436	Okaku	237.6	352	14
1422	Okaku	224.1	461	15
1577	Uukwiyu	224.0	464	16
1495	Ongwediva	223.7	467	17
1576	Uukwiyu	223.0	477	18
1496	Ongwediva	222.5	480	19
1423	Okaku	220.3	491	20

The ten constituencies in Oshana 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). Okatyali, Ompundja and Uuvudhiya constituencies are omitted from the following charts because they comprise three, five and six datazones respectively, which is too few to calculate a meaningful interquartile range.

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 Oshakati West, appear at either end of the line). Ongwediva has the largest range of deprivation, with some of the least deprived datazones in Namibia as well as some of the most deprived.

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 Uukwiyu and Okaku 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). Most of the constituencies have a relatively narrow range for the middle 50 percent. However, Ongwediva has a comparatively large range. If this 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 datazones in the constituency are concentrated in the least deprived part of the national distribution. Most of the constituencies have datazones that are concentrated towards the middle of the national distribution. However, the datazones in Uukwiyu and Okaku are concentrated at the most deprived end of the national distribution.

Further analysis shows that half of the constituencies have datazones in the most deprived 10 percent of datazones *within Oshana* on the overall NIMD. These five constituencies

and the number of datazones that are in the most deprived 10 percent of datazones within Oshana are as follows: Okaku (7 of 21), Okatana (1 of 16), Okatyali (1 of 3), Ongwediva (2 of 31) and Uukwiyu (5 of 13).

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 Oshana, 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, 74.8 percent of the population in Okaku constituency experienced material deprivation in 2001. The within Oshana ranks are shown as well as the domain scores, for each constituency in Oshana (where 1=most deprived). In terms of material deprivation, the most deprived constituency in Oshana is Uuvudhiya (with a very high 91 percent of the population experiencing material deprivation). Only three constituencies, Ongwediva, Oshakati East and Oshakati West have less than 50 percent of people experiencing material deprivation.

In relation to employment deprivation, the most deprived constituency is Uukwiya (with 76 percent of the relevant population being employment deprived), followed by Okaku (67 percent) and Ompundja (65 percent). Okatyali is the most deprived constituency in terms of education deprivation (with 70 percent of the relevant population being education deprived), followed closely by Uukwiya (66 percent) and Uuvudhiya and Okaku (both 65 percent). In five constituencies, Okaku, Okatana, Uuvudhiya, Uukwiyu and Ompundja over 90 percent of the total population experience living environment deprivation.

None of the constituencies show a consistent pattern of deprivation across the domains (i.e. no constituency has the highest or lowest rates for more than one domain).

The domain scores and ranks for each of the datazones in Oshana 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 Oshana Region

Constituency	Material deprivation rate (%)	Material deprivation rank (within Oshana)	Employment deprivation rate (%)	Employment deprivation rank (within Oshana)	Education deprivation rate (%)	Education deprivation rank (within Oshana)	Living environment deprivation rate (%)	Living environment deprivation rank (within Oshana)
Okaku	74.8	5	66.6	2	64.7	3	95.9	1
Okatana	77.0	3	31.0	8	58.1	8	94.2	2
Okatyali	87.4	2	17.4	10	70.3	1	86.6	6
Ompundja	76.6	4	64.8	3	61.7	5	90.3	5
Ondangwa	55.5	7	40.9	4	59.1	7	78.2	7
Ongwediva	43.9	9	35.5	6	48.1	10	69.3	10
Oshakati East	45.1	8	32.4	7	57.5	9	73.9	9
Oshakati West	43.1	10	39.9	5	60.4	6	76.5	8
Uukwiyu	62.0	6	75.8	1	65.8	2	90.8	4
Uuvudhiya	90.7	1	20.9	9	64.6	4	91.1	3

Table 3 shows the percentage of each constituency's datazones that are in the most deprived 10 percent of datazones *nationally* for each domain.

All of the constituencies in Oshana, apart from Okatyali and Uuvudhiya, feature amongst the most deprived 10 percent of datazones in Namibia on at least one of the domains. None of the constituencies have datazones in the most deprived 10 percent of datazones nationally in terms of material, education or living environment deprivation. Over half of the datazones in Okaku, Ompundja and Uukwiya fall within the most deprived 10 percent of datazones nationally in terms of employment deprivation, and over one third of datazones in these constituencies are in the most deprived 10 percent in terms of health deprivation.

Table 3: Percentage of datazones in most deprived 10 percent of datazones in Namibia

Constituency	Number of datazones	Material deprivation	Employment deprivation	Health deprivation	Education deprivation	Living env. deprivation
Okaku	21	0.0	52.4	33.3	0.0	0.0
Okatana	16	0.0	6.3	12.5	0.0	0.0
Okatyali	3	0.0	0.0	0.0	0.0	0.0
Ompundja	5	0.0	60.0	0.0	0.0	0.0
Ondangwa	27	0.0	11.1	7.4	0.0	0.0
Ongwediva	31	0.0	19.4	12.9	0.0	0.0
Oshakati East	23	0.0	0.0	4.3	0.0	0.0
Oshakati West	22	0.0	0.0	13.6	0.0	0.0
Uukwiyu	13	0.0	61.5	38.5	0.0	0.0
Uuvudhiya	6	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 Oshana* for each domain. Ongwediva is the only constituency that has at least one datazone in the most deprived 10 percent of datazones for each domain. Okaku has datazones in the most deprived 10 percent for every domain with the exception of education deprivation, while Uukwiyu does so for every domain except living environment deprivation. Oshakati East has datazones that feature in the most deprived 10 percent on just one of the domains (education).

Table 4: Percentage of datazones in most deprived 10 percent of datazones in the Oshana Region

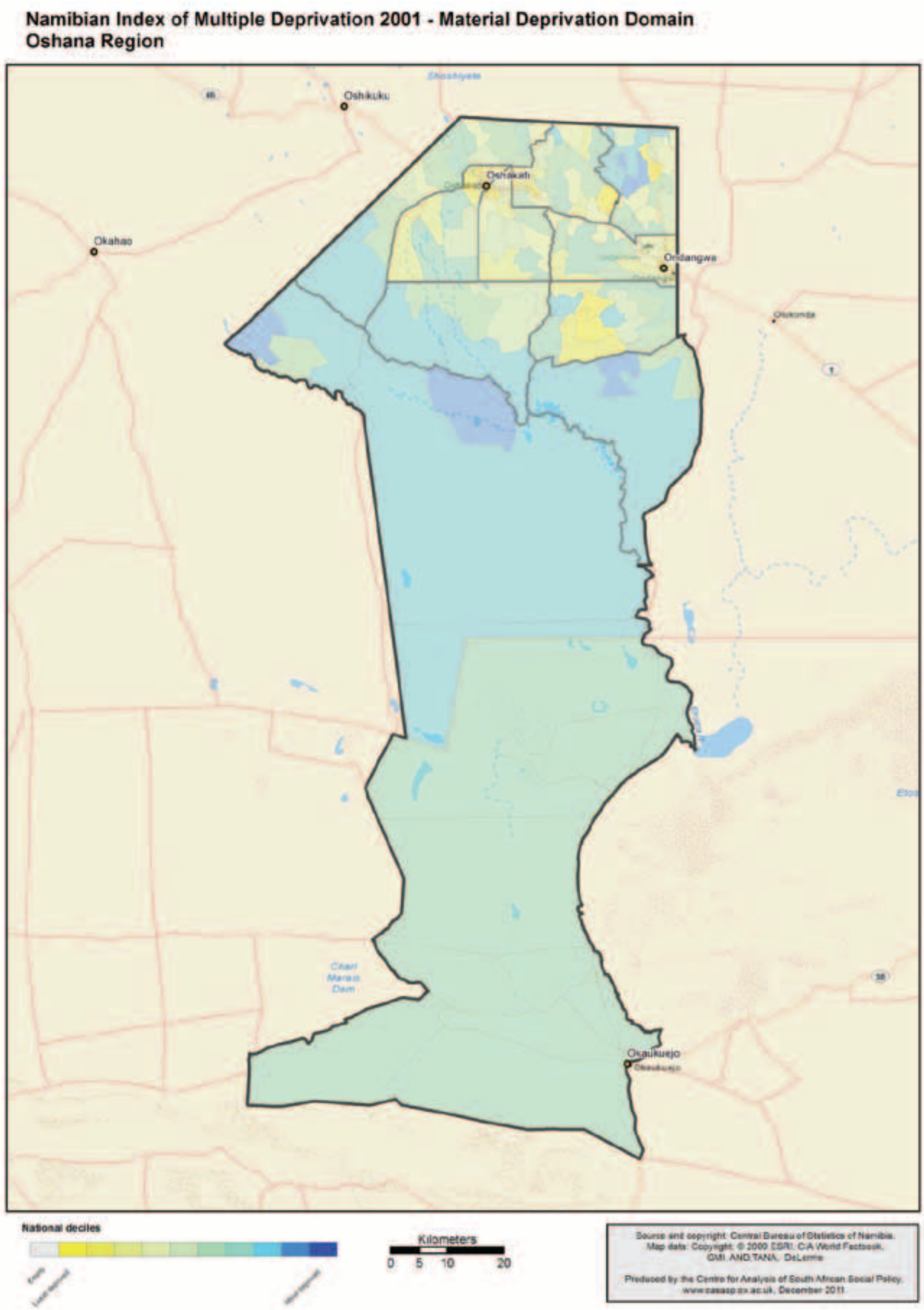
Constituency	Number of datazones	Material deprivation	Employment deprivation	Health deprivation	Education deprivation	Living Env. deprivation
Okaku	21	33.3	28.6	19.0	0.0	33.3
Okatana	16	6.3	0.0	12.5	0.0	12.5
Okatyali	3	33.3	0.0	0.0	66.7	0.0
Ompundja	5	20.0	0.0	0.0	0.0	40.0
Ondangwa	27	0.0	3.7	7.4	11.1	0.0
Ongwediva	31	3.2	9.7	9.7	3.2	3.2
Oshakati East	23	0.0	0.0	0.0	21.7	0.0
Oshakati West	22	0.0	0.0	9.1	9.1	0.0
Uukwiyu	13	7.7	46.2	23.1	23.1	0.0
Uuvudhiya	6	66.7	0.0	0.0	0.0	66.7

Note: Caution should be applied when interpreting the percentages for constituencies with a small number of datazones.

The following maps present each of the five domains at datazone level for Oshana and for the Oshakati area. As with Maps 1, 2 and 3, 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 Oshana Region.

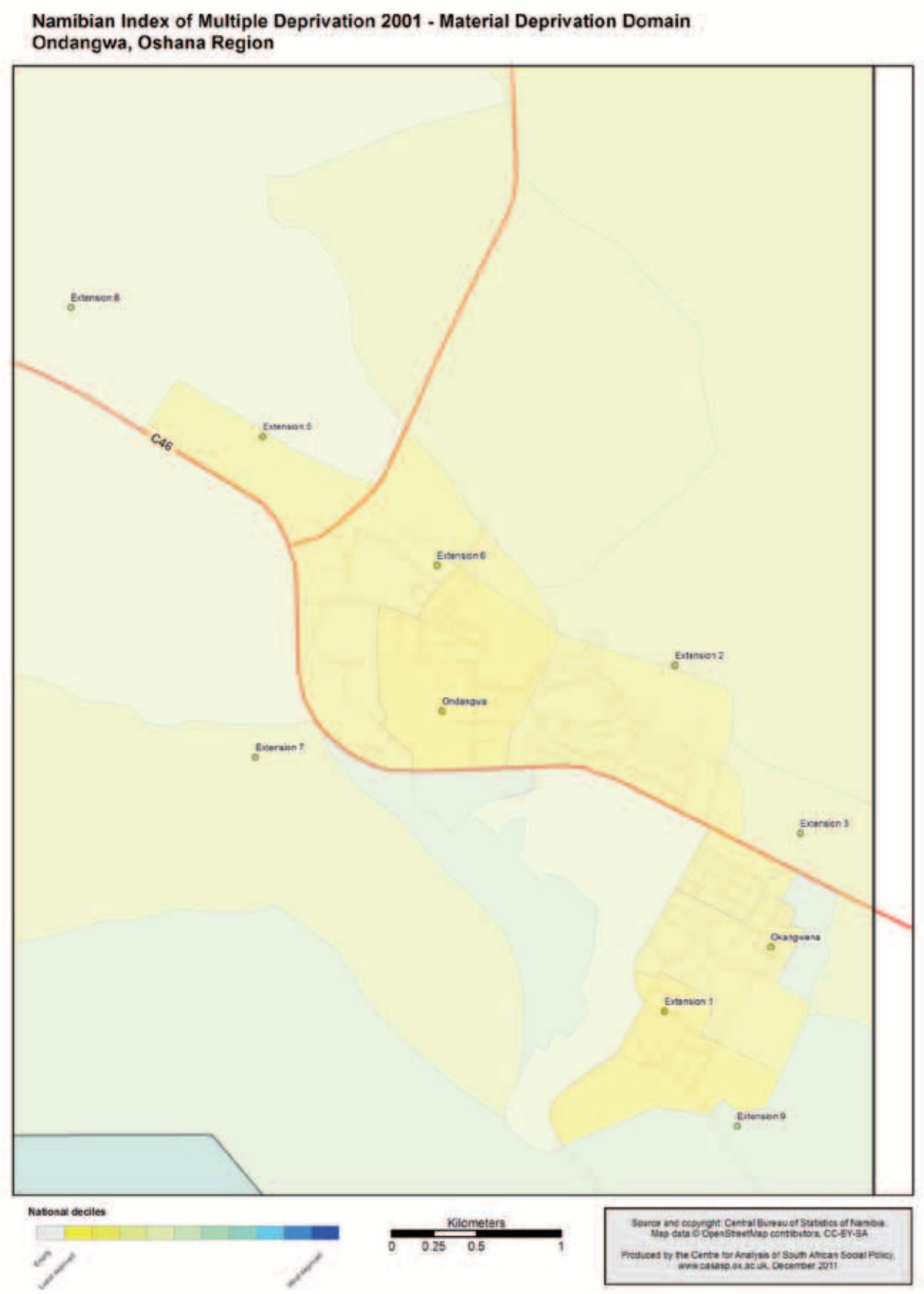
> “Some datazones do not have a score for the overall NIMD or separate domains and are therefore shaded in grey. Using Google Earth Historical Imagery it was possible to investigate these datazones and confirm that they did not have anyone living in them in 2001”

Map 4

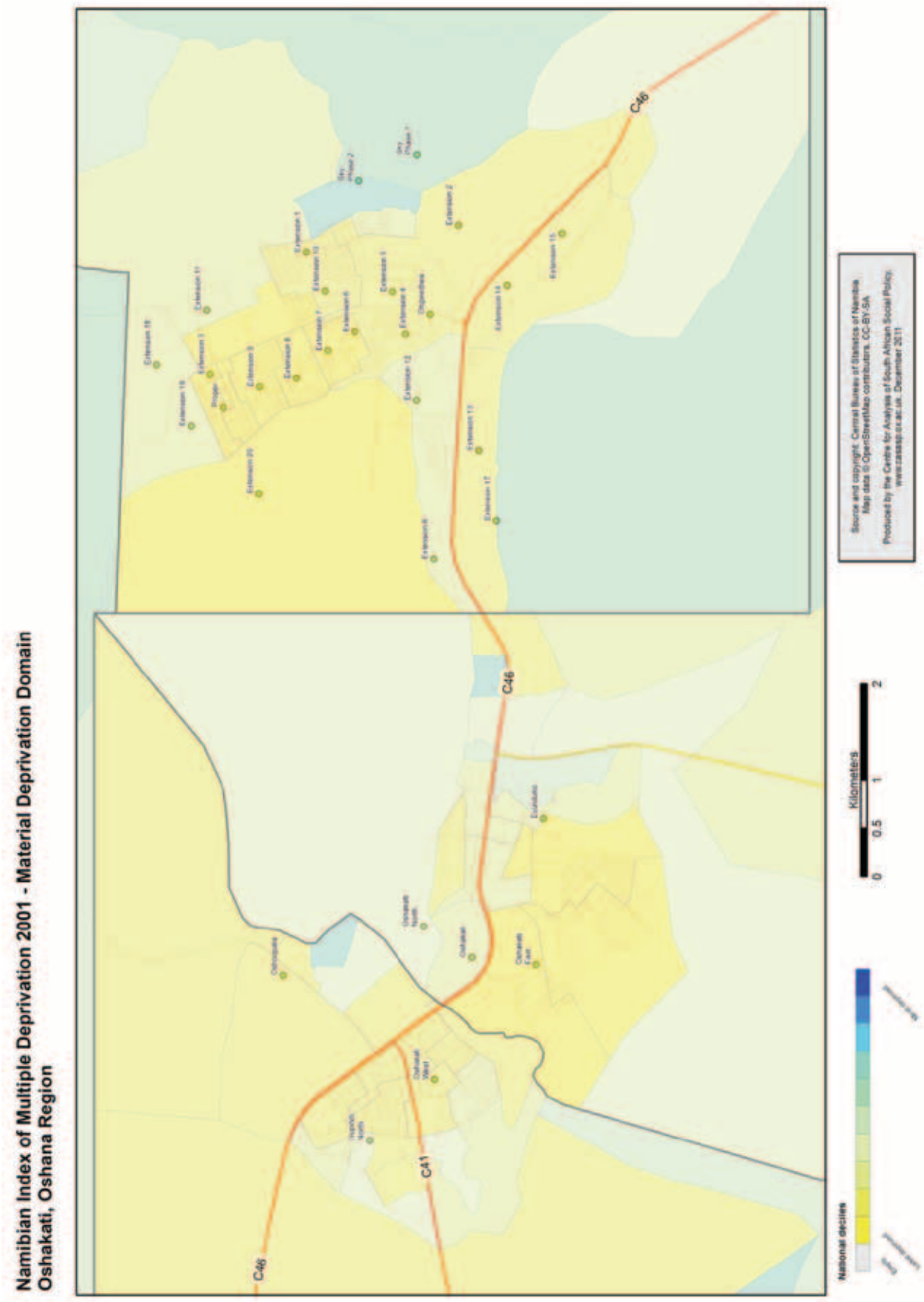


Namibian Index of Multiple Deprivation 2001 - Material Deprivation Domain
Oshana Region
Oshikuku
Oshakati
Okahao
Ondangwa
Okaukuejo
National deciles
Kilometers
0 5 10 20
Source and copyright: Central Bureau of Statistics of Namibia.
Map data: Copyright © 2000 ESRI, CIA World Factbook, GMI, AND TANA, DeLorme
Produced by the Centre for Analysis of South African Social Policy, www.casasp.ox.ac.uk, December 2011

Map 5


Namibian Index of Multiple Deprivation 2001 - Material Deprivation Domain
Ondangwa, Oshana Region
Extension 8
C46
Extension 5
Extension 6
Extension 2
Ondangwa
Extension 7
Extension 3
Okangwena
Extension 1
Extension 9
National deciles
Kilometers
0 0.25 0.5 1
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

Map 6


Namibian Index of Multiple Deprivation 2001 - Material Deprivation Domain
Oshakati, Oshana Region
C46
C46
C46
C41
Kilometers
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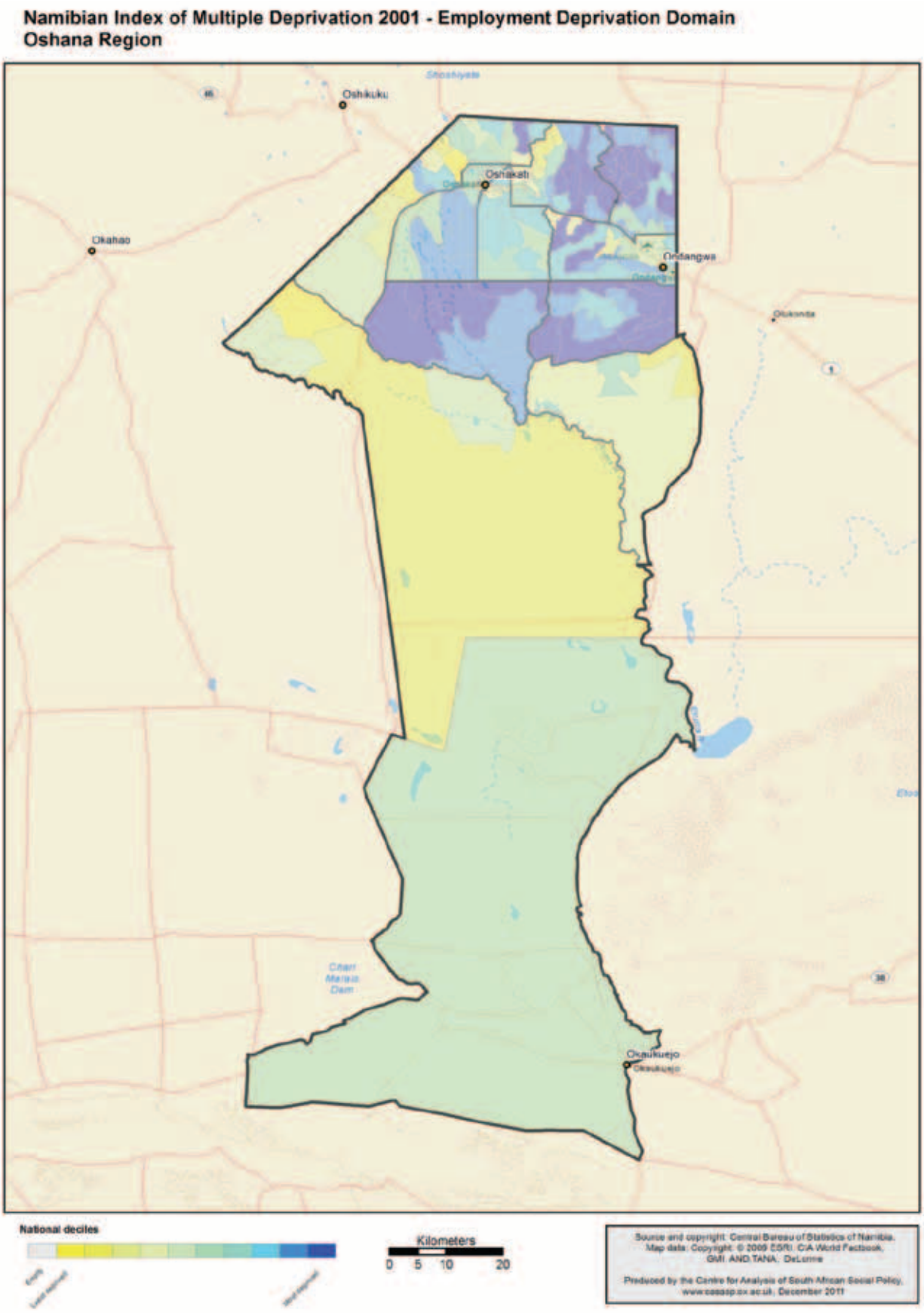
0.5
1
2
National deciles

Map 7


Namibian Index of Multiple Deprivation 2001 - Employment Deprivation Domain
Oshana Region
Oshikuku
Oshakati
Okahao
Ondangwa
Okakarara
Okaukuejo
National deciles
Kilometers
0 5 10 20
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Map data: Copyright: © 2009 ESRI, CIA World Factbook, GMI, AND,TANA, DeLorme
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Map 8


Namibian Index of Multiple Deprivation 2001 - Employment Deprivation Domain
Ondangwa, Oshana Region
Extension 8
C46
Extension 5
Extension 6
Extension 2
Ondangwa
Extension 7
Extension 3
Okangwena
Extension 1
Extension 9
National deciles
Kilometers
0 0.25 0.5 1
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Map data © OpenStreetMap contributors, CC-BY-SA
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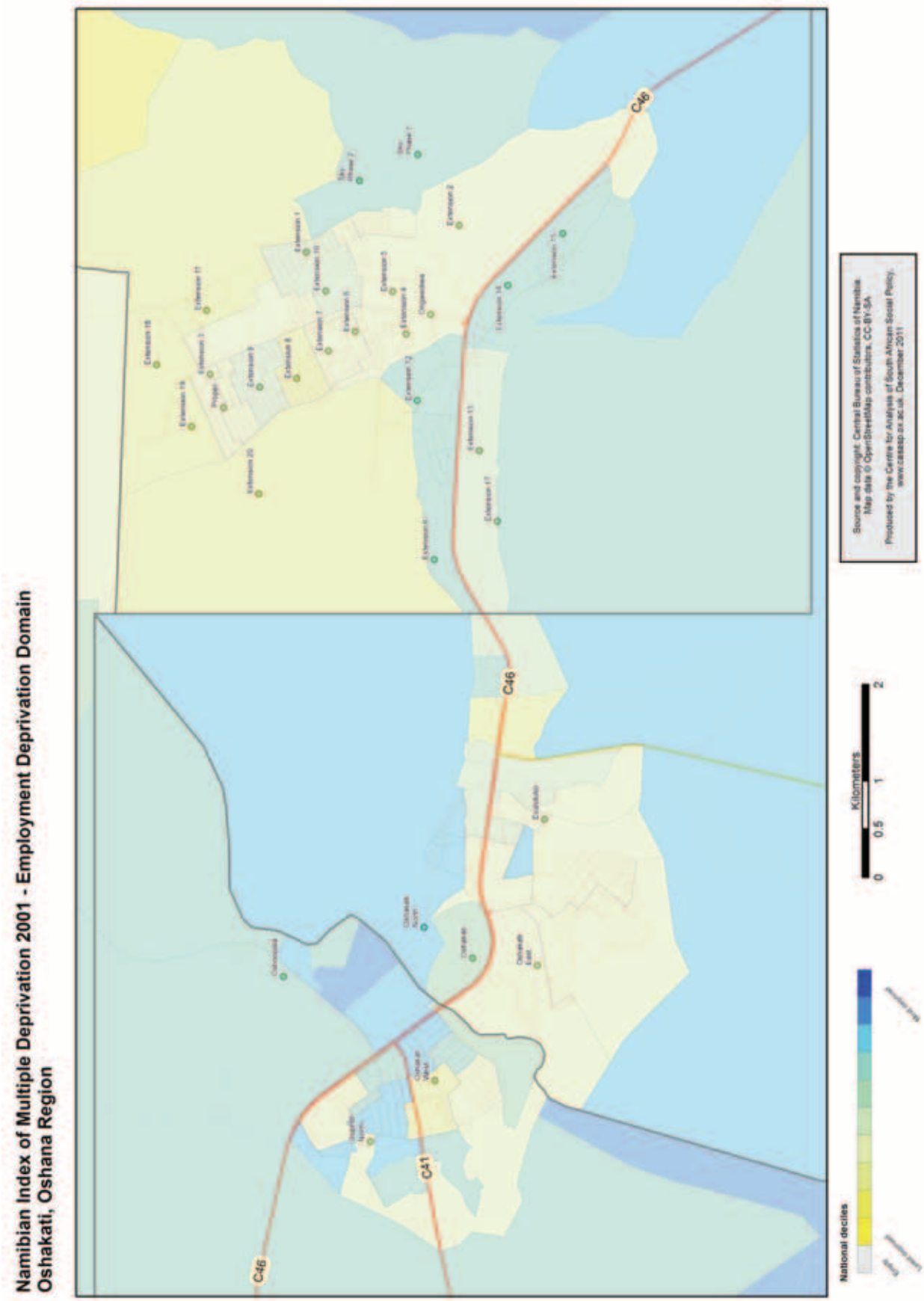
Map 9


Namibian Index of Multiple Deprivation 2001 - Employment Deprivation Domain
Oshakati, Oshana Region
C46
C41
C46
C46
Kilometers
0
0.5
1
2
National deciles
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Map data © OpenStreetMap contributors, CC-BY-SA
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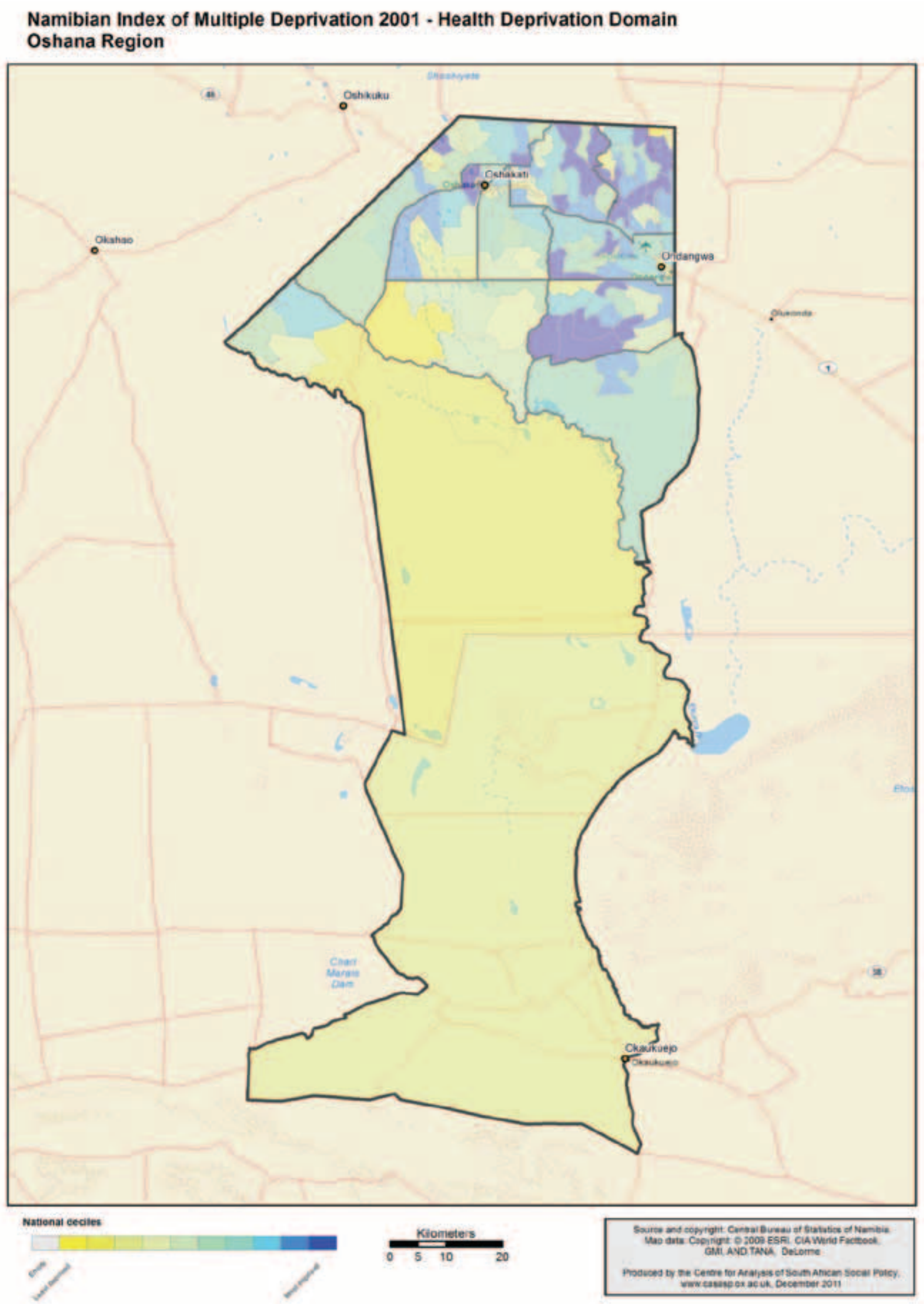
Map 10


Namibian Index of Multiple Deprivation 2001 - Health Deprivation Domain
Oshana Region
Oshikuku
Oshakati
Okahao
Ondangwa
Okaukuejo
National deciles
Kilometers
0 5 10 20
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Map 11


Namibian Index of Multiple Deprivation 2001 - Health Deprivation Domain
Ondangwa, Oshana Region
Extension 8
C46
Extension 5
Extension 6
Extension 2
Ondangwa
Extension 7
Extension 3
Okangwena
Extension 1
Extension 9
National deciles
Kilometers
0 0.25 0.5 1
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Map data © OpenStreetMap contributors, CC-BY-SA
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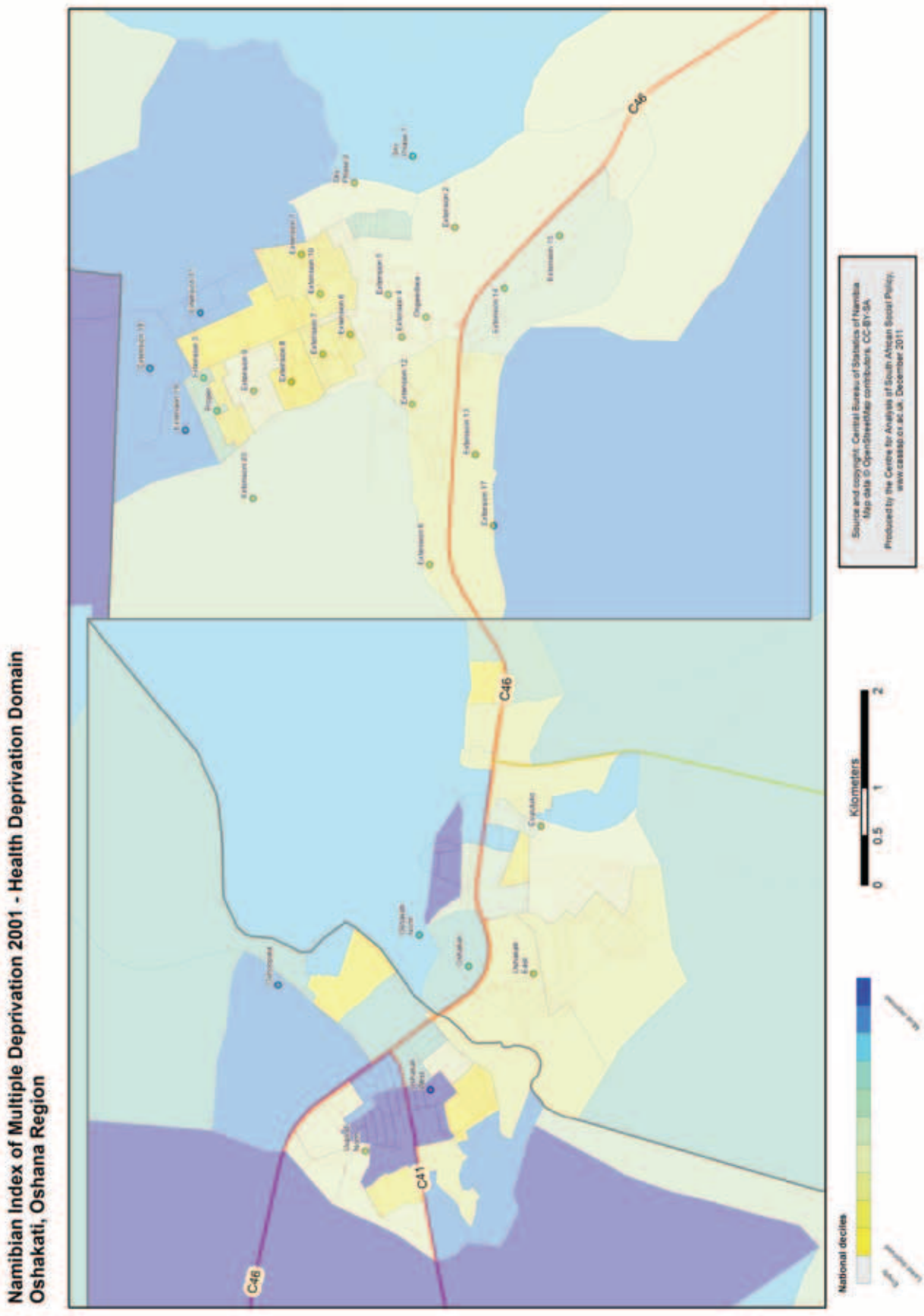
Map 12


Namibian Index of Multiple Deprivation 2001 - Health Deprivation Domain
Oshakati, Oshana Region
C46
C41
C46
C46
Kilometers
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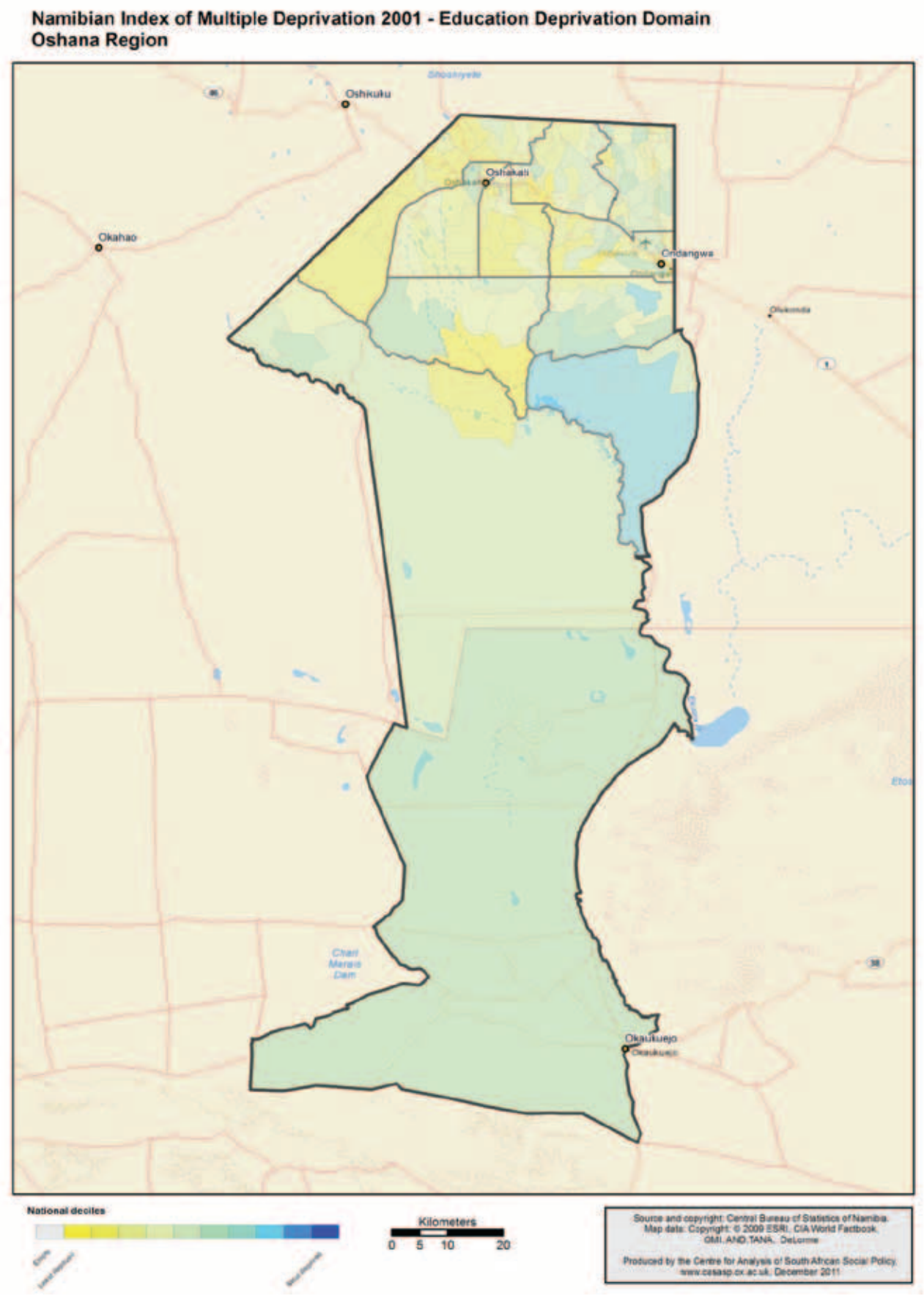
2
National deciles

Map 13


Namibian Index of Multiple Deprivation 2001 - Education Deprivation Domain
Oshana Region
Oshikuku
Okahao
Oshakati
Ondangwa
Okaukuejo
National deciles
Kilometers
0 5 10 20
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GMI, AND,TANA, DeLorme
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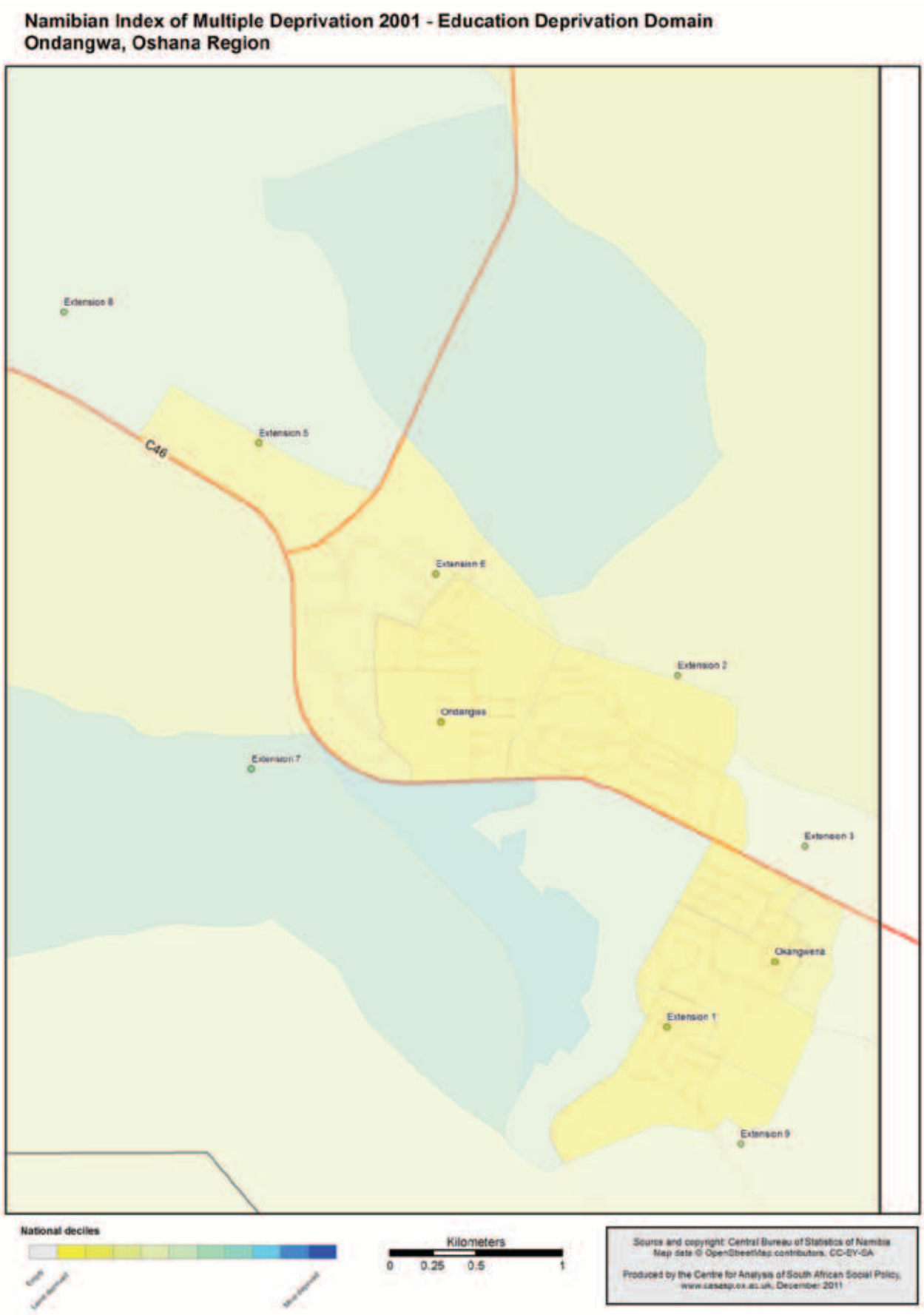
Map 14


Namibian Index of Multiple Deprivation 2001 - Education Deprivation Domain
Ondangwa, Oshana Region
Extension 8
C46
Extension 5
Extension 6
Extension 2
Ondangwa
Extension 7
Extension 3
Okangwena
Extension 1
Extension 9
National deciles
Kilometers
0 0.25 0.5 1
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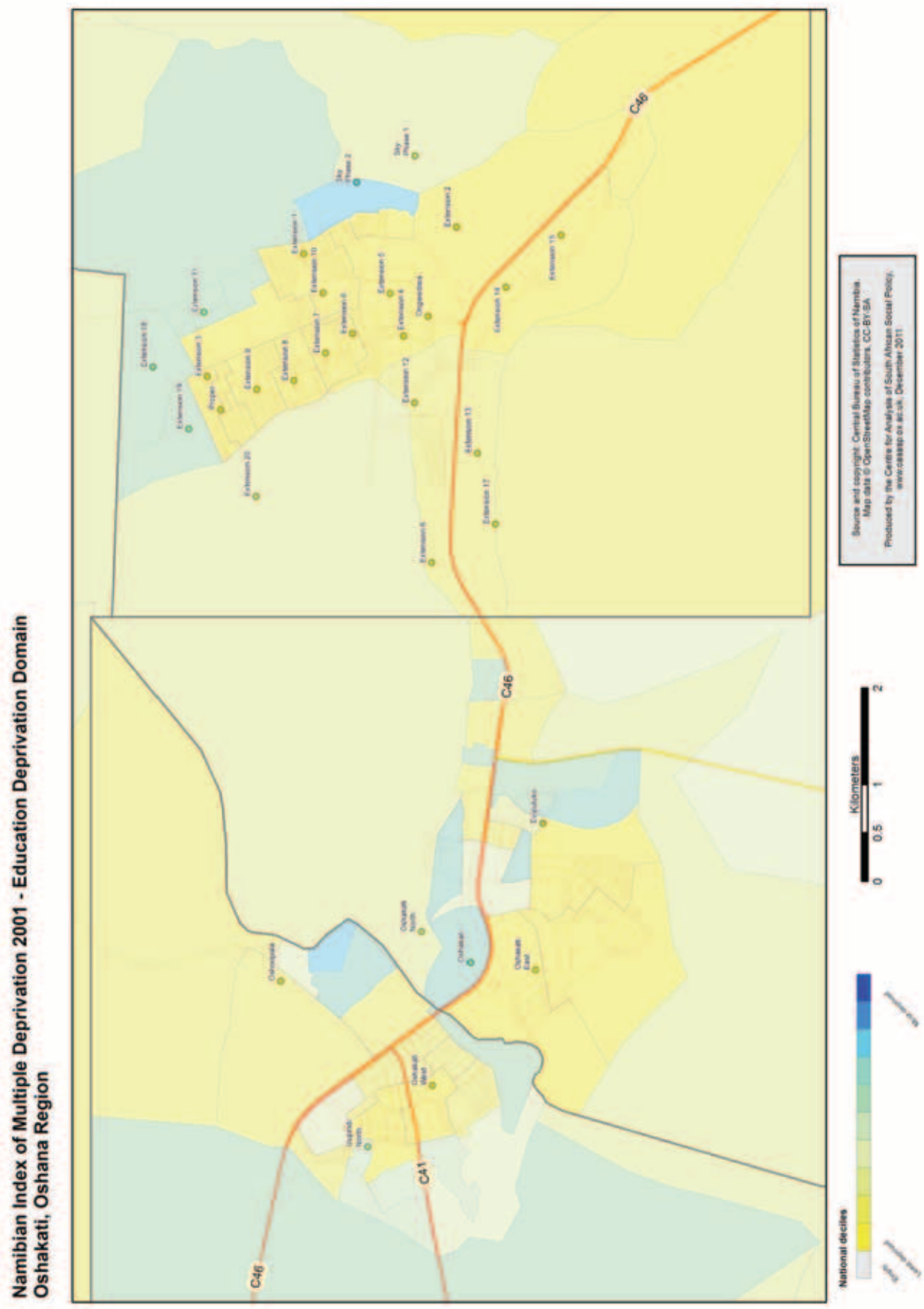
Map 15


Namibian Index of Multiple Deprivation 2001 - Education Deprivation Domain
Oshakati, Oshana Region
C46
C41
Kilometers
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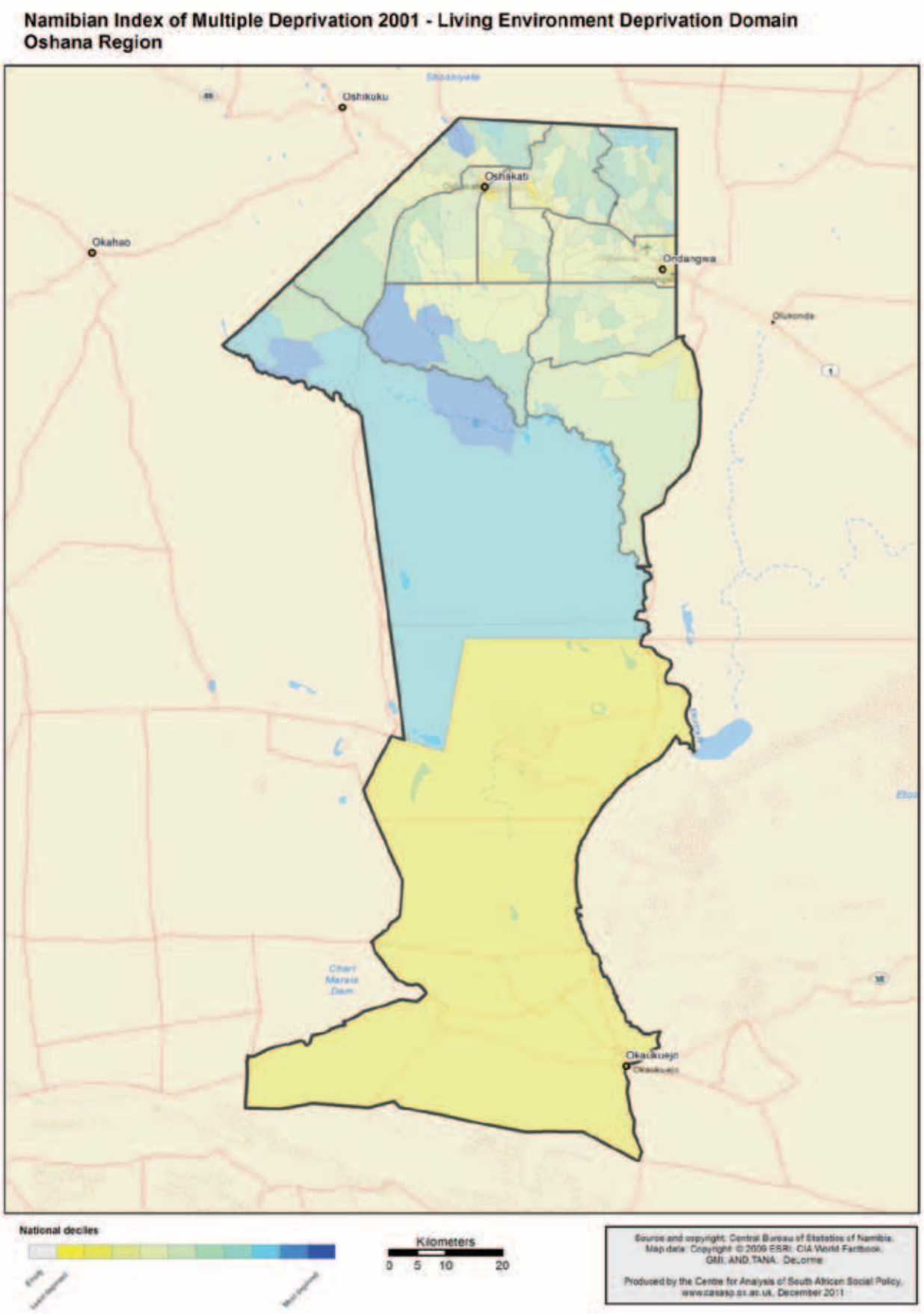
National deciles

Map 16


Namibian Index of Multiple Deprivation 2001 - Living Environment Deprivation Domain
Oshana Region
Oshikuku
Okahao
Ondangwa
Oluvonda
National deciles
Kilometers
0 5 10 20
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Map data: Copyright © 2009 ESRI, CIA World Factbook,
GMI, AND,TANA, DeLorme
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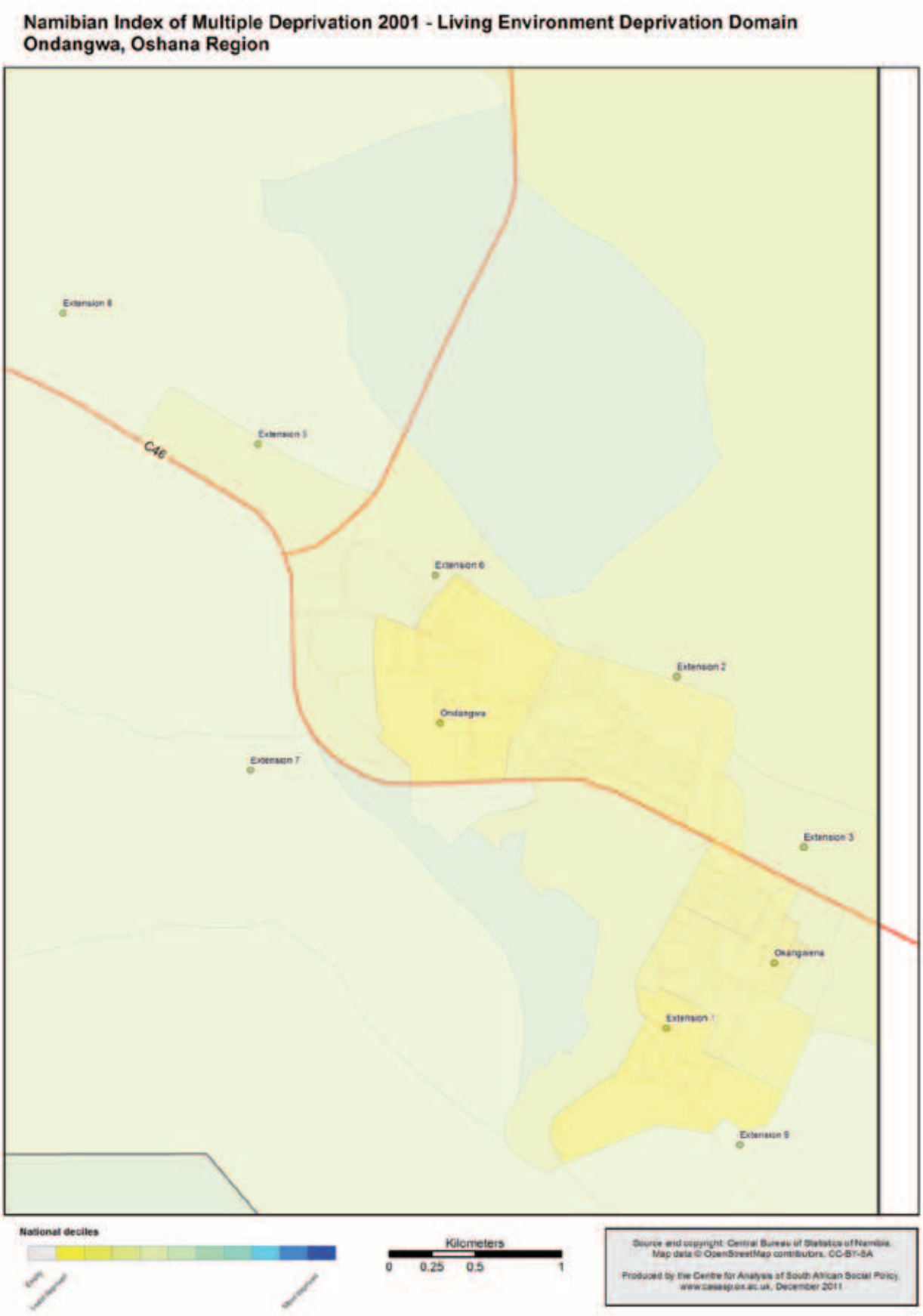
Map 17


Namibian Index of Multiple Deprivation 2001 - Living Environment Deprivation Domain
Ondangwa, Oshana Region
Extension 8
C46
Extension 5
Extension 6
Extension 2
Ondangwa
Extension 7
Extension 3
Okahgwena
Extension 1
Extension 9
National deciles
Kilometers
0 0.25 0.5 1
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Produced by the Centre for Analysis of South African Social Policy
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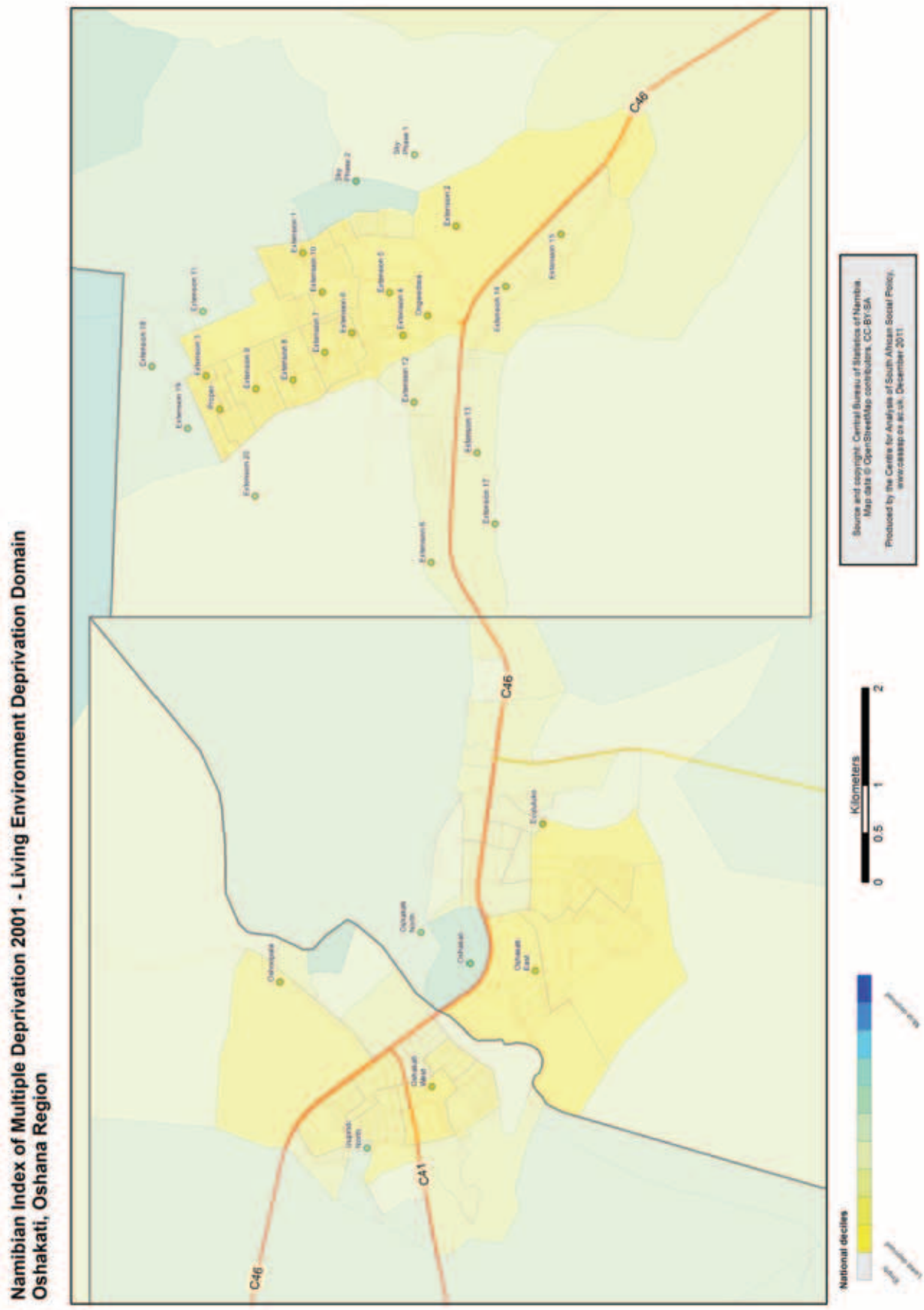
Map 18


Namibian Index of Multiple Deprivation 2001 - Living Environment Deprivation Domain
Oshakati, Oshana Region
C46
C41
Kilometers
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National deciles

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 Oshana 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 censuses). 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 Oshana region and even the least deprived areas, such as Oshakati East constituency, contain pockets of deprivation. They are simply less deprived than other areas with higher levels of deprivation such as Okaku constituency. 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 Oshana 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 Oshana for the five domains and the overall NIMD. For all domains except health the score is calculated as a rate. So for example, 96.9% of the population in datazone 1418 in Okaku 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 Oshana ranks are shown for each datazone (where 1=most deprived).

Datazone	Constituency	Material score	Material rank	Employment score	Employment rank	Health score	Health rank	Education score	Education rank	Living environment score	Living environment rank	NIMD score	NIMD rank
1418	Okaku	96.9	4	86.9	3	1224.1	25	67.3	30	98.5	15	300.0	1
1419	Okaku	93.5	10	80.6	7	194.1	151	56.6	128	98.0	20	192.8	39
1420	Okaku	93.4	11	72.5	22	1250.5	23	65.6	46	97.5	26	260.5	3
1421	Okaku	71.7	68	58.1	51	856.3	51	63.5	73	99.8	5	213.5	28
1422	Okaku	81.8	47	45.5	80	1630.3	12	65.2	53	97.9	23	224.1	15
1423	Okaku	62.8	82	76.1	14	984.6	36	67.0	32	95.0	49	220.3	20
1424	Okaku	59.1	88	57.5	53	455.4	108	66.1	42	96.8	33	163.1	71
1425	Okaku	64.5	80	61.8	40	865.0	49	62.4	79	98.5	16	199.6	36
1426	Okaku	92.2	18	61.9	39	2866.5	1	68.4	18	99.1	9	292.1	2
1427	Okaku	51.6	100	72.6	20	1267.4	21	65.4	48	90.7	78	215.4	25
1428	Okaku	81.4	48	41.0	90	1264.9	22	60.6	93	92.7	66	181.5	53
1429	Okaku	86.3	35	39.9	95	1104.5	31	65.1	56	94.2	55	188.0	45
1430	Okaku	87.0	30	60.3	45	785.0	64	67.5	26	83.9	105	195.7	37
1432	Okaku	94.1	8	66.8	31	894.1	47	67.3	29	98.8	12	250.6	8
1433	Okaku	95.3	6	76.2	13	0.0	164	60.5	94	98.8	11	194.2	38
1434	Okaku	52.4	96	82.9	6	285.6	136	64.9	58	98.0	22	182.1	52
1435	Okaku	49.6	106	59.8	47	1679.9	10	64.2	64	96.6	35	217.9	21
1436	Okaku	65.3	79	58.7	50	1429.2	16	64.5	62	99.4	8	237.6	14
1437	Okaku	15.2	152	77.4	11	691.6	73	61.4	88	90.4	79	165.5	66
1438	Okaku	97.3	3	69.2	28	1082.8	33	63.0	77	96.2	37	250.8	7
1439	Okaku	94.1	9	74.7	17	657.3	79	65.3	50	93.1	64	217.0	22
1440	Okatana	85.4	40	44.1	85	413.3	115	53.5	136	99.8	4	167.3	63
1441	Okatana	71.8	67	37.6	105	604.8	88	54.2	134	86.7	94	119.9	114
1442	Okatana	57.9	91	24.5	131	367.6	123	58.5	113	97.2	28	101.3	130
1443	Okatana	77.8	59	48.7	71	785.1	63	65.4	49	99.6	6	203.2	34
1444	Okatana	78.4	55	34.5	109	910.9	46	58.9	107	98.1	19	163.7	68
1445	Okatana	80.9	49	21.7	141	1631.2	11	60.3	96	97.5	25	182.9	49
1446	Okatana	86.8	32	72.6	19	999.9	35	63.8	68	98.5	17	238.4	13
1447	Okatana	51.5	101	45.8	79	538.1	98	61.1	89	95.2	47	133.2	103

1448	Okatana	92.9	14	26.4	127	529.5	102	58.4	114	97.0	29	141.1	95
1449	Okatana	82.2	45	15.7	156	656.9	80	55.6	129	95.2	48	118.2	116
1450	Okatana	72.5	66	6.0	165	645.1	81	51.9	138	87.7	90	92.8	136
1451	Okatana	56.0	93	64.0	36	1156.2	28	58.8	108	82.1	115	183.0	48
1452	Okatana	79.3	53	20.5	150	261.2	138	58.3	117	93.2	63	92.6	137
1453	Okatana	74.0	64	51.0	62	476.4	106	54.3	133	84.0	104	130.6	105
1454	Okatana	88.0	26	3.7	167	590.5	91	57.8	122	93.6	60	108.8	121
1455	Okatana	78.0	58	7.5	163	1621.1	13	60.2	100	91.6	75	154.7	80
1456	Okatyali	92.3	17	22.6	137	603.4	89	73.3	3	94.8	52	176.5	56
1457	Okatyali	96.5	5	40.3	93	1213.3	26	74.4	1	85.9	98	242.6	12
1458	Okatyali	78.1	57	6.5	164	516.8	103	65.1	54	78.6	123	99.4	133
1459	Ompundja	80.1	52	67.3	30	384.8	120	63.6	71	88.6	85	163.2	70
1460	Ompundja	92.0	19	60.4	44	437.4	111	46.2	150	98.7	13	182.7	51
1461	Ompundja	62.6	83	72.3	23	575.2	93	66.0	43	85.1	100	175.8	58
1462	Ompundja	66.1	77	56.2	55	334.2	130	63.7	70	85.1	99	134.7	102
1463	Ompundja	94.9	7	66.7	32	0.0	164	68.1	22	99.8	2	216.9	23
1464	Ondangwa	89.4	23	72.6	21	727.7	71	64.9	57	86.8	93	203.0	35
1465	Ondangwa	86.4	34	50.3	64	535.6	99	56.7	127	80.2	118	142.6	93
1466	Ondangwa	78.2	56	70.9	24	772.4	66	59.7	103	86.1	97	182.8	50
1467	Ondangwa	34.9	126	48.7	70	1926.0	5	58.3	115	84.8	101	179.2	55
1468	Ondangwa	80.4	51	50.9	63	966.0	38	64.1	66	92.2	70	183.8	47
1469	Ondangwa	70.5	70	48.1	74	642.7	83	63.5	72	80.0	120	144.3	91
1470	Ondangwa	36.6	123	56.5	54	825.5	57	67.4	28	88.6	86	168.3	61
1471	Ondangwa	50.4	105	30.4	115	754.9	69	61.8	86	80.1	119	114.4	117
1472	Ondangwa	51.0	104	21.3	144	924.2	43	55.3	131	83.2	108	111.4	120
1473	Ondangwa	59.9	86	24.8	130	690.9	74	66.2	41	86.8	92	124.3	110
1474	Ondangwa	37.7	121	52.8	56	913.0	45	61.9	85	76.8	129	148.7	85
1475	Ondangwa	39.6	117	36.4	106	643.9	82	68.9	15	91.7	72	138.1	99
1476	Ondangwa	90.6	22	75.8	15	803.7	60	61.0	90	92.2	69	210.4	31
1477	Ondangwa	59.2	87	47.1	75	859.6	50	66.5	37	95.7	44	174.0	60
1478	Ondangwa	83.8	43	17.3	154	2315.0	3	68.2	21	95.3	46	203.5	33
1479	Ondangwa	24.8	138	23.7	132	446.0	110	55.5	130	63.3	142	67.9	147

1480	Ondangwa	25.5	137	27.0	124	207.5	146	32.6	157	41.8	152	46.9	156
1481	Ondangwa	0.5	167	29.6	118	401.8	117	40.1	154	27.4	158	53.7	152
1482	Ondangwa	64.2	81	33.4	112	829.5	56	70.2	9	93.4	61	165.7	65
1483	Ondangwa	53.7	95	49.5	69	288.7	135	65.9	44	77.0	128	121.2	113
1484	Ondangwa	14.5	153	27.0	123	28.2	163	37.3	155	14.3	165	32.1	162
1485	Ondangwa	68.3	73	50.3	65	497.1	105	69.0	13	83.0	109	155.8	79
1486	Ondangwa	17.4	148	38.4	103	196.0	149	47.3	145	41.5	153	59.7	150
1487	Ondangwa	43.6	113	30.2	116	531.6	100	64.2	65	77.1	127	100.5	131
1488	Ondangwa	68.5	72	38.5	100	791.0	61	57.8	121	75.7	131	129.4	107
1489	Ondangwa	74.7	63	36.1	107	1101.3	32	59.1	105	89.2	84	156.4	78
1490	Ondangwa	87.4	28	64.2	35	545.2	95	47.1	146	82.6	113	160.8	74
1491	Ongwediva	52.2	97	59.8	48	941.3	40	63.4	74	94.8	51	180.9	54
1492	Ongwediva	42.9	114	77.1	12	934.3	41	65.6	45	98.0	21	215.7	24
1493	Ongwediva	51.2	103	78.0	9	761.7	67	58.7	111	96.9	32	189.9	44
1494	Ongwediva	39.4	118	70.5	26	581.9	92	64.7	61	93.8	59	167.6	62
1495	Ongwediva	87.8	27	77.9	10	679.4	76	65.3	51	97.5	24	223.7	17
1496	Ongwediva	88.9	25	48.6	72	2786.1	2	62.3	81	87.8	89	222.5	19
1497	Ongwediva	74.9	62	59.0	49	745.6	70	41.6	153	71.3	135	150.3	82
1498	Ongwediva	51.8	99	52.5	59	332.0	131	46.4	149	68.3	138	103.6	125
1499	Ongwediva	77.1	60	41.2	89	816.8	58	58.9	106	89.6	81	148.2	86
1500	Ongwediva	38.0	120	14.2	157	1168.8	27	67.7	25	92.6	67	144.0	92
1501	Ongwediva	2.6	164	17.8	153	399.7	118	60.0	101	86.2	96	65.3	149
1502	Ongwediva	80.6	50	41.7	86	1072.6	34	58.0	120	83.0	110	161.7	73
1503	Ongwediva	13.2	155	69.1	29	544.1	96	65.5	47	98.6	14	175.8	57
1504	Ongwediva	85.8	37	60.6	43	1403.1	17	66.4	38	98.4	18	248.6	9
1505	Ongwediva	93.1	13	10.7	160	843.3	52	60.8	91	96.0	39	148.7	84
1506	Ongwediva	65.3	78	7.8	162	373.6	122	58.8	110	96.1	38	87.7	138
1507	Ongwediva	5.5	162	18.1	152	127.4	156	22.6	167	14.9	163	24.5	166
1508	Ongwediva	6.4	161	23.0	135	0.0	164	25.5	162	29.4	156	25.4	164
1509	Ongwediva	17.1	150	30.0	117	173.7	153	23.9	164	16.2	162	41.0	159
1510	Ongwediva	85.9	36	38.6	99	351.4	126	73.0	5	96.9	31	175.0	59

1511	Ongwediva	20.0	145	22.7	136	359.4	125	34.4	156	25.7	159	48.4	155
1512	Ongwediva	46.5	108	21.3	145	555.6	94	47.1	147	54.5	145	74.9	142
1513	Ongwediva	20.9	144	38.4	102	397.1	119	43.9	151	46.7	151	73.1	146
1514	Ongwediva	21.3	143	29.0	120	212.2	145	48.0	144	70.1	137	55.6	151
1515	Ongwediva	36.6	122	41.3	88	189.8	152	56.8	126	76.3	130	80.2	140
1516	Ongwediva	2.6	165	17.0	155	53.2	161	30.6	159	14.0	166	19.4	167
1517	Ongwediva	7.5	159	25.6	128	273.6	137	23.3	165	28.1	157	42.3	157
1518	Ongwediva	2.6	166	21.6	142	530.9	101	24.9	163	20.2	160	52.0	154
1519	Ongwediva	12.6	156	18.7	151	96.8	158	23.1	166	16.4	161	25.0	165
1520	Ongwediva	52.1	98	62.7	38	1871.8	6	60.2	99	93.9	58	213.8	27
1521	Ongwediva	79.1	54	70.5	25	1477.6	15	66.7	35	97.4	27	253.1	4
1522	Oshakati East	85.1	42	52.3	60	361.9	124	64.8	60	95.7	43	158.1	75
1523	Oshakati East	59.9	85	31.7	113	678.6	77	60.6	92	95.0	50	125.8	108
1524	Oshakati East	76.1	61	51.2	61	788.3	62	56.9	125	89.4	82	157.0	76
1525	Oshakati East	53.9	94	44.2	84	602.3	90	58.7	112	82.7	112	121.3	112
1526	Oshakati East	58.1	90	44.7	83	810.3	59	61.6	87	93.2	62	149.9	83
1527	Oshakati East	66.9	75	52.5	58	539.8	97	53.5	137	91.6	74	137.8	100
1528	Oshakati East	60.0	84	48.5	73	618.1	85	57.0	124	86.9	91	132.4	104
1529	Oshakati East	11.9	157	21.7	140	226.7	143	31.8	158	10.9	167	35.0	161
1530	Oshakati East	14.4	154	46.7	78	137.9	154	69.2	12	70.9	136	104.1	124
1531	Oshakati East	33.4	128	34.6	108	694.7	72	70.7	7	96.0	40	151.6	81
1532	Oshakati East	40.4	115	20.7	148	426.5	114	62.7	78	65.8	140	77.6	141
1533	Oshakati East	18.6	147	45.5	81	1382.0	18	70.6	8	83.7	106	187.4	46
1534	Oshakati East	33.2	129	29.0	119	841.7	53	58.1	119	64.2	141	103.4	126
1535	Oshakati East	70.6	69	25.4	129	204.1	147	68.5	17	78.3	124	102.8	129
1536	Oshakati East	48.0	107	13.6	158	203.0	148	58.3	116	62.8	143	53.1	153
1537	Oshakati East	87.0	29	38.8	98	0.0	164	68.7	16	84.7	102	125.5	109
1538	Oshakati East	28.6	133	26.7	126	475.6	107	48.7	142	72.0	134	73.8	144
1539	Oshakati East	7.2	160	20.6	149	194.3	150	30.1	160	14.6	164	30.7	163

1540	Oshakati East	5.2	163	21.5	143	331.3	132	29.7	161	32.7	155	41.8	158
1541	Oshakati East	46.2	109	23.7	133	879.7	48	71.5	6	80.3	117	145.0	89
1542	Oshakati East	36.0	125	23.2	134	426.9	113	58.8	109	73.8	132	74.4	143
1543	Oshakati East	44.6	112	49.6	68	676.4	78	62.0	84	94.4	54	144.6	90
1544	Oshakati East	40.3	116	41.5	87	450.1	109	57.3	123	77.1	126	99.0	134
1545	Oshakati West	31.9	130	37.8	104	631.7	84	51.7	140	88.2	88	105.1	122
1546	Oshakati West	86.9	31	65.6	33	784.7	65	60.0	102	92.9	65	190.4	43
1547	Oshakati West	67.6	74	57.9	52	381.8	121	60.2	97	92.3	68	140.5	96
1548	Oshakati West	85.6	38	63.3	37	232.0	142	59.7	104	89.2	83	147.6	87
1549	Oshakati West	24.6	139	39.6	96	320.6	133	51.7	139	48.5	149	73.1	145
1550	Oshakati West	59.0	89	21.8	139	350.5	127	65.2	52	94.7	53	103.1	128
1551	Oshakati West	45.4	111	22.2	138	951.2	39	64.5	63	79.6	122	122.7	111
1552	Oshakati West	56.1	92	40.5	92	219.1	144	64.8	59	72.7	133	99.8	132
1553	Oshakati West	26.3	136	33.4	111	240.0	140	68.2	20	83.3	107	96.4	135
1554	Oshakati West	30.2	132	44.7	82	608.5	87	54.0	135	66.2	139	105.0	123
1555	Oshakati West	90.8	21	38.9	97	831.4	55	73.3	4	97.0	30	214.9	26
1556	Oshakati West	51.4	102	60.9	42	69.7	160	70.0	10	86.6	95	141.4	94
1557	Oshakati West	17.2	149	50.0	66	685.7	75	63.9	67	79.7	121	129.4	106
1558	Oshakati West	36.4	124	20.7	147	39.0	162	48.6	143	51.7	147	39.8	160
1559	Oshakati West	21.6	142	12.2	159	1713.1	8	43.7	152	34.9	154	112.5	119
1560	Oshakati West	22.6	141	40.6	91	981.0	37	55.1	132	52.0	146	118.5	115
1561	Oshakati West	27.0	135	21.1	146	349.0	128	62.1	83	56.1	144	65.5	148
1562	Oshakati West	46.2	110	49.6	67	292.1	134	58.2	118	77.3	125	103.1	127
1563	Oshakati West	19.0	146	38.4	101	96.1	159	66.3	40	82.9	111	86.2	139
1564	Oshakati West	27.5	134	46.9	76	1235.4	24	46.4	148	46.8	150	138.9	97
1565	Oshakati West	30.5	131	40.2	94	1973.1	4	67.4	27	90.8	77	190.8	42
1566	Oshakati West	39.3	119	34.3	110	1138.8	29	63.2	76	96.6	34	157.0	77
1567	Uukwiyu	23.2	140	85.0	5	1617.1	14	69.3	11	95.8	42	251.5	5
1568	Uukwiyu	15.5	151	61.5	41	1318.7	20	67.0	31	84.6	103	192.6	40
1569	Uukwiyu	85.5	39	75.0	16	1377.6	19	68.3	19	90.2	80	250.9	6
1570	Uukwiyu	91.8	20	65.0	34	757.7	68	62.2	82	95.6	45	204.1	32

1571	Uukwiyu	9.2	158	52.6	57	918.9	44	66.3	39	94.2	56	163.3	69
1572	Uukwiyu	33.8	127	73.6	18	234.2	141	60.2	98	91.8	71	135.8	101
1573	Uukwiyu	85.3	41	78.0	8	1747.7	7	60.3	95	91.7	73	247.0	10
1574	Uukwiyu	69.5	71	59.9	46	618.0	86	65.1	55	88.5	87	166.0	64
1575	Uukwiyu	92.6	15	46.8	77	932.5	42	68.1	23	96.6	36	212.9	29
1576	Uukwiyu	66.4	76	70.2	27	1693.4	9	63.7	69	80.4	116	223.0	18
1577	Uukwiyu	81.9	46	90.6	2	431.5	112	73.5	2	82.6	114	224.0	16
1578	Uukwiyu	89.0	24	85.2	4	1118.7	30	62.3	80	94.1	57	242.7	11
1579	Uukwiyu	82.4	44	93.8	1	403.5	116	68.9	14	91.4	76	211.8	30
1580	Uuvudhiya	86.7	33	31.6	114	255.5	139	67.0	33	51.0	148	112.7	118
1581	Uuvudhiya	93.3	12	4.6	166	836.0	54	63.2	75	95.8	41	147.1	88
1582	Uuvudhiya	73.0	65	28.4	121	334.8	129	67.9	24	99.9	1	165.2	67
1583	Uuvudhiya	92.5	16	9.4	161	107.3	157	66.7	36	99.6	7	138.3	98
1584	Uuvudhiya	98.0	1	26.9	125	500.6	104	66.8	34	99.0	10	191.9	41
1585	Uuvudhiya	98.0	2	27.1	122	127.9	155	51.3	141	99.8	3	161.8	72

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