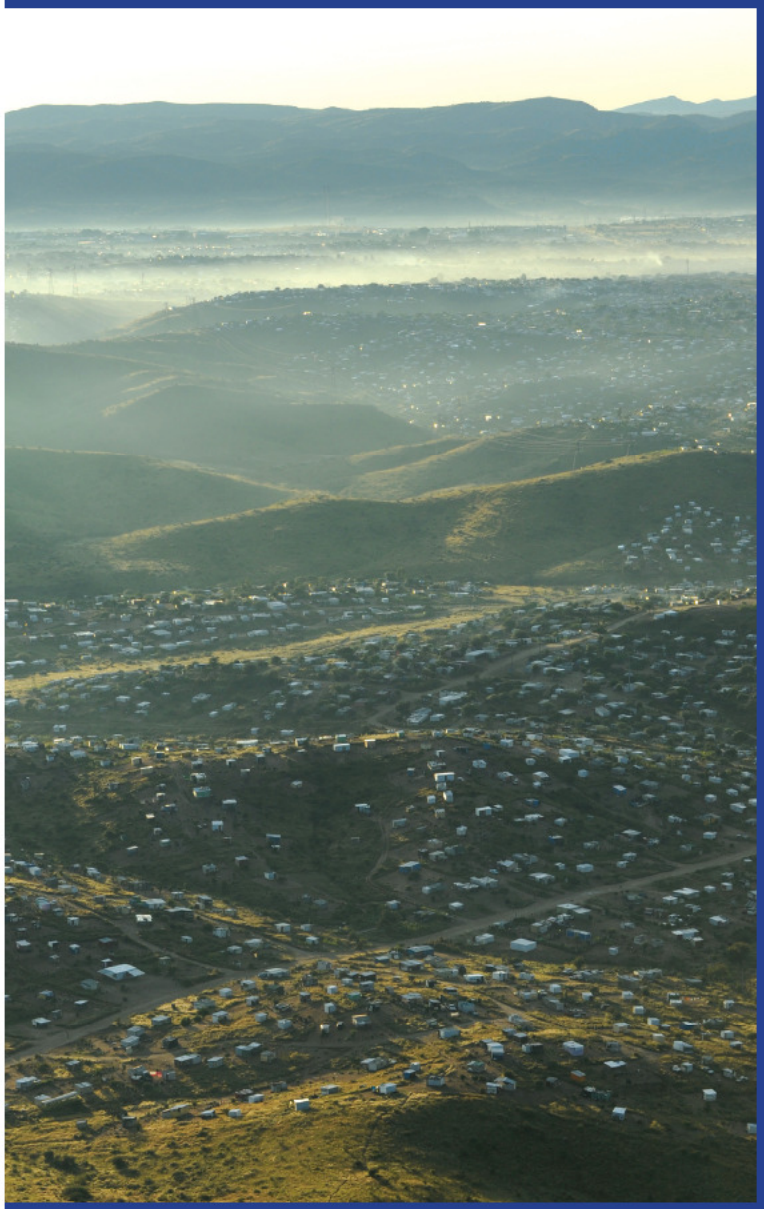
# An atlas of poverty in Namibia



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*Cover photos*
*Left: Sprawling informal settlement on the outskirts of Windhoek (Helge Denker)*
*Top: Children in a rural area in north-central Namibia (RAISON)*
*Bottom: A shack in the DRC informal settlement, Swakopmund (Ndapewa Nakanyete)*

# Foreword

Over the past decade many countries in the developing world conducted poverty mapping or have produced poverty atlases. There is a reason for that. Income and wealth distributions are important for evaluating and monitoring development, including national development plans and the Millennium Development Goals, for example. Wealth distributions are determinants of specific socio-economic outcomes, such as health, education, crime and related phenomena of inequality. Gaining knowledge of the spatial distribution of welfare is important to focus development interventions to those areas where poverty or inequality is largest.

This atlas has used several ways of presenting poverty. One way has been to combine elements of the Income and Household Expenditure Surveys, conducted by the Central Bureau of Statistics (CBS) every five years, with the more extensive coverage of Population and Housing Censuses, held every ten years. This combination allows one to estimate expenditure for smaller areas than possible with survey data alone, without compromising the anonymity of the respondents. With the advances in the information society it is becoming more and more important to disseminate information at a more detailed level.

Since 2001 the CBS has been developing its capacity to deal with spatial aspects of statistics through training staff and establishing a Geographical Information System. This atlas builds on this experience and uses data from the 2001 Population and Housing Census and the 2003-2004 Household Income and Expenditure Survey, besides a number of welfare indicators that are not immediately related to income and expenditure.

The result is impressive although this atlas does not pretend to present a comprehensive analysis of poverty in Namibia. Quite a number of subjects are not touched at all. As such it is rather an introduction to small area welfare or poverty mapping in Namibia, and the first of its kind in our country. The recently finalized 2009-2010 Household Income and Expenditure Survey and the upcoming 2011 Population and Housing Census will provide a new dataset that will allow us and our stakeholders to monitor the changes since the previous rounds of surveys and censuses in a quantitative way. In this sense, the present work is complementary to the more qualitative participatory poverty assessments that were held a few years ago.

I hope that this atlas will help to raise the awareness of the importance of the above types of surveys and censuses that are periodically held by us and various ministries in the country, and not least the upcoming 2011 Population and Housing Census.

Let me take this opportunity to thank the Government of the Grand Duchy of Luxembourg who jointly with the Government of Namibia funded and implemented this project.

In the same manner, many thanks go to the households and other respondents who provided the information and to the men and women staff who collected the data.

F.S.M. Hangula,
Government Statistician

# Maps and graphs

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ANGOLA
ZAMBIA
BOTSWANA
SOUTH AFRICA
ATLANTIC OCEAN
Eenhana
Outapi
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Opuwo
Oshakati
Ondangwa
Omusati
Oshana
Rundu
Katima Mulilo
Caprivi
Kavango
Divundu
Oshikoto
Tsumeb
Kunene
Otavi
Grootfontein
Tsumkwe
Outjo
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Khorixas
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Henties Bay
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Aranos
Mariental
Hardap
Keetmanshoop
Lüderitz
Aus
Karas
Karasburg
Oranjemund
Regional border
0
100
kilometres

# 1 Introduction

Poverty and welfare are important concerns, especially in developing nations such as Namibia. Large numbers and high proportions of the Namibian population are poor. Many are extremely poor. Differences in income and expenditure between the wealthy and poor are often several orders of magnitude.

Many of the broad parameters associated with welfare are well established in Namibia. For instance, people in rural areas are generally much poorer than in towns, and levels of poverty in the northern regions of the country are higher than elsewhere. Similarly, residents of informal urban settlements are poorer than those who live in formal suburban housing.

These are some of the obvious geographic or spatial trends to welfare in Namibia, and each is linked to social, economic, political or historical circumstances in different parts of the country.

The maps and other material presented here provide more detailed information on the geography of poverty. This is done with several goals in mind. Firstly, the maps should allow programmes that seek to improve welfare to identify areas where extreme levels of poverty occur and/or where many poor people live. Secondly, the maps provide new or different perspectives on welfare, many of which are not familiar to most Namibians. In this respect, the maps illustrate how aspects of poverty vary within regions rather than simply depicting well-known differences between regions.

Finally, the maps show examples of applications and information that can be derived from data collected during the 2001 Population & Housing Census and the 2004 Household Income & Expenditure Survey. While these data were collected some time ago, there is no evidence or particular reason to assume that the major trends and differences have altered significantly since then. It is also hoped that this publication will encourage new analyses to be done once the results on the 2009 Household Income & Expenditure Survey and 2011 Population & Housing Census are available.

The booklet has several sections. Following the first one on methods, the next section presents estimates of median expenditure per person across the country. Thereafter, a series of maps show estimates of the number of households in three wealth groups, called terciles. The first tercile group is the poorest third of all families while the third tercile is the wealthiest third; the second tercile consists of households that fall between the poorest and richest.

Further sections provide other indices of welfare derived from the 2001 Population & Housing Census data. These are the number of households which:

- lack access to water which is considered safe for consumption
- have walls made from poles, grass and mud
- use wood for cooking
- lack sanitation and thus use the bush as a toilet
- have no household member with more than a primary school education

Finally, some additional geographical aspects to welfare are provided in a series of maps showing measures of aridity, land values and tenure, soil fertility and access to markets.

All data on which the maps are based are available for further analysis and investigation on the distribution of poverty, particularly where the scale of the maps did not allow for sufficient detail to be shown in this publication.

Finally, we recommend that this booklet be read in conjunction with other publications on Namibian poverty, particularly those that explore qualitative aspects as reported from the participatory poverty analyses carried out under the auspices of the National Planning Commission. References to these other reports are provided in Appendix 1.

# 2 Methods

Most of the analyses to map out levels of poverty were done using a computer programme named POVMAP.[1] Details of the statistical methods and variables employed are given in Appendix 2, while the procedures that were used are summarised below:

The 2004 Household Income & Expenditure Survey collected information from about 9,800 households that were randomly selected from different areas of the country.[2] The total annual expenditure of each household was estimated and a range of socio-economic information was also recorded for each home. This included information on the age and gender of the head of the household, materials and fuels used in the house, the levels of education and employment of family members, and access to radios, televisions and computers.

Using POVMAP, statistical relationships called multivariate regressions could be derived between household expenditure (as a reflection of wealth) and measures of socio-economic conditions. For example, wealthier households tend to have combinations of high levels of education and employment, as well as electricity, piped water, radios, computers and televisions in their homes. Poorer homes, by contrast, usually have walls of poles and mud, lack access to safe water, and use the bush as a toilet. They are often headed by women and few members of the family are employed, for instance. It is these kinds of associations that can be quantified as regression equations.

Since the regressions between expenditure and household characteristics were for the Household Income & Expenditure data, they are limited to places where samples of households were surveyed. These places are called Primary Sampling Units (PSUs) of which there were about 540 across the country during the 2004 survey.

By contrast, the 2001 Population & Housing Census covered all areas of the country, and it also covered all households. Information recorded on the characteristics of the homes was often identical to that collected in the Income & Expenditure survey, such as on the head of the household, materials, fuels, education, employment, and electronic goods. As a result, the regression relationships derived from the sample survey data could be applied to the full set of census data to predict the annual expenditure of each household in the whole country.

It should be stressed that this statistical methodology only provides an estimate of household expenditure, and that the estimates are subject to high levels of variance and thus have wide limits of confidence, meaning that the actual value might be quite different from the calculated estimate. To reduce margins of uncertainty, expenditure was divided by the number of people in each household to give a figure of expenditure per person. The households were also grouped

into clusters of between 400 and 800 households so that estimates for each cluster could be more reliable than ones based on smaller numbers of homes. Clusters of more than 400 households are also large enough to safeguard the confidentiality of the information collected.

Separate regression relationships were derived for different socio-economic landscapes or settings. This was necessary because relationships between household expenditure and characteristics were expected to differ between landscapes. Thus, all the PSUs from the Income & Expenditure survey and all the clusters from the Population & Housing Census were allocated to one of five socio-economic landscapes, as follows:

- Urban formal (includes all formal housing in town areas that have been surveyed and planned and where tenure-holders are clearly established)
- Urban informal (unplanned, unsurveyed, informal homes)
- Rural formal, which is the same as commercial or freehold land
- Pastoral communal areas: communal areas in Hardap, Karas, Omaheke, Otjozondjupa, Erongo and Kunene
- Agro-pastoral areas in the communal areas of Omusati, Oshana, Oshikoto, Ohangwena, Kavango and Caprivi.

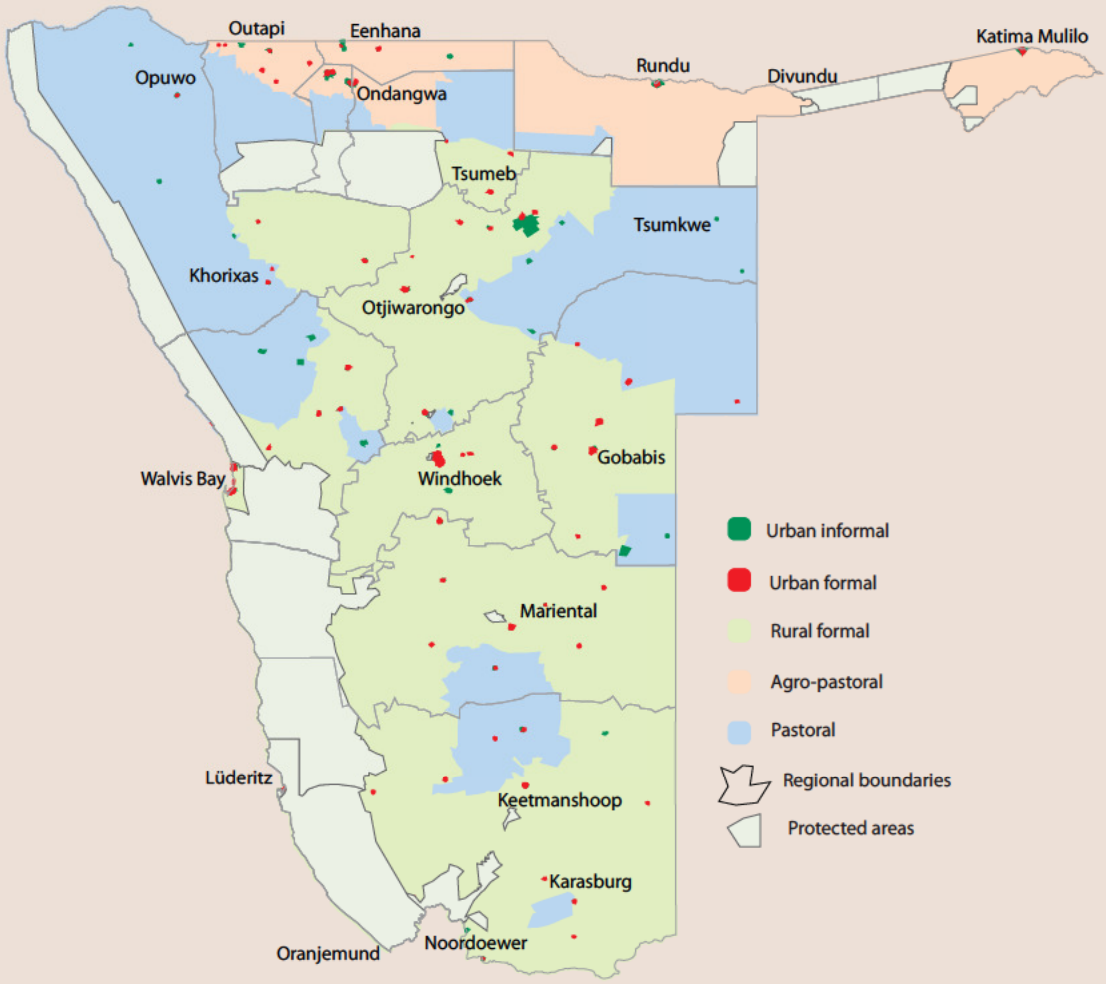


**Figure 1.**
**The distribution of the five socio-economic landscapes used for the regression analyses of 2001 Population & Housing data and for the 2004 Income & Expenditure Survey. Most urban areas are too small to be seen at this scale.**

The clusters created for the POVMAP analyses were created by grouping together neighbouring enumeration areas (EAs). These are small areas used during the 2001 Population & Housing Census for purposes of planning and implementing the census. Each EA was planned to contain about 100 households, and enumerators were then assigned to collect all the census data in each EA. The entire country was divided into about 4,200 EAs for the 2001 Census. From these, 650 clusters were formed.

For purposes of grouping into clusters, each EA was classified into one of the five socio-economic units described above and shown in Figure 1, so that only EAs with the same characteristics were lumped. The classification of EAs into these groups was done using high resolution aerial photographs and satellite images and a knowledge of socio-economic circumstances in different areas of the country. The same methods were used to allocate PSUs to different socio-economic landscapes. Although this subjective methods awaits improvement, the only systematic detailed socio-economic information available comes from the Census itself, and this information was used to do the calculations.

The 650 clusters in different socio-economic landscapes were used only for the analyses of expenditure and estimates of the number of households in different wealth groups (see Chapters 3 and 4. Other indications of poverty using figures on safe water, building materials, education and fuel (in Chapters 5-9) used and mapped measures of these variables for each enumeration area.

Protected areas are excluded from all the maps because socio-economic conditions in these areas generally differ from those in neighbouring areas. In addition, very few people live in most protected areas.

## A word of warning!

The maps presented in this booklet show results of the analyses for clusters in which there were between 400 and 800 households, or for enumeration areas where there were far fewer households.[3] In densely populated areas, the clusters and enumeration areas naturally cover small areas, some of which are so small that they are not visible on maps of the whole of Namibia or even some of the larger regions. This is particularly true for clusters and enumeration areas in urban areas, and those in densely settled regions of Omusati, Ohangwena, Oshikoto, Oshana and Kavango. To overcome this problem, some maps are presented that 'zoom in' on urban areas. On many other maps the town areas are depicted in large circles to make the characteristics of these urban areas clearly visible. Two circles are shown for most towns, one summarising all the data for informal areas, and the other, data for formal areas. However, in cases where towns consist exclusively of formal or of informal housing, only one circle is shown.

By contrast, an equal but converse problem arises where clusters and enumeration areas cover large areas that are sparsely populated. They thus appear large on the maps, and often dominate the visual image, so that the reader usually pays more attention to these large zones than to other parts of the country where more people reside. For example, the map showing the median income per person on page 9 shows large rural areas in southern Namibia where people have high incomes. A reader may well assume that these might be the only places in Namibia with such high incomes. And because the areas are so large, the reader may further conclude that large numbers of very rich people live there. What the map fails to show is that there are many other, much smaller areas in the country with just as many, if not more people with high incomes. The reader thus needs to bear in mind that the density of wealthy people in those large zones is very small, while densities of rich people in small zones is much greater.