Datazone level Namibian Index of Multiple Deprivation 2001

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Omusati Region

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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of the NIMD required very detailed and reliable data and information, it was agreed that the 2001 census data, though 'outdated', be used as the source of information for preparing the NIMD.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 Omusati 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 Omusati 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 Omusati 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 Omusati 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 Omusati 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 Omusati 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 Omusati 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 Omusati 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 Omusati 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 Omusati 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 Omusati region based on the existing EA geography which nest within the 12 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 229 datazones were created for the Omusati 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 229 datazones and 12 constituencies in Omusati 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 .

Indicators

> "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."

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 indicators for the domains, it was important to ensure that they are direct measures of the domain

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.

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 Omusati region, at both constituency and datazone levels, is presented. Using the data from the NIMD it is possible to compare the 229 datazones and 12 constituencies within Omusati. Map 1 shows the datazones in Omusati 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. The map provides an easy to interpret picture of the pattern of multiple deprivation in the Omusati region.

Map 1

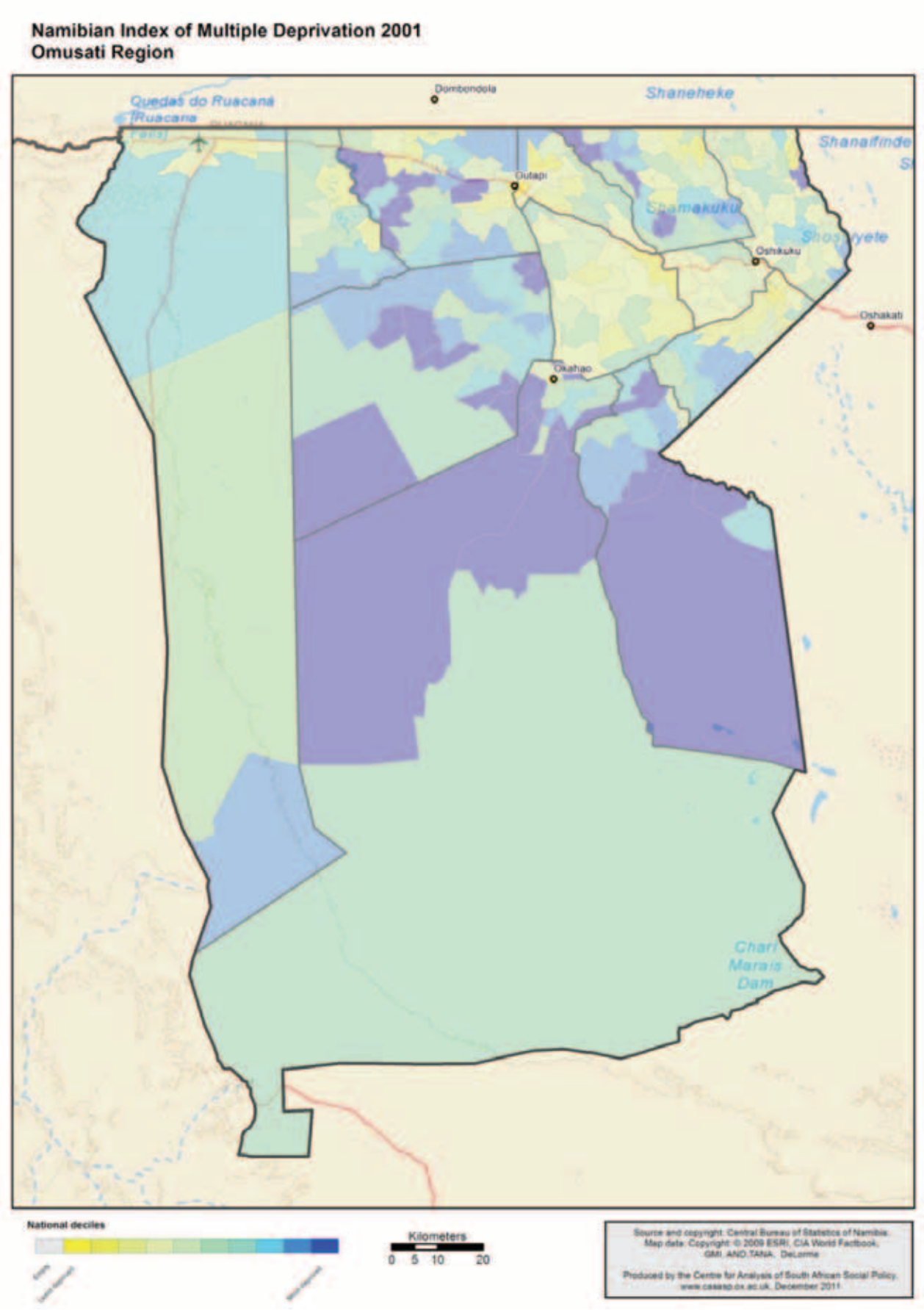

Namibian Index of Multiple Deprivation 2001
Omusati Region
Quedas do Ruacana
Ruacana
Domboindola
Shaneheke
Outapi
Oshikuku
Oshakati
Okahao
Chari
Marais
Dam
National deciles
Kilometers
0 5 10 20
Source and copyright: Central Bureau of Statistics of Namibia.
Map data: Copyright © 2009 ESRI, CIA World Factbook,
GMI, AND,TANA, DeLorme
Produced by the Centre for Analysis of South African Social Policy.
www.casasp.ox.ac.uk. December 2011

Table 1 shows some of the data underlying this map. The NIMD 2001 score, national rank (where 1=most deprived and 1,871=least deprived) and Omusati rank (where 1=most deprived and 229=least deprived) for the 20 most deprived datazones in Omusati are shown. Appendix 2 provides this information for all of the datazones in Omusati.

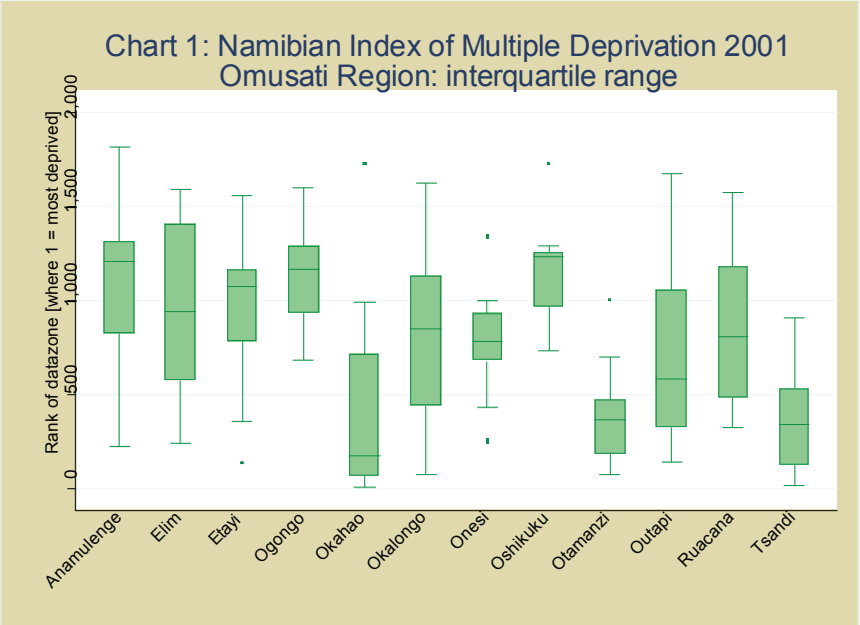
The most deprived datazone in Omusati is in Okahao constituency, and is therefore given a rank of 1 among the datazones in Omusati. If ranked alongside all datazones in Namibia, it ranks as 3rd most deprived. Thirty-one of the datazones in Omusati are in the most deprived 10 percent of datazones in Namibia in terms of multiple deprivation (the cut-off for the 10 percent most deprived is a rank of 187). The least deprived datazone in Omusati is located in Anamulenge and ranks at 1,817 in the country as a whole.

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

Datazone	Constituency	NIMD score	NIMD rank – national	NIMD rank – within Omusati
1268	Okahao	360.3	3	1
1273	Okahao	345.7	10	2
1275	Okahao	345.6	11	3
1384	Tsandi	334.7	19	4
1397	Tsandi	330.4	22	5
1398	Tsandi	324.8	27	6
1277	Okahao	305.9	51	7
1272	Okahao	299.8	65	8
1294	Okalongo	296.0	73	9
1396	Tsandi	294.7	74	10
1379	Tsandi	294.4	75	11
1408	Otamanzi	293.9	76	12
1269	Okahao	293.1	78	13
1407	Otamanzi	292.6	80	14
1395	Tsandi	292.2	81	15
1306	Okalongo	284.0	112	16
1298	Okalongo	283.3	114	17
1385	Tsandi	281.4	119	18
1378	Tsandi	276.0	134	19
1226	Etayi	275.9	135	20

The twelve constituencies in Omusati 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 datazones 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, such as Etayi and Onesi, appear at either end of the line). A number of the constituencies, particularly Anamulenge, Okalongo and Outapi have a wide range of deprivation. Otamanzi has a comparatively small range of deprivation, and to a lesser extent the same is true of Oshikuku and Ogongo.

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 rank in Okahao is lower (more deprived) than in the other constituencies. Otamanzi and Tsandi also have low median ranks. 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). The constituency with the largest range for the middle 50 percent is Elim. Onesi, Oshikuku and Otamanzi have a relatively small range for the middle 50 percent. 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. In many of the constituencies the datazones are situated towards the middle of the national distribution. However, datazones in Tsandi, Otamanzi and Okahao are concentrated towards the most deprived end of the distribution.

Further analysis shows that the datazones in the most deprived 10 percent of datazones *within Omusati* on the overall NIMD are located in six constituencies. These six constituencies and the number of datazones that are in the most deprived 10 percent of datazones within Omusati are as follows: Etayi (1 in 34), Okahao (7 of 17), Okalongo (3 of 29), Otamanzi (2 of 13), Outapi (1 of 29) and Tsandi (8 of 28).

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 Omusati, 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, 81.9 percent of the population in Anamulenge constituency experienced material deprivation in 2001. The within Omusati ranks are shown as well as the domain scores, for each constituency in Omusati (where 1=most deprived). A high proportion (approximately 80 percent or more) of the population of each constituency experience material deprivation, with the exception of Etayi (64%). The most deprived constituency is Tsandi (with 92 percent of the population experiencing material deprivation). The same constituency, Tsandi, is also the most deprived in terms of employment deprivation (with 65 percent of the relevant population being employment deprived), followed by Okahao and Otamanzi (both 61percent).

In all of the constituencies over half of the relevant population is education deprived. The most deprived constituency is Ruacana (with 70 percent of the relevant population being education deprived). In terms of living environment deprivation, the most deprived constituency in Omusati is Otamanzi (with 98 percent of the total population experiencing living environment deprivation). In all but one constituency – Oshikuku – over 90 percent of the population experiences living environment deprivation (in Oshikuku the figure is 86 percent).

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

Constituency	Material deprivation rate (%)	Material deprivation rank (within Omusati)	Employment deprivation rate (%)	Employment deprivation rank (within Omusati)	Education deprivation rate (%)	Education deprivation rank (within Omusati)	Living environment deprivation rate (%)	Living environment deprivation rank (within Omusati)
Anamulenge	81.9	10	12.9	12	59.6	10	94.6	7
Elim	83.9	8	42.9	4	58.3	11	92.8	9
Etayi	63.5	12	31.1	7	63.2	6	97.4	3
Ogongo	79.3	11	21.9	10	62.8	7	93.5	8
Okahao	90.5	3	61.4	2	68.3	3	90.0	11
Okalongo	88.5	4	16.0	11	56.2	12	96.0	6
Onesi	86.4	6	32.4	6	66.3	4	97.5	2
Oshikuku	85.0	7	29.6	8	61.0	9	86.1	12
Otamanzi	83.9	9	60.6	3	68.5	2	97.6	1
Outapi	86.7	5	37.4	5	61.1	8	96.1	5
Ruacana	90.6	2	24.4	9	70.4	1	91.8	10
Tsandi	92.2	1	65.0	1	65.6	5	97.0	4

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

Four constituencies, Okahao, Okalongo, Otamanzi and Outapi have datazones in the most deprived 10 percent for four of the domains. In terms of material deprivation, nine of the twelve constituencies have datazones that fall within the most deprived 10 percent in Namibia as a whole. Over half of the datazones in Tsandi and approximately two fifths of the datazones in Okahao are in the most deprived 10 percent of datazones nationally in terms of employment. In relation to education deprivation, Otamanzi and Ruacana are the only constituencies to feature in the most deprived 10 percent nationally, each having one datazone in the 10 percent most deprived datazones.

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
Anamulenge	13	7.7	0.0	0.0	0.0	7.7
Elim	13	0.0	0.0	15.4	0.0	0.0
Etayi	34	2.9	2.9	26.5	0.0	0.0
Ogongo	18	11.1	0.0	0.0	0.0	0.0
Okahao	17	29.4	41.2	17.6	0.0	5.9
Okalongo	29	31.0	3.4	24.1	0.0	17.2
Onesi	13	15.4	0.0	0.0	0.0	0.0
Oshikuku	9	0.0	11.1	0.0	0.0	0.0
Otamanzi	13	38.5	7.7	7.7	7.7	0.0
Outapi	29	10.3	3.4	13.8	0.0	31.0
Ruacana	13	0.0	7.7	0.0	7.7	7.7
Tsandi	28	32.1	53.6	14.3	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 Omusati* for each domain. Okahao and Tsandi are the only constituencies that have datazones in the most deprived 10 percent of datazones on each domain. Okalongo and Outapi have datazones in the most deprived 10 percent for four of the five domains. Elim, Ogongo and Oshikuku have datazones in the most deprived 10 percent for just one of the domains. Over two fifths of the datazones in Okahao and Tsandi are in the most deprived 10 percent of datazones in terms of employment deprivation, while over half of the datazones in Ruacana are in the most deprived 10 percent in relation to education deprivation.

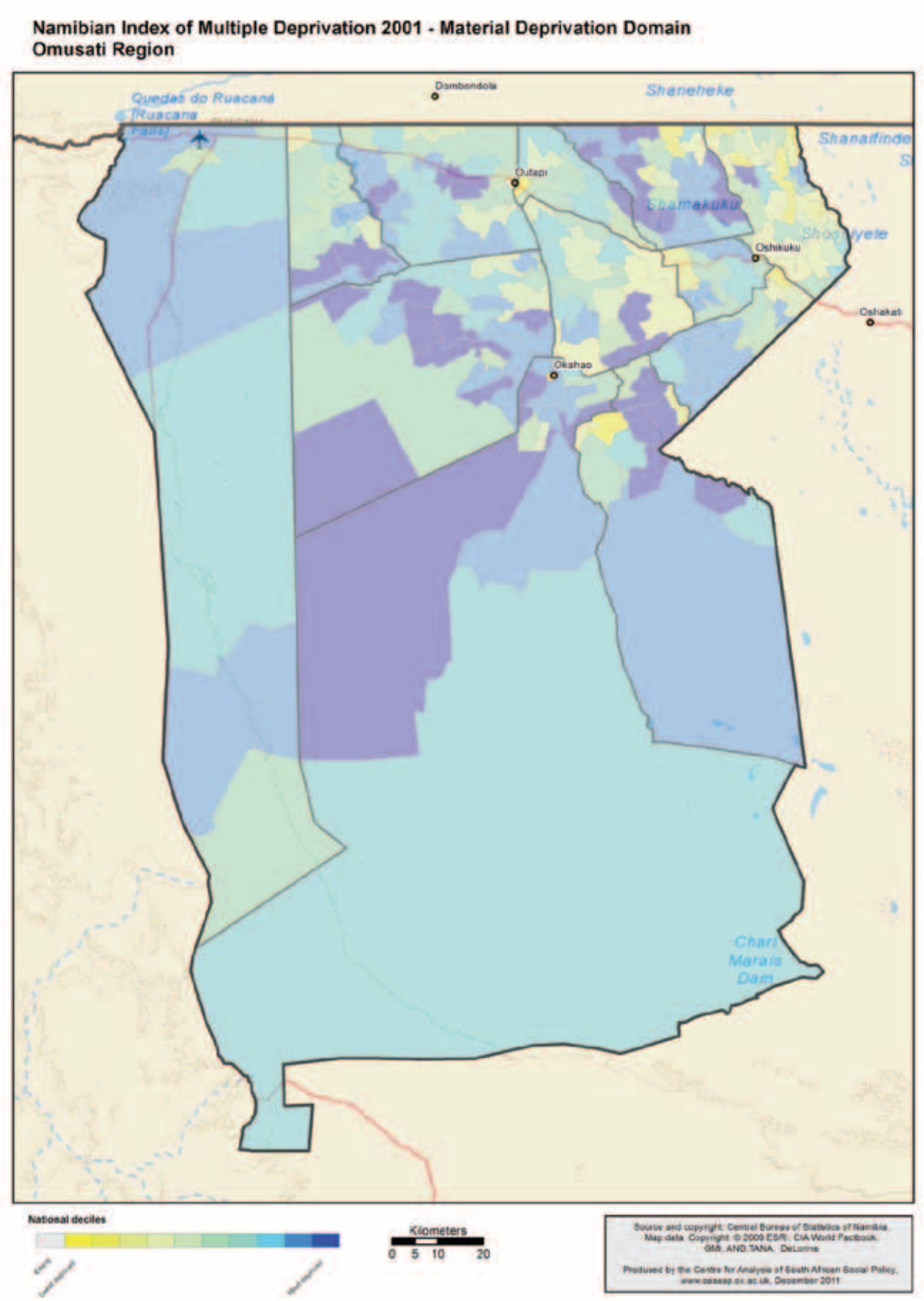
Table 4: Percentage of datazones in most deprived 10 percent of datazones in the Omusati Region

Constituency	Number of datazones	Material deprivation	Employment deprivation	Health deprivation	Education deprivation	Living env. deprivation
Anamulenge	13	7.7	0.0	0.0	0.0	7.7
Elim	13	0.0	0.0	7.7	0.0	0.0
Etayi	34	0.0	2.9	17.6	0.0	0.0
Ogongo	18	5.6	0.0	0.0	0.0	0.0
Okahao	17	11.8	41.2	17.6	29.4	11.8
Okalongo	29	17.2	0.0	20.7	3.4	24.1
Onesi	13	7.7	0.0	0.0	30.8	0.0
Oshikuku	9	0.0	11.1	0.0	0.0	0.0
Otamanzi	13	30.8	0.0	7.7	7.7	0.0
Outapi	29	10.3	0.0	13.8	6.9	34.5
Ruacana	13	0.0	7.7	0.0	53.8	7.7
Tsandi	28	17.9	42.9	3.6	7.1	3.6

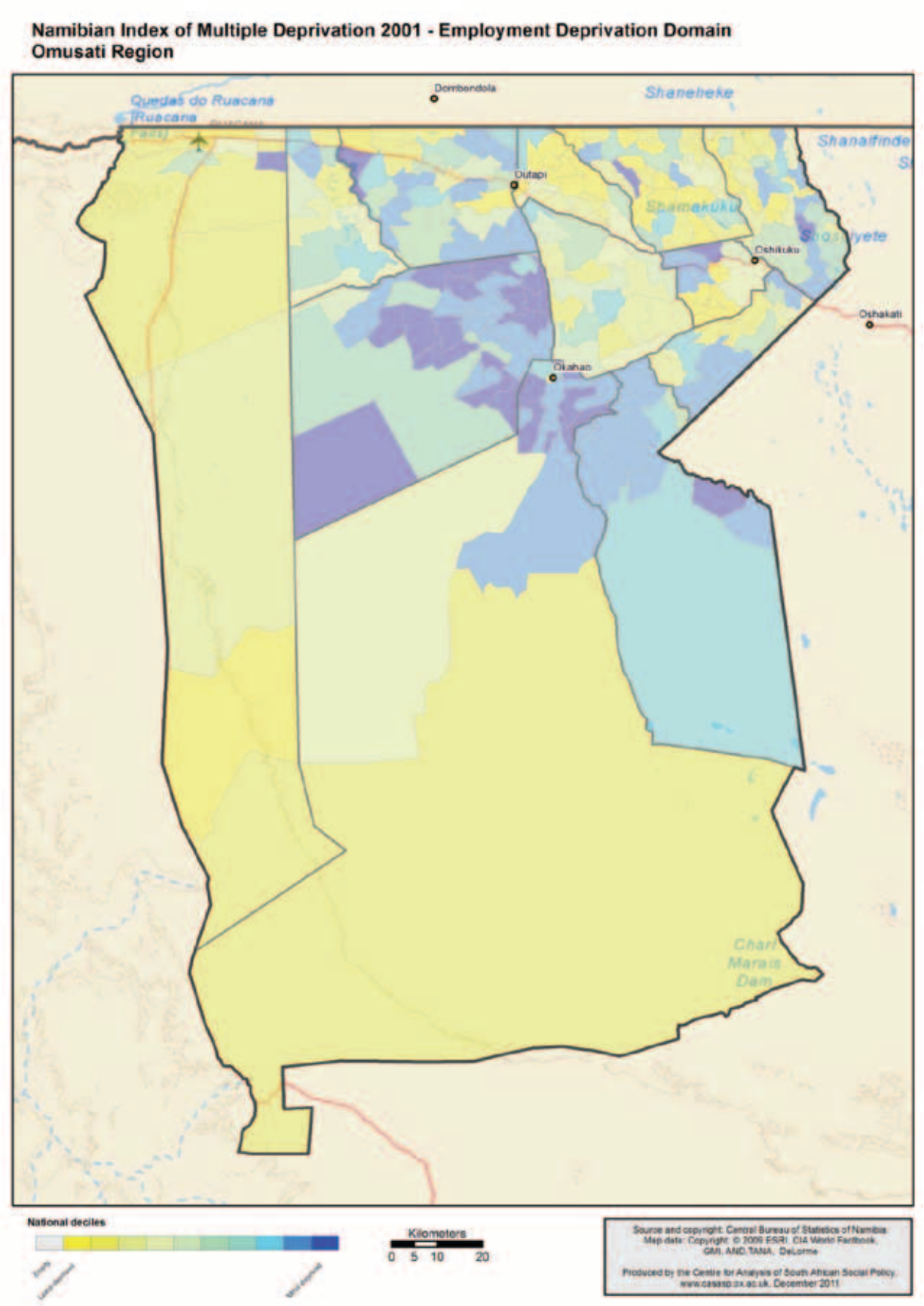
The following maps present each of the five domains at datazone level for Omusati region. As with Map 1 the lightest shading relates to the least deprived datazones. It is intended that these maps should provide accessible profiles of the domains of deprivation in the Omusati Region.

> “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”

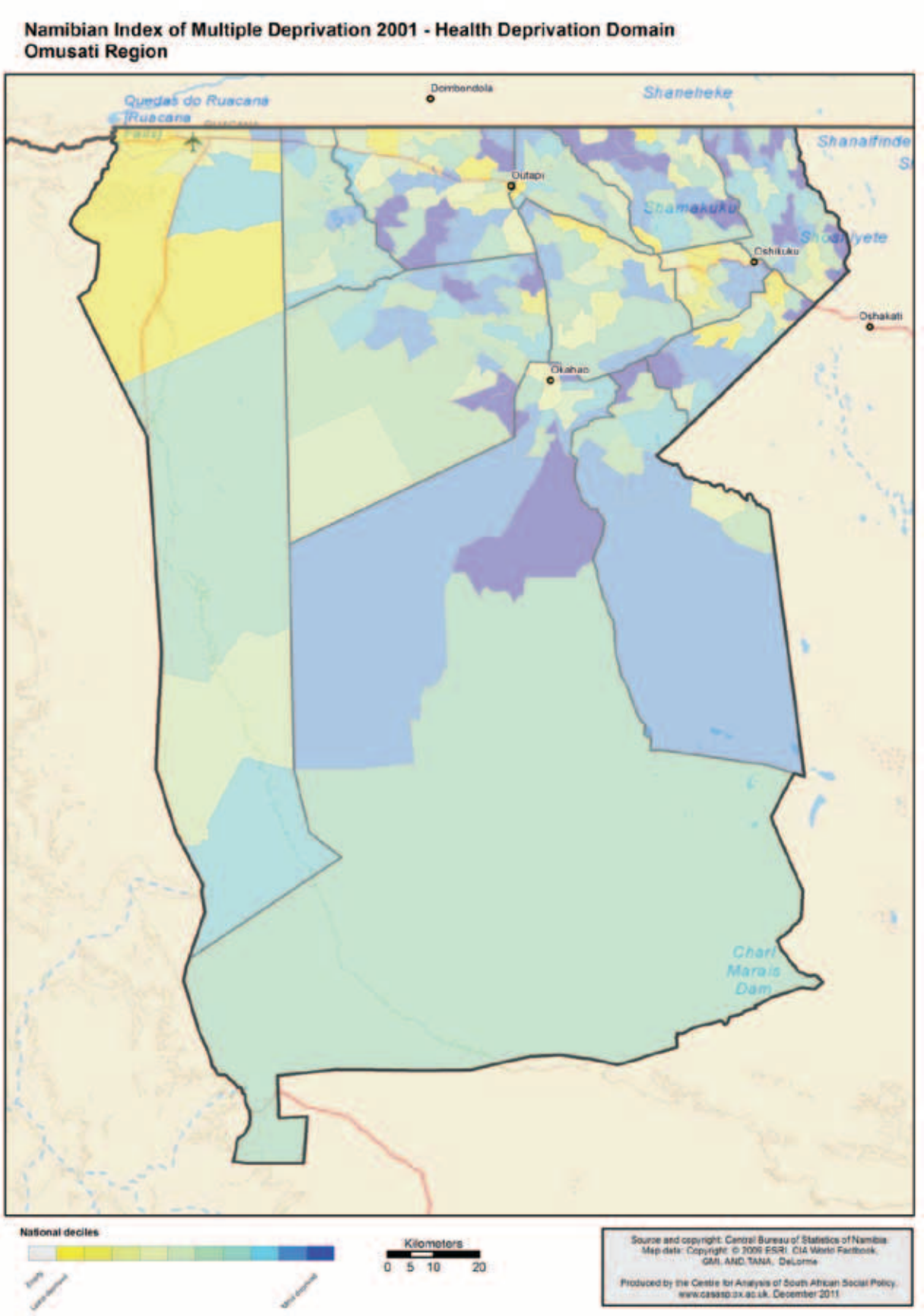
Map 2


Namibian Index of Multiple Deprivation 2001 - Material Deprivation Domain
Omusati Region
Dombondola
Shaneheke
Quedas do Ruacana
Ruacana
Falls
Outapi
Oshikuku
Oshakati
Okahao
Chari
Marais
Dam
National deciles
Kilometers
0 5 10 20
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.casasp.ox.ac.uk, December 2011

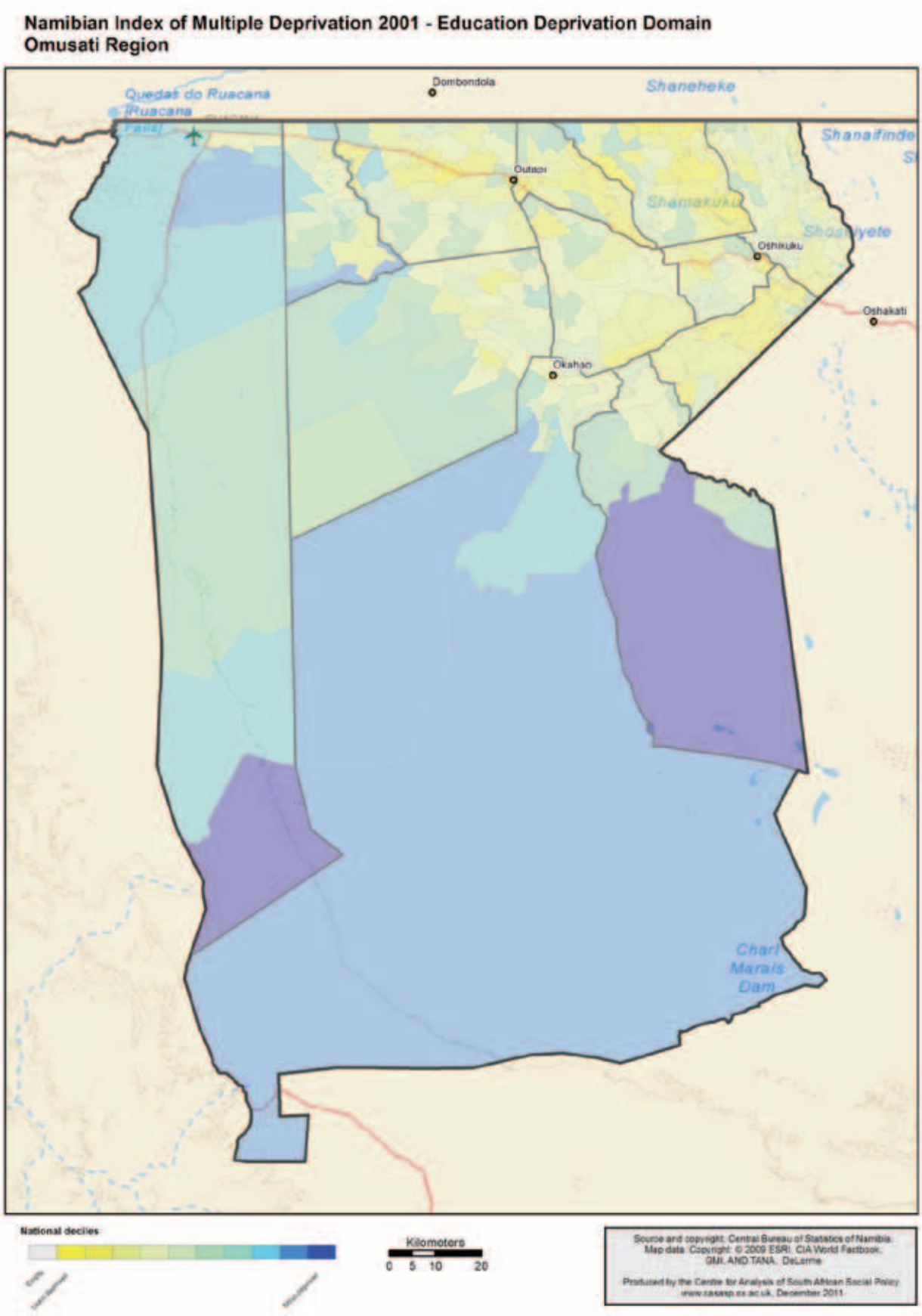
Map 3


Namibian Index of Multiple Deprivation 2001 - Employment Deprivation Domain
Omusati Region
Quedas do Ruacana
(Ruacana Falls)
Ruacana
Dombondola
Shaneheke
Outapi
Shamakuku
Oshikuku
Oshakati
Okahao
Chari
Maria
Dam
National deciles
Kilometers
0 5 10 20
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.casasp.ox.ac.uk, December 2011

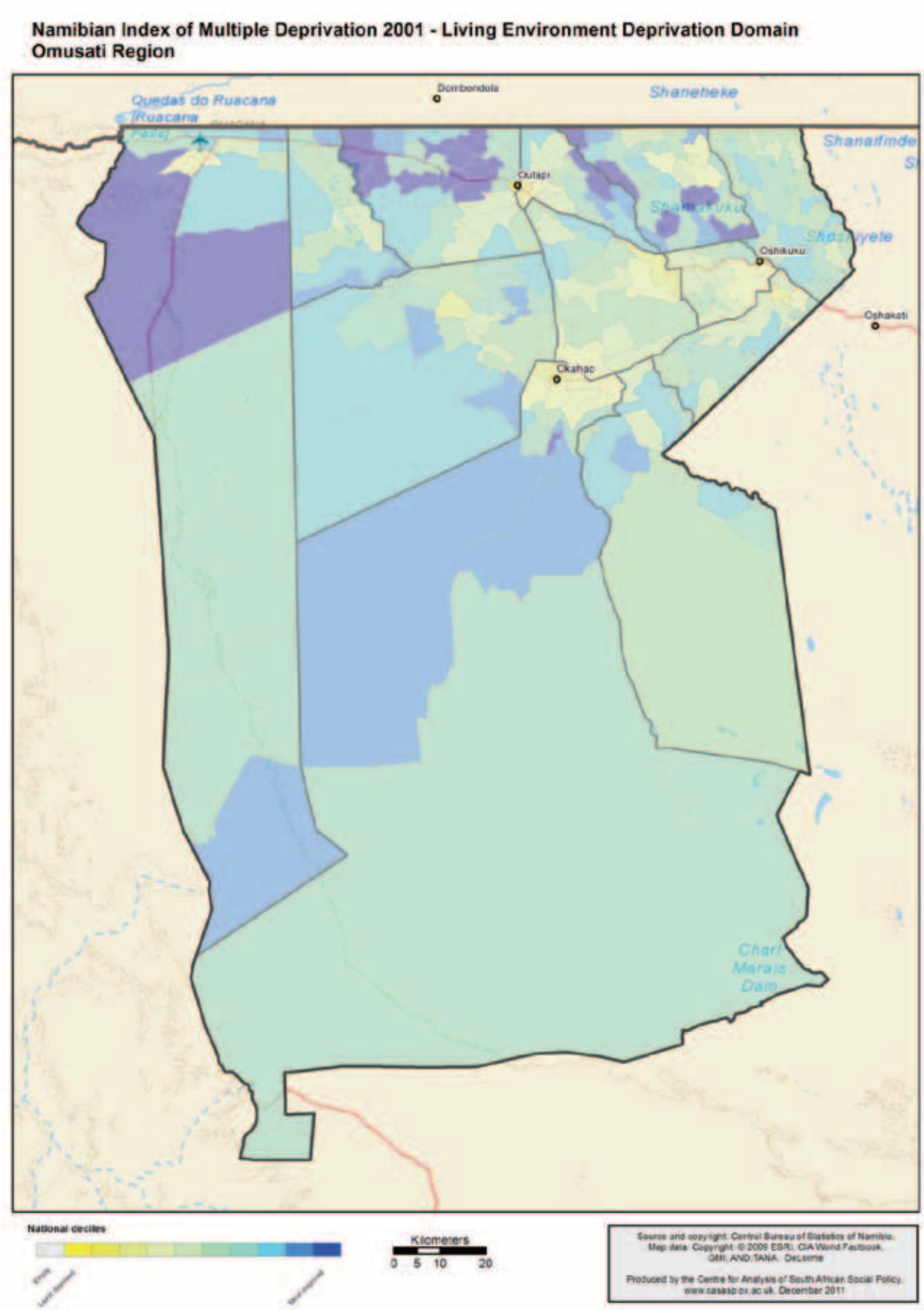
Map 4


Namibian Index of Multiple Deprivation 2001 - Health Deprivation Domain
Omusati Region
Quedas do Ruacana
Ruacana
Dombondola
Shaneheke
Shanafinde
Outapi
Shamakuku
Oshikuku
Oshakati
Okahao
Chari
Marais
Dam
National deciles
Kilometers
0 5 10 20
Source and copyright: Central Bureau of Statistics of Namibia
Map data: Copyright © 2006 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 - Education Deprivation Domain
Omusati Region
Quedas do Ruacana
Ruacana
Dombondola
Shaneheke
Outapi
Shamakuku
Oshikuku
Oshakati
Okahao
Shanaifinde
Charl Marais Dam
National deciles
Kilometers
0 5 10 20
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.casasp.ox.ac.uk, December 2011

Map 6


Namibian Index of Multiple Deprivation 2001 - Living Environment Deprivation Domain
Omusati Region
Quedas do Ruacana
Ruacana
Dombondola
Shaneheke
Shanafinde
Outapi
Oshikuku
Oshakati
Okahao
Charl Marais Dam
National deciles
Kilometers
0 5 10 20
Source and copyright: Central Bureau of Statistics of Namibia.
Map data: Copyright © 2009 ESRI, CIA World Factbook, GRI, AND,TANA, DeLorme
Produced by the Centre for Analysis of South African Social Policy.
www.casasp.ox.ac.uk. December 2011

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 Omusati 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

> “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”

such wide inter- and intra-constituency (datazone level) variations with respect to specific domains 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 Omusati region and even the least deprived areas, such as Oshikuku and Ogongo constituencies, contain pockets of deprivation. They are simply less deprived than other areas with higher levels of deprivation such as Okahao and Tsandi 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 Omusati 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 Omusati for the five domains and the overall NIMD. For all domains except health the score is calculated as a rate. So for example, 85.2% of the population in datazone 1189 in Anamulenge 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 Omusati 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
1189	Anamulenge	85.2	153	3.1	218	604.0	131	55.0	207	98.5	92	121.2	200
1190	Anamulenge	94.5	100	6.7	199	1176.7	36	53.9	211	99.9	26	200.0	94
1191	Anamulenge	95.9	87	17.1	161	678.9	117	67.0	62	97.6	119	172.7	134
1192	Anamulenge	82.0	160	18.3	154	617.0	130	54.5	208	99.0	71	135.9	180
1193	Anamulenge	99.2	18	31.8	127	408.6	172	60.5	166	99.9	31	208.9	87
1194	Anamulenge	95.5	92	53.3	76	962.3	68	68.9	39	99.7	44	257.8	33
1195	Anamulenge	63.9	188	1.2	227	479.5	158	61.2	155	91.4	197	85.2	219
1196	Anamulenge	91.9	121	1.5	225	822.0	84	69.9	32	94.6	179	160.2	150
1197	Anamulenge	94.2	103	4.3	212	586.0	135	58.0	194	99.9	4	180.7	123
1198	Anamulenge	87.1	143	1.7	224	700.9	111	61.8	146	96.4	153	126.0	193
1199	Anamulenge	5.2	229	3.7	216	63.9	224	51.9	218	73.2	222	24.0	229
1200	Anamulenge	82.7	159	24.2	139	784.7	92	54.2	210	86.0	209	124.0	197
1201	Anamulenge	88.7	139	14.7	167	524.5	146	59.6	182	94.4	183	116.8	206
1202	Elim	97.9	54	59.4	58	1140.1	40	60.3	168	98.7	81	253.8	36
1203	Elim	96.6	78	63.5	36	855.6	81	65.4	83	93.0	190	226.2	67
1204	Elim	97.7	59	59.5	56	388.4	176	50.6	219	99.7	41	210.7	84
1205	Elim	93.6	107	17.3	159	1264.3	26	59.5	183	95.8	166	175.7	132
1206	Elim	96.8	75	10.8	179	0.0	227	56.5	203	95.2	172	102.2	213
1207	Elim	90.4	133	6.5	201	452.5	167	54.3	209	91.7	195	100.8	214
1208	Elim	59.1	193	37.3	108	84.4	221	53.6	212	69.1	224	74.5	222
1209	Elim	28.5	220	59.0	59	88.0	216	61.2	156	90.0	203	108.2	210
1210	Elim	62.2	191	54.5	72	631.2	127	52.3	216	80.8	215	135.8	181
1211	Elim	72.7	173	18.3	155	2306.6	1	67.3	60	98.6	88	208.7	88
1212	Elim	97.7	58	17.7	156	202.0	208	59.9	176	90.2	202	120.4	201
1213	Elim	98.2	49	45.3	89	1018.0	54	58.8	188	98.0	111	225.3	68
1214	Elim	83.4	157	37.2	109	758.0	99	58.0	193	98.9	77	167.1	141
1215	Etayi	81.0	162	59.6	55	1357.0	23	63.8	121	96.4	154	222.0	73
1216	Etayi	22.8	224	22.7	144	1189.9	35	63.9	117	95.6	169	140.8	174
1217	Etayi	35.2	217	20.6	151	431.1	169	61.6	153	90.7	199	84.8	220
1218	Etayi	47.2	211	37.2	111	973.5	65	64.8	94	97.6	118	163.5	145

1219	Etayi	27.2	222	8.9	189	388.2	177	59.7	179	99.7	43	100.5	216
1220	Etayi	78.2	168	5.5	206	755.5	101	68.3	54	97.2	133	144.1	169
1221	Etayi	98.7	30	12.6	173	787.8	89	55.2	204	99.6	47	192.7	108
1222	Etayi	94.7	98	63.1	43	434.8	168	62.0	140	98.6	90	201.7	91
1223	Etayi	90.2	135	8.1	193	768.4	97	61.0	159	96.7	144	137.7	178
1224	Etayi	31.4	218	53.0	77	784.7	91	62.9	131	98.6	87	169.7	137
1225	Etayi	77.5	169	37.2	110	1126.6	44	64.1	108	97.8	114	186.0	113
1226	Etayi	98.3	45	55.1	70	1732.2	13	66.3	69	96.6	147	275.9	20
1227	Etayi	51.0	207	63.4	38	776.3	96	63.8	118	99.0	73	195.1	103
1228	Etayi	28.4	221	12.9	172	1399.5	19	61.0	160	97.3	132	144.5	167
1229	Etayi	49.4	209	2.2	223	883.3	79	64.8	96	98.1	106	128.9	189
1230	Etayi	19.1	225	14.5	168	1198.1	34	68.4	49	97.0	138	152.6	158
1231	Etayi	81.7	161	13.8	170	638.6	123	64.3	103	99.3	54	149.6	160
1232	Etayi	51.1	205	34.5	116	717.8	108	65.4	82	96.6	148	142.6	170
1233	Etayi	49.7	208	35.9	112	1008.4	57	65.8	76	98.9	74	178.2	128
1234	Etayi	90.7	129	34.1	118	1264.2	27	60.5	167	99.7	42	214.5	82
1235	Etayi	67.9	180	9.4	185	2201.1	2	65.9	75	97.3	130	185.0	114
1236	Etayi	67.6	181	79.0	11	1063.1	48	65.7	78	96.2	159	229.8	61
1237	Etayi	46.7	213	38.4	105	634.0	126	60.1	173	96.0	163	127.1	192
1238	Etayi	58.8	194	33.5	119	509.1	150	64.1	107	99.2	60	145.6	164
1239	Etayi	48.3	210	62.7	44	249.5	203	60.7	164	98.1	109	146.4	163
1240	Etayi	57.3	199	31.9	126	572.9	137	61.9	142	99.1	64	141.9	172
1241	Etayi	90.1	136	66.1	30	297.2	195	60.9	162	97.7	116	178.4	126
1242	Etayi	65.9	185	41.1	100	479.7	157	64.2	105	94.3	184	134.0	182
1243	Etayi	93.3	109	44.0	91	1918.5	8	63.9	116	97.4	127	237.5	55
1244	Etayi	66.0	183	14.4	169	1451.4	18	63.2	128	97.3	128	166.9	142
1245	Etayi	57.6	198	4.4	211	962.1	69	62.4	134	95.0	173	122.2	198
1246	Etayi	71.0	176	7.8	195	1260.4	28	63.0	130	94.5	181	147.1	161
1247	Etayi	58.1	196	5.1	208	1872.3	9	60.7	165	97.3	129	161.9	147
1248	Etayi	89.7	137	7.2	198	725.1	107	61.8	148	95.3	171	130.2	188
1249	Ogongo	58.3	195	16.1	163	1125.7	45	63.8	119	85.2	211	133.2	183
1250	Ogongo	87.8	142	31.4	129	638.5	124	63.0	129	90.5	200	140.3	175

1251	Ogongo	68.9	179	7.9	194	422.6	171	61.8	150	97.0	137	100.6	215
1252	Ogongo	94.4	101	10.1	183	507.1	151	66.8	65	96.6	146	145.4	165
1253	Ogongo	55.8	202	28.5	132	701.9	110	66.1	72	83.0	214	124.4	196
1254	Ogongo	97.9	55	42.3	95	299.6	194	63.2	127	95.6	170	168.1	138
1255	Ogongo	63.8	190	46.2	88	257.7	202	62.2	136	96.4	152	127.3	191
1256	Ogongo	57.9	197	11.8	175	595.2	133	61.7	151	96.8	142	107.6	211
1257	Ogongo	98.9	27	17.3	160	679.3	116	61.0	161	96.6	145	176.4	131
1258	Ogongo	83.5	156	9.2	186	623.5	128	59.6	181	94.5	182	113.3	209
1259	Ogongo	95.3	94	25.2	136	573.5	136	56.5	202	94.9	174	141.7	173
1260	Ogongo	99.2	20	23.4	143	1053.9	49	58.4	192	92.3	192	197.0	98
1261	Ogongo	70.3	177	50.8	82	974.2	64	67.6	59	95.8	165	194.9	104
1262	Ogongo	94.0	105	13.5	171	959.8	71	63.4	125	99.0	68	181.7	118
1263	Ogongo	71.9	175	34.5	115	598.4	132	66.9	63	98.2	105	157.6	154
1264	Ogongo	90.7	128	33.1	122	87.1	217	65.3	85	99.8	39	153.5	157
1265	Ogongo	92.8	113	22.5	146	263.0	200	60.7	163	97.3	131	125.2	194
1266	Ogongo	51.3	204	24.6	138	188.9	211	62.1	138	76.9	220	73.2	223
1267	Okahao	97.4	67	59.8	54	326.2	189	64.2	106	79.9	217	177.8	129
1268	Okahao	99.9	3	63.8	35	1992.8	7	72.4	14	99.3	53	360.3	1
1269	Okahao	80.8	163	80.5	10	1042.2	52	77.2	4	98.5	94	293.1	13
1270	Okahao	96.3	81	72.3	20	1203.8	33	66.5	67	96.9	139	267.3	27
1271	Okahao	96.5	79	61.8	47	884.6	78	69.4	38	96.5	151	245.9	44
1272	Okahao	98.7	32	88.5	1	978.1	63	65.9	74	98.7	83	299.8	8
1273	Okahao	97.5	60	64.8	34	1790.6	12	71.8	18	99.9	18	345.7	2
1274	Okahao	98.3	48	72.9	19	386.8	178	65.4	84	88.9	205	214.5	81
1275	Okahao	99.9	2	85.1	3	735.0	106	68.3	52	99.9	14	345.6	3
1276	Okahao	64.8	186	63.5	37	546.9	144	65.2	87	98.0	112	183.2	116
1277	Okahao	98.5	37	23.6	141	1223.5	31	77.9	3	99.9	23	305.9	7
1278	Okahao	92.8	112	8.5	190	682.9	115	75.3	7	98.2	100	192.9	105
1279	Okahao	91.2	124	59.5	57	899.3	77	64.7	97	89.0	204	201.5	92
1280	Okahao	95.4	93	80.7	9	1800.3	11	65.3	86	77.0	219	270.4	23
1281	Okahao	97.5	62	51.6	80	269.0	199	64.5	100	65.1	225	160.9	148

1282	Okahao	98.8	29	82.3	6	739.9	105	71.3	24	85.1	213	272.1	22
1283	Okahao	8.1	227	16.4	162	304.2	193	58.5	190	51.8	226	47.0	227
1284	Okalongo	51.0	206	7.4	196	339.3	186	58.8	187	87.6	207	67.0	225
1285	Okalongo	95.2	96	8.3	191	928.2	75	25.5	228	99.8	32	178.3	127
1286	Okalongo	98.6	34	15.6	164	379.9	180	60.2	170	98.2	103	158.1	153
1287	Okalongo	97.8	56	21.5	147	698.5	113	47.0	221	86.6	208	146.6	162
1288	Okalongo	97.5	61	8.3	192	283.0	198	59.9	177	99.9	21	166.7	143
1289	Okalongo	98.4	39	58.7	60	193.9	209	35.2	226	93.8	186	171.7	135
1290	Okalongo	69.9	178	4.8	210	960.9	70	58.0	195	99.0	69	142.0	171
1291	Okalongo	42.9	215	10.0	184	1030.2	53	64.9	93	98.5	93	144.2	168
1292	Okalongo	85.8	150	34.9	113	1637.0	15	62.1	139	85.1	212	186.8	111
1293	Okalongo	99.1	22	1.1	228	2038.9	5	55.0	206	99.3	55	233.6	58
1294	Okalongo	99.0	26	66.6	28	1143.9	39	68.3	55	98.7	82	296.0	9
1295	Okalongo	96.7	77	17.5	158	364.8	183	25.8	227	99.9	16	167.5	139
1296	Okalongo	99.4	16	5.5	207	978.3	62	66.7	66	98.4	97	217.3	77
1297	Okalongo	82.7	158	3.4	217	563.3	141	61.1	157	97.6	121	117.4	205
1298	Okalongo	99.0	25	57.3	63	1328.9	24	61.8	149	99.4	50	283.3	17
1299	Okalongo	96.8	74	1.4	226	1134.6	43	56.8	201	99.9	3	227.5	66
1300	Okalongo	95.9	85	9.2	187	741.0	104	57.5	199	99.9	7	195.9	101
1301	Okalongo	99.2	21	38.2	106	1839.7	10	42.1	223	96.4	155	243.8	46
1302	Okalongo	98.3	46	2.5	222	477.1	160	59.4	184	99.9	30	173.6	133
1303	Okalongo	99.0	24	46.4	87	909.8	76	62.0	141	99.9	17	269.9	24
1304	Okalongo	96.4	80	10.3	182	839.1	82	68.4	48	98.5	96	190.4	110
1305	Okalongo	89.4	138	42.3	94	86.6	218	65.7	77	99.9	22	180.7	124
1306	Okalongo	97.0	71	0.9	229	1997.8	6	72.8	11	99.9	12	284.0	16
1307	Okalongo	98.1	53	41.9	97	1362.1	22	69.8	34	97.6	117	261.5	32
1308	Okalongo	99.8	8	3.0	219	2051.4	3	58.5	191	91.3	198	219.8	74
1309	Okalongo	99.8	7	5.8	203	28.2	225	16.2	229	91.8	194	121.8	199
1310	Okalongo	75.1	171	2.6	221	790.0	87	60.1	172	98.6	86	131.2	187
1311	Okalongo	29.3	219	42.1	96	453.4	166	58.6	189	96.5	150	115.1	207
1312	Okalongo	91.4	123	12.1	174	478.4	159	52.5	215	71.9	223	98.4	217

1313	Onesi	85.9	148	41.2	99	462.5	163	68.4	50	96.8	140	167.5	140
1314	Onesi	97.5	65	18.6	153	1204.0	32	66.5	68	91.8	193	198.1	96
1315	Onesi	72.3	174	23.9	140	651.0	120	60.2	169	93.0	189	118.6	203
1316	Onesi	96.2	83	20.9	150	780.6	93	76.7	6	99.9	24	253.7	37
1317	Onesi	94.0	104	10.4	181	390.5	175	72.7	12	99.8	34	186.3	112
1318	Onesi	98.5	36	49.6	84	698.6	112	61.1	158	99.2	61	228.5	64
1319	Onesi	99.6	12	38.6	103	373.8	182	72.7	13	99.8	36	250.6	41
1320	Onesi	56.0	201	44.5	90	1137.6	41	64.0	113	98.8	80	192.7	107
1321	Onesi	95.9	86	43.0	93	565.9	139	61.9	143	96.8	141	177.4	130
1322	Onesi	90.3	134	57.1	64	744.6	102	65.5	79	95.9	164	198.0	97
1323	Onesi	86.7	144	24.6	137	520.5	148	71.8	19	99.1	65	181.3	120
1324	Onesi	80.5	164	10.5	180	532.8	145	62.1	137	97.2	134	118.1	204
1325	Onesi	78.7	167	17.7	157	741.8	103	64.9	92	99.5	48	160.7	149
1326	Oshikuku	97.1	70	4.0	214	168.9	213	65.1	90	97.4	125	128.3	190
1327	Oshikuku	23.3	223	22.6	145	310.2	191	41.8	224	9.8	229	45.0	228
1328	Oshikuku	46.6	214	57.6	62	358.7	184	61.7	152	93.2	188	131.6	186
1329	Oshikuku	97.5	63	75.7	16	0.0	227	61.8	147	96.3	157	191.8	109
1330	Oshikuku	98.1	51	28.8	131	184.0	212	68.7	42	98.7	84	178.8	125
1331	Oshikuku	85.5	151	23.5	142	955.0	72	57.7	198	80.4	216	136.1	179
1332	Oshikuku	93.5	108	21.4	148	972.6	66	64.5	99	87.9	206	163.5	146
1333	Oshikuku	90.4	132	55.9	67	27.5	226	52.6	214	93.5	187	132.6	184
1334	Oshikuku	91.0	126	2.9	220	555.6	143	66.2	71	91.5	196	124.4	195
1335	Outapi	74.9	172	32.9	123	483.1	156	68.4	51	97.5	123	152.2	159
1336	Outapi	92.1	119	27.6	133	86.4	219	57.8	196	99.9	15	156.4	155
1337	Outapi	99.8	6	15.0	166	1044.5	51	41.0	225	99.9	10	252.0	39
1338	Outapi	97.0	72	32.1	125	214.8	206	48.9	220	98.5	95	145.1	166
1339	Outapi	94.3	102	61.8	46	1013.5	55	57.5	200	99.9	9	268.7	25
1340	Outapi	98.4	40	50.9	81	287.3	197	71.7	20	99.9	11	265.5	29
1341	Outapi	96.7	76	66.8	27	760.0	98	52.2	217	99.9	8	263.9	31
1342	Outapi	91.9	120	11.8	176	73.7	222	59.8	178	99.9	20	139.4	177
1343	Outapi	99.7	11	32.6	124	462.4	164	65.1	91	99.4	51	215.3	80

1344	Outapi	93.2	110	50.6	83	383.0	179	60.2	171	99.2	62	181.4	119
1345	Outapi	99.5	14	61.0	50	295.4	196	61.8	145	99.9	6	264.9	30
1346	Outapi	92.5	116	33.5	120	1394.9	20	63.9	114	97.5	122	209.2	85
1347	Outapi	91.1	125	3.8	215	259.3	201	59.7	180	94.7	176	96.3	218
1348	Outapi	67.6	182	6.7	200	212.8	207	65.2	89	99.0	70	107.0	212
1349	Outapi	65.9	184	25.4	135	1137.3	42	66.3	70	92.4	191	160.1	151
1350	Outapi	92.4	117	33.3	121	685.3	114	68.8	41	99.3	56	200.2	93
1351	Outapi	96.8	73	55.3	68	1386.0	21	65.5	80	99.6	45	274.2	21
1352	Outapi	95.8	90	34.5	114	1605.5	16	64.1	109	98.2	104	229.0	62
1353	Outapi	86.5	147	7.4	197	401.9	173	59.2	185	98.2	102	114.2	208
1354	Outapi	96.3	82	63.4	39	1173.9	37	67.1	61	94.2	185	250.0	42
1355	Outapi	98.1	50	61.7	48	708.4	109	63.8	120	99.0	72	242.2	48
1356	Outapi	95.8	91	61.1	49	356.5	185	60.0	175	96.2	160	181.1	121
1357	Outapi	78.9	166	4.9	209	458.0	165	71.5	21	99.9	13	181.0	122
1358	Outapi	84.6	154	39.6	102	591.1	134	63.7	123	99.9	1	217.4	76
1359	Outapi	91.0	127	65.9	32	497.0	153	60.1	174	99.9	5	238.9	53
1360	Outapi	5.6	228	27.2	134	332.1	187	61.9	144	77.2	218	69.0	224
1361	Outapi	47.0	212	31.4	128	143.9	214	46.3	222	51.8	227	58.7	226
1362	Outapi	90.6	131	52.5	78	1110.4	46	68.5	47	98.6	89	239.0	52
1363	Outapi	86.6	145	54.6	71	1671.1	14	63.7	122	98.4	99	240.9	50
1364	Ruacana	98.3	44	11.0	178	85.9	220	73.7	8	99.9	2	227.6	65
1365	Ruacana	80.0	165	34.3	117	192.1	210	73.4	9	85.5	210	139.5	176
1366	Ruacana	95.3	95	15.1	165	654.2	119	71.3	23	98.1	107	184.9	115
1367	Ruacana	98.4	41	4.1	213	400.1	174	72.0	15	98.1	108	182.1	117
1368	Ruacana	87.8	141	5.8	204	779.4	94	82.8	1	99.9	29	241.8	49
1369	Ruacana	97.4	66	9.0	188	0.0	227	71.9	16	98.2	101	155.6	156
1370	Ruacana	95.2	97	11.7	177	825.7	83	76.8	5	98.9	75	222.1	72
1371	Ruacana	98.1	52	5.6	205	221.5	205	69.5	36	98.9	76	165.9	144
1372	Ruacana	86.5	146	19.6	152	983.6	61	70.9	26	99.9	25	223.3	71
1373	Ruacana	92.9	111	5.8	202	248.6	204	64.8	95	99.1	66	132.4	185
1374	Ruacana	52.2	203	40.6	101	307.6	192	55.2	205	15.3	228	80.3	221
1375	Ruacana	93.8	106	21.4	149	326.1	190	62.3	135	90.4	201	119.3	202
1376	Ruacana	92.6	114	69.2	22	64.9	223	72.9	10	97.1	135	209.2	86

1377	Tsandi	63.8	189	82.1	7	777.2	95	62.7	133	98.4	98	215.8	79
1378	Tsandi	98.3	43	47.4	86	1095.4	47	68.7	43	99.8	37	276.0	19
1379	Tsandi	90.6	130	84.7	4	2050.4	4	64.0	111	98.9	78	294.4	11
1380	Tsandi	62.0	192	81.8	8	90.8	215	69.4	37	98.8	79	196.7	99
1381	Tsandi	64.0	187	75.5	17	617.3	129	63.9	115	99.9	27	224.8	69
1382	Tsandi	97.8	57	53.9	74	1046.9	50	64.4	101	97.6	120	240.3	51
1383	Tsandi	98.6	35	69.0	23	564.7	140	68.6	46	96.4	156	247.3	43
1384	Tsandi	99.1	23	78.4	13	953.1	73	71.4	22	99.9	28	334.7	4
1385	Tsandi	97.3	69	75.7	15	985.0	60	68.6	44	98.5	91	281.4	18
1386	Tsandi	96.0	84	56.5	65	787.9	88	71.9	17	98.6	85	251.9	40
1387	Tsandi	95.9	88	60.4	52	570.1	138	61.2	154	94.6	178	192.7	106
1388	Tsandi	98.8	28	38.5	104	647.9	121	64.0	112	94.5	180	195.9	100
1389	Tsandi	99.9	4	74.4	18	522.9	147	63.7	124	95.8	167	253.9	35
1390	Tsandi	98.4	38	55.2	69	755.7	100	65.5	81	97.0	136	231.2	59
1391	Tsandi	98.3	47	59.9	53	468.7	161	64.4	102	97.4	126	216.1	78
1392	Tsandi	75.2	170	71.1	21	962.7	67	52.7	213	96.6	149	202.9	90
1393	Tsandi	98.4	42	56.4	66	374.5	181	63.4	126	99.2	59	217.7	75
1394	Tsandi	85.8	149	43.7	92	464.5	162	71.2	25	99.2	63	198.4	95
1395	Tsandi	99.6	13	85.7	2	509.5	149	67.7	56	99.3	57	292.2	15
1396	Tsandi	99.8	9	82.9	5	425.6	170	68.9	40	99.6	46	294.7	10
1397	Tsandi	99.2	19	68.4	24	1320.6	25	69.6	35	99.8	35	330.4	5
1398	Tsandi	97.5	64	76.4	14	1251.7	29	67.7	57	99.9	19	324.8	6
1399	Tsandi	98.7	31	30.1	130	655.8	118	70.5	29	99.8	37	237.4	56
1400	Tsandi	99.9	5	41.4	98	556.8	142	68.6	45	97.9	113	238.1	54
1401	Tsandi	85.3	152	60.6	51	787.3	90	59.2	186	75.8	221	170.8	136
1402	Tsandi	91.4	122	68.4	25	1249.0	30	65.2	88	96.3	158	245.4	45
1403	Tsandi	92.4	118	78.5	12	999.6	58	64.5	98	95.7	168	242.9	47
1404	Tsandi	94.7	99	53.9	73	1013.1	56	57.7	197	97.8	115	214.4	83
1405	Otamanzi	88.4	140	63.1	42	929.6	74	69.9	33	99.2	58	253.1	38
1406	Otamanzi	92.5	115	66.3	29	496.9	154	67.6	58	99.8	33	236.2	57
1407	Otamanzi	99.7	10	65.6	33	985.4	59	70.2	31	96.8	143	292.6	14

1408	Otamanzi	97.3	68	51.8	79	1155.4	38	79.9	2	96.1	161	293.9	12
1409	Otamanzi	99.5	15	67.7	26	327.8	188	68.3	53	99.8	40	266.4	28
1410	Otamanzi	95.8	89	63.2	41	505.0	152	70.4	30	97.5	124	228.9	63
1411	Otamanzi	83.6	155	53.7	75	1460.2	17	66.0	73	94.9	175	223.5	70
1412	Otamanzi	39.7	216	37.4	107	806.8	85	66.9	64	98.0	110	159.5	152
1413	Otamanzi	99.3	17	48.4	85	880.7	80	64.1	110	99.1	67	254.0	34
1414	Otamanzi	99.9	1	65.9	31	492.3	155	62.8	132	99.5	49	268.1	26
1415	Otamanzi	56.6	200	62.6	45	635.4	125	70.7	27	96.1	162	195.2	102
1416	Otamanzi	12.5	226	63.4	40	647.6	122	70.7	28	99.4	52	203.1	89
1417	Otamanzi	98.6	33	57.9	61	805.9	86	64.2	104	94.7	177	230.7	60

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