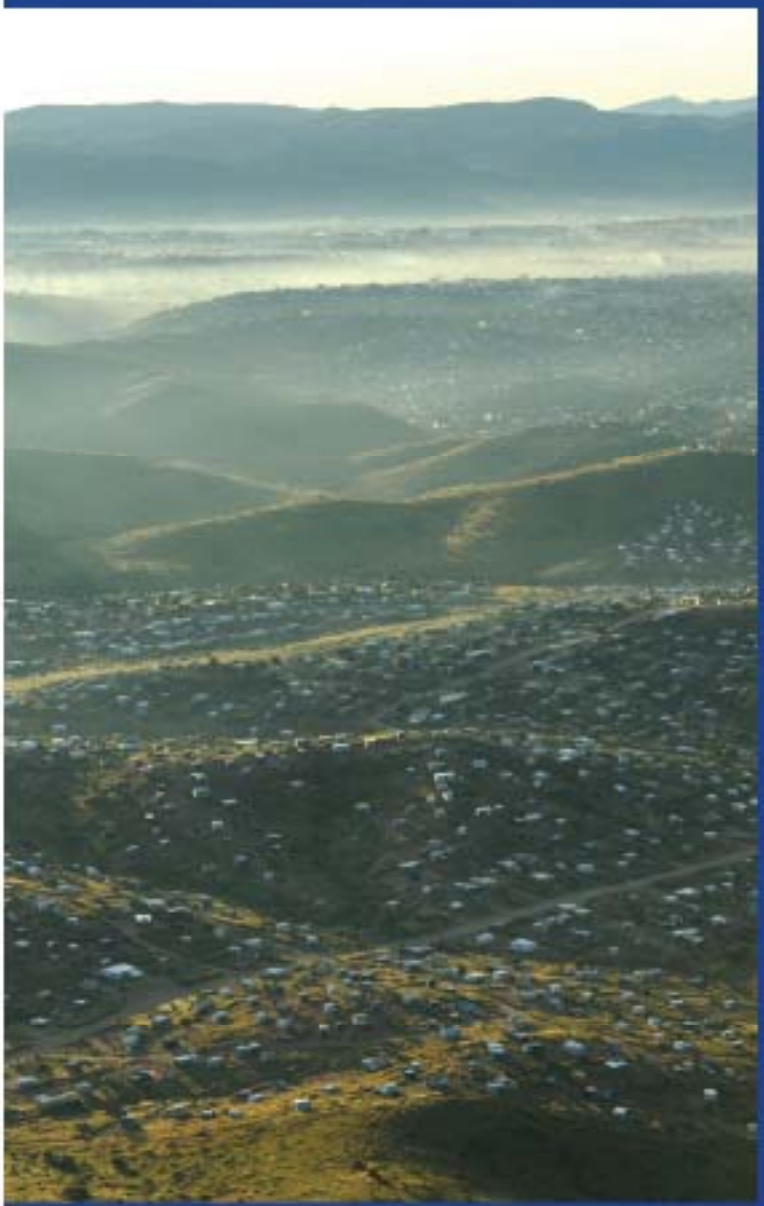
An atlas of poverty in Namibia



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REPUBLIC OF NAMIBIA

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)

An atlas of poverty in Namibia

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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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.

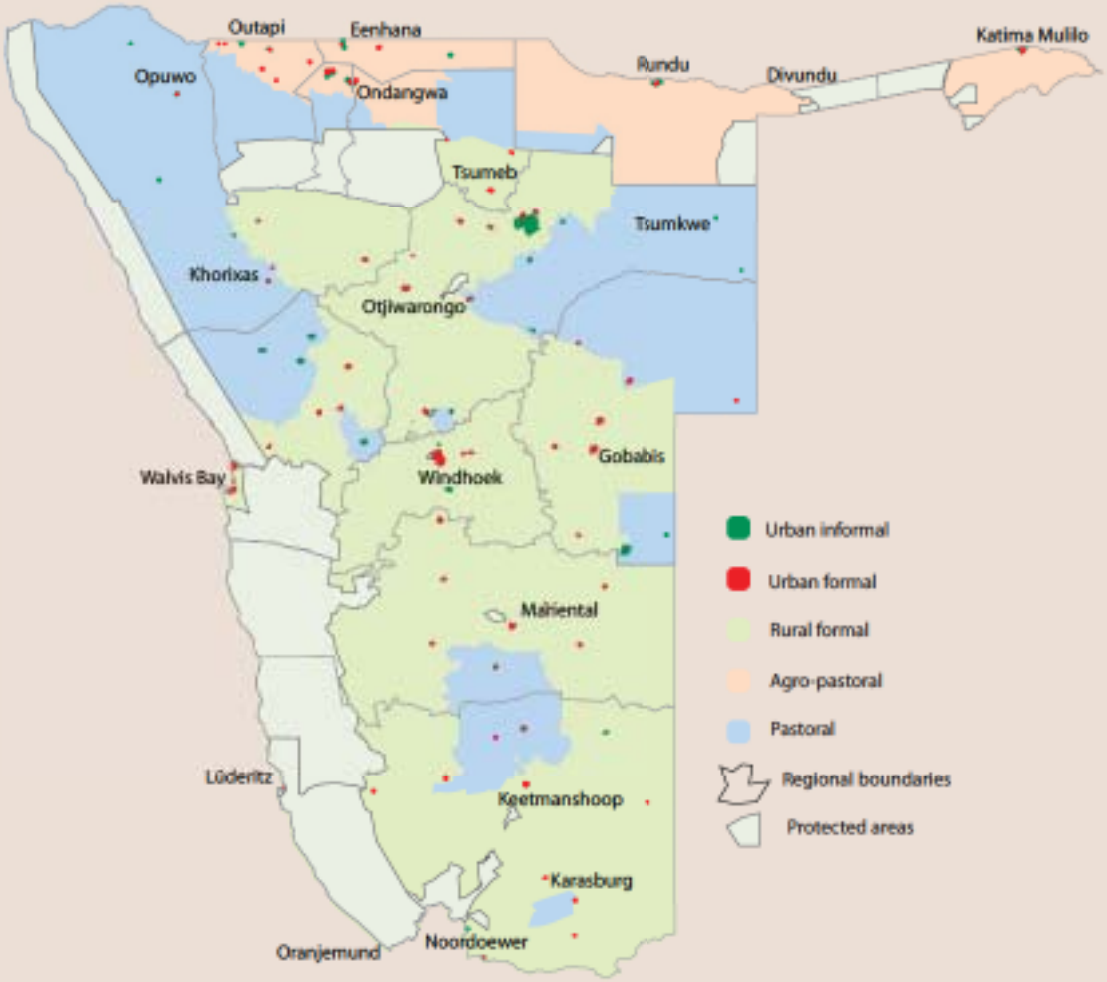


Figure 1.
The distribution of the five socio-economic landscapes used for the regression analyses of 2001 Population & Housing data and for the 2004 Income & Expenditure Survey. Most urban areas are too small to be seen at this scale.

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.

3 Expenditure

Measures of poverty are generally expressed as estimates of income, for example people with incomes of less than US$ 1 or 2 per day. However, it is seldom possible to obtain accurate figures on income since most people are reluctant to divulge their true earnings. An alternative approach employed by household income & expenditure surveys is to estimate the total expenditure of a family and to use that as a measure of wealth. This approach relies on the reasonable assumption that total expenditure is a good reflection of total income since most families save little of what they earn.

Such estimates of wealth are usually given as averages or means, the latter being the more technical equivalent of an average. However, averages or means can only be used when the statistical distribution of the data is normal. In the case of expenditure (or income), data are heavily skewed because there are large numbers of poor people and relatively few rich people.[4] Under these circumstances, the median is a much better measure because it is the value (expenditure, in this case) that separates the poorest half from the wealthiest half of all people in an area.

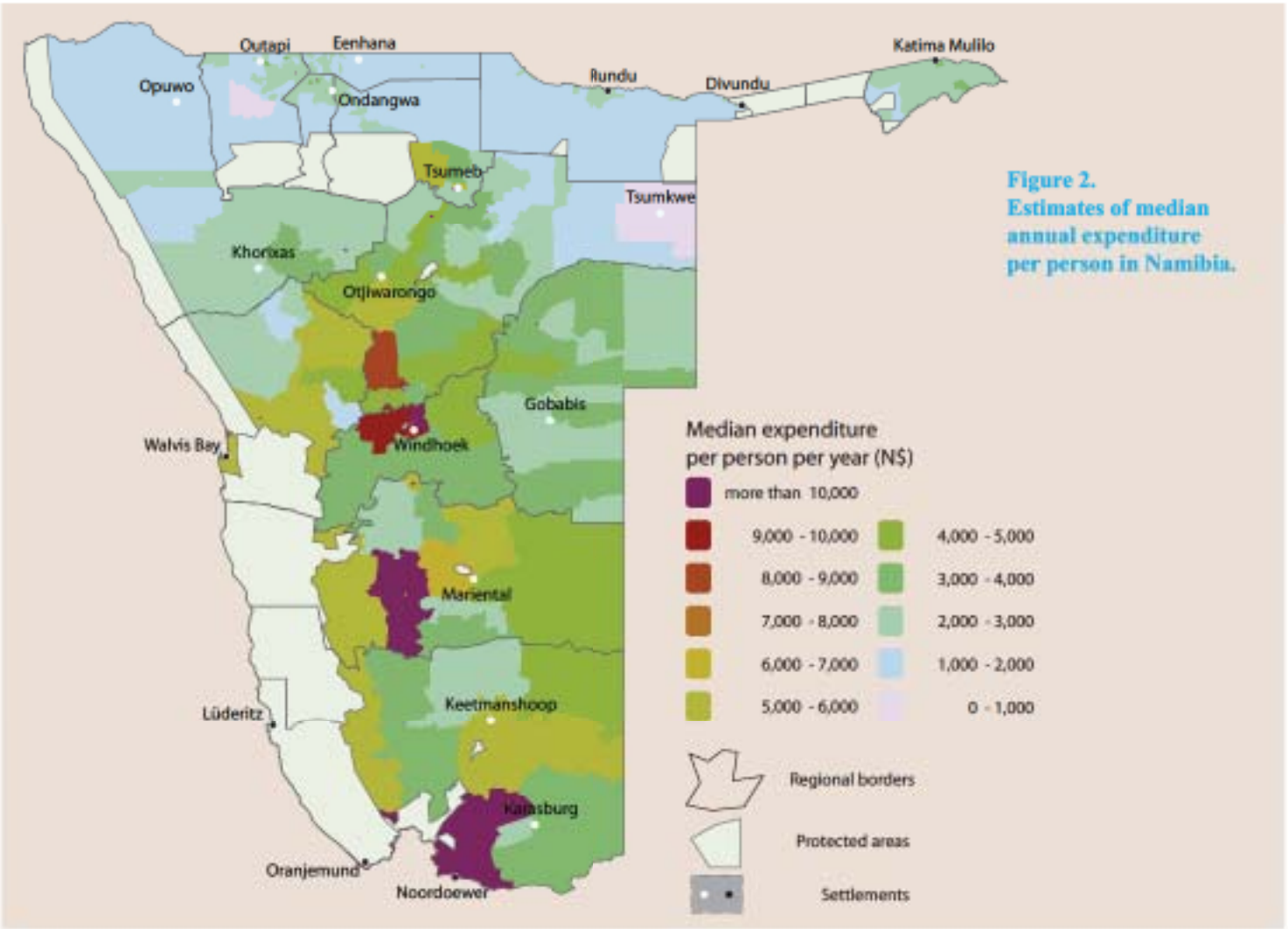


Figure 2.
Estimates of median annual expenditure per person in Namibia.

Figure 2 for the whole country, and the six regional and urban maps that follow, show the median expenditures per person per year. The values were derived from the expenditure estimates in N$ from the 2004 Household Income & Expenditure survey but then adjusted upwards to account for inflation. For example, N$1,000 in 2004 was increased to N$1,438 (or by 143.8%) for 2010.

Expenditures measured during the 2004 Household Income & Expenditure Survey include sums spent in cash to buy goods and services as well as the value of items obtained in kind, such as harvested food and free rental. The values of goods and services in kind are estimated from local market values paid for the same items.

The estimates of median annual expenditure per person are for all ages, and thus disregard the fact that children consume and therefore spend less than adults. As a result, households with many children may be relatively better off than those with fewer children, but these differences would be slight.

This map confirms the broad trends and differences between the northern and more central and southern regions of the country. However, average expenditures are higher in eastern Caprivi than the other northern regions. Zones in southern and central Namibia with the lowest expenditure values are generally those in communal areas.

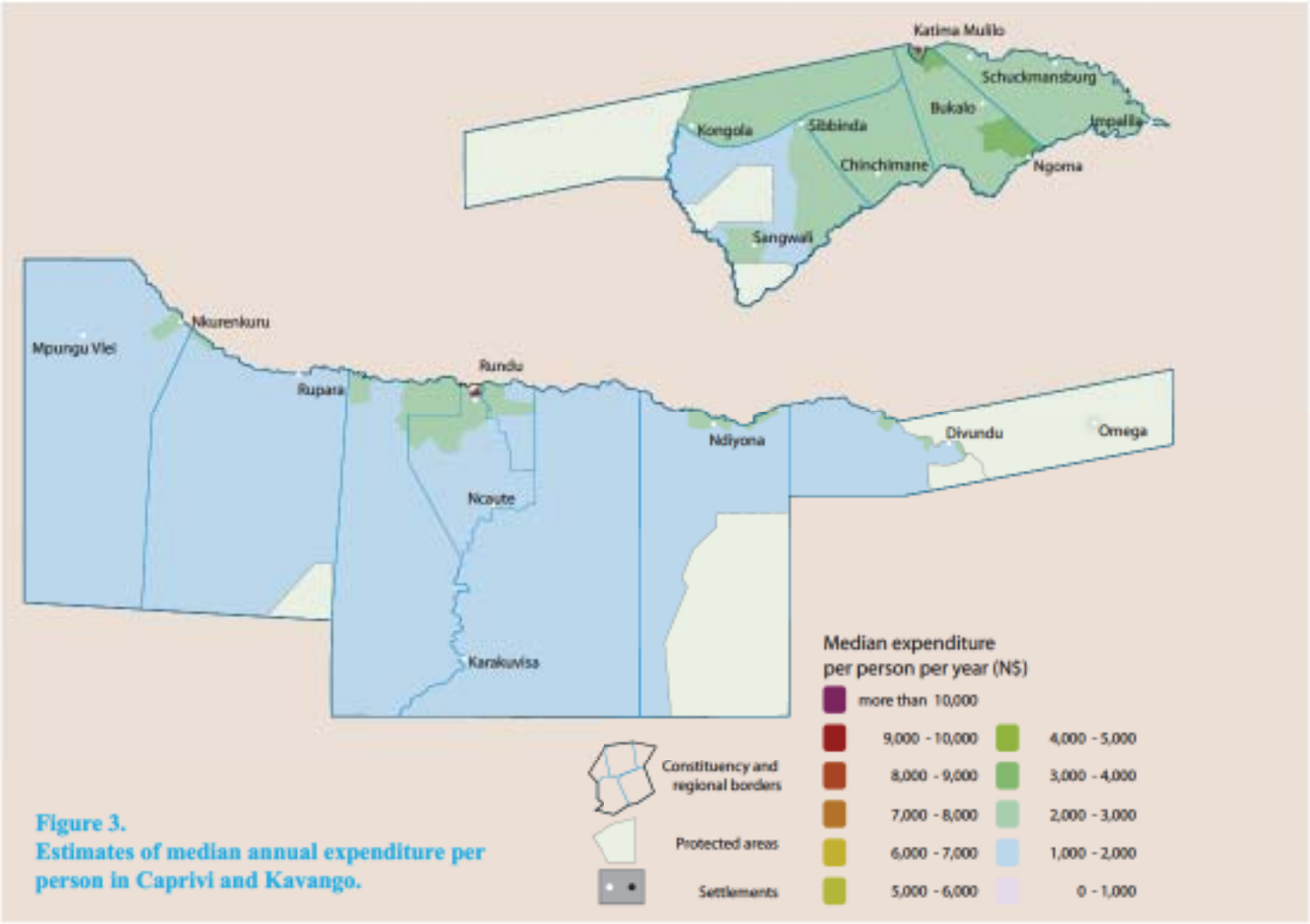


Figure 3.
Estimates of median annual expenditure per person in Caprivi and Kavango.

These maps confirm the significant difference in average expenditure between much of Caprivi and most rural areas in Kavango. Expenditures along the Okavango River and northern border of Kavango are generally higher than in the southern areas. The density of people along the river is very much higher than in the southern areas.

Median expenditures are considerably higher in the towns of Katima Mulilo and Rundu than elsewhere. People living in smaller towns such as Nkurenkuru, Ndiyona, Omega and Divundu also have higher expenditures, on average, than people in surrounding rural areas. These differences are not visible at this scale of analysis, however.

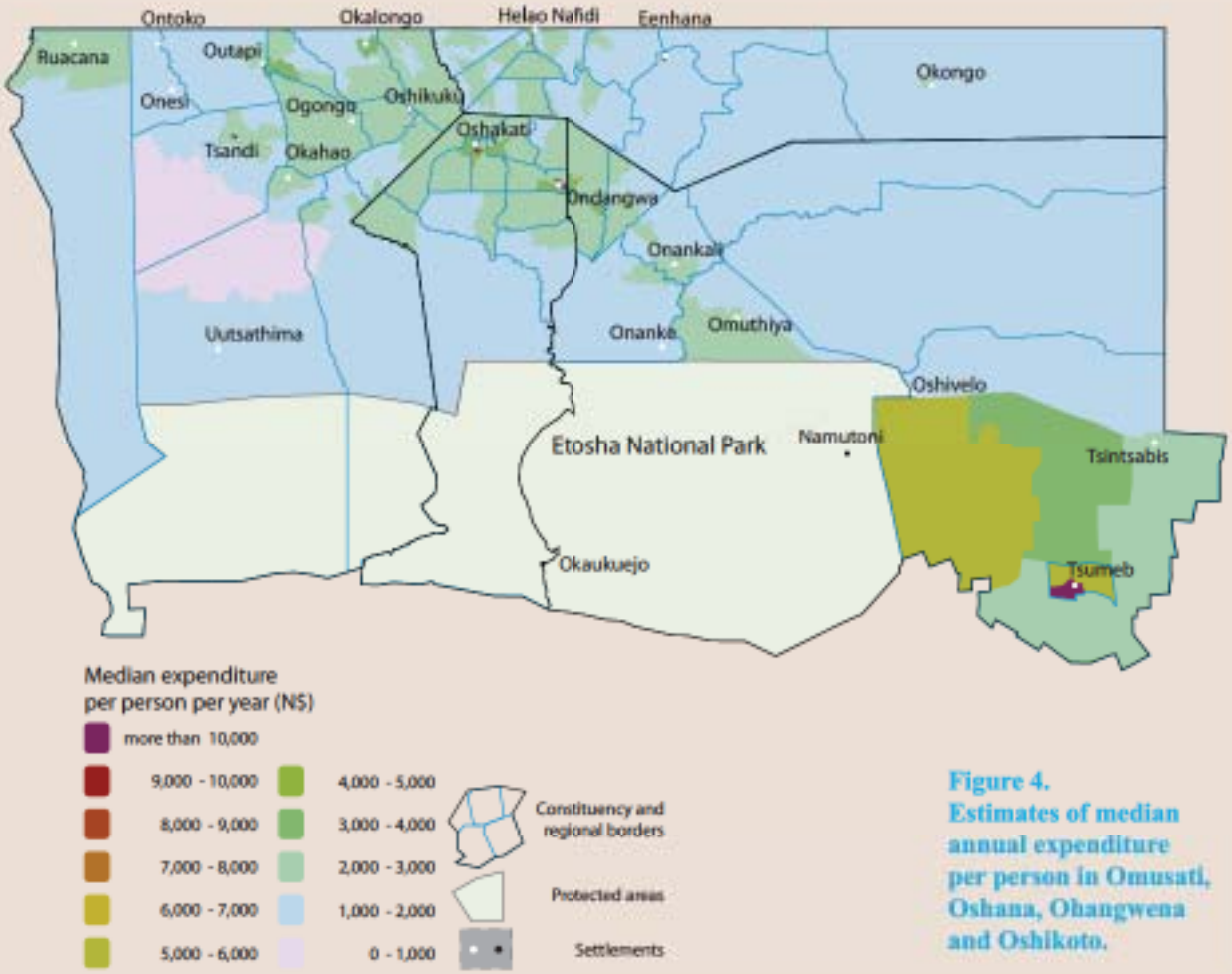


Figure 4.
Estimates of median annual expenditure per person in Omusati, Oshana, Ohangwena and Oshikoto.

People of the freehold farms around Tsumeb, many of which are now owned by formally disadvantaged Namibians, have higher expenditures than those in other rural areas of these four northern regions. Within the rural communal areas to the north, there is a clear swathe of higher expenditure which runs between Omuthiya in the south-east and Ruacana in the north-west, as well as northwards to Oshikango.

Many small towns and commercial centres fall in that swathe, and this is also the most densely populated area across the four regions.

All of the major towns – Tsumeb, Ondangwa, Eenhana, Ongwediva-Oshakati, Outapi and Okahao – have dense populations of people with expenditures that are considerably higher than elsewhere in the four regions.

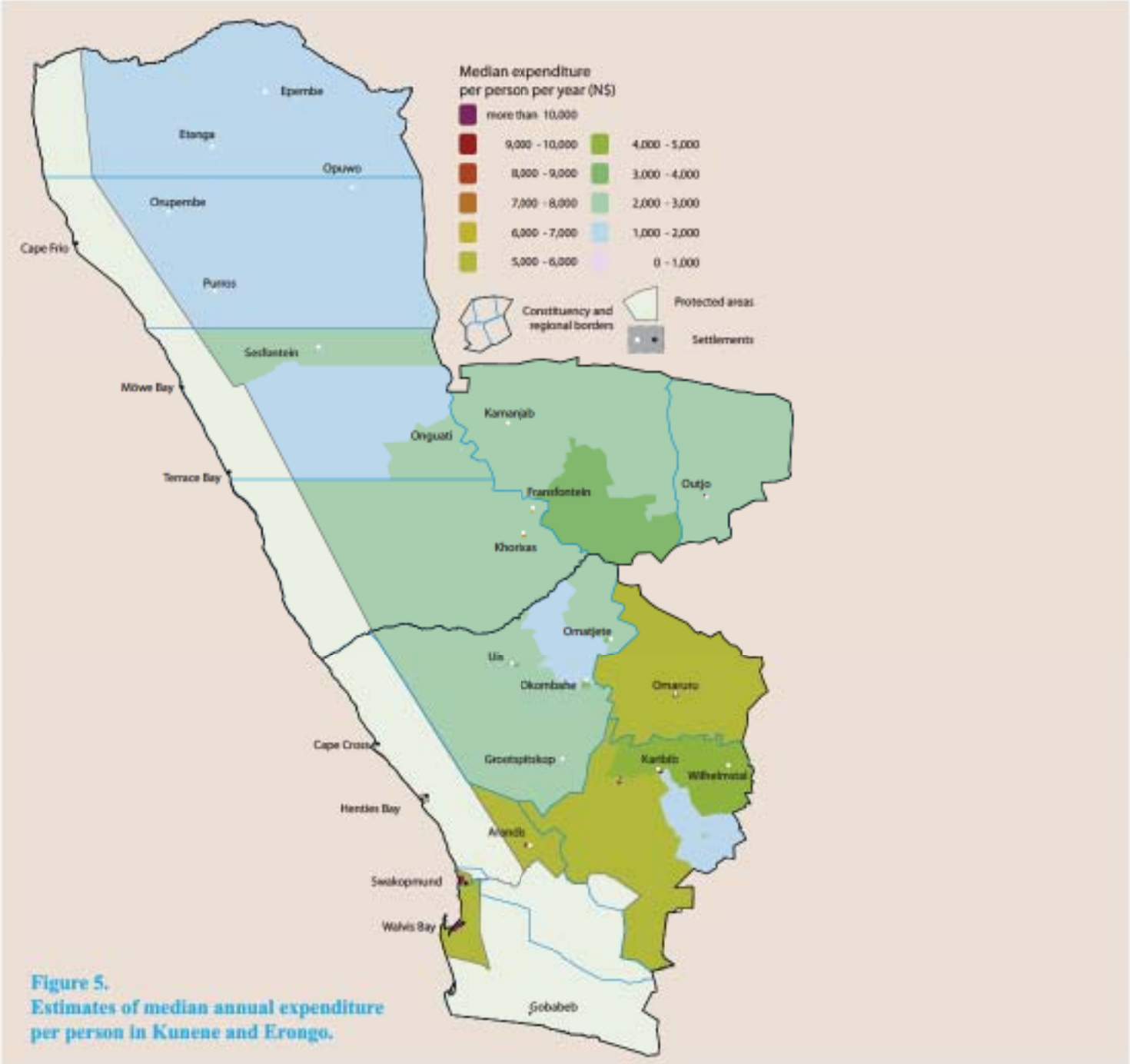
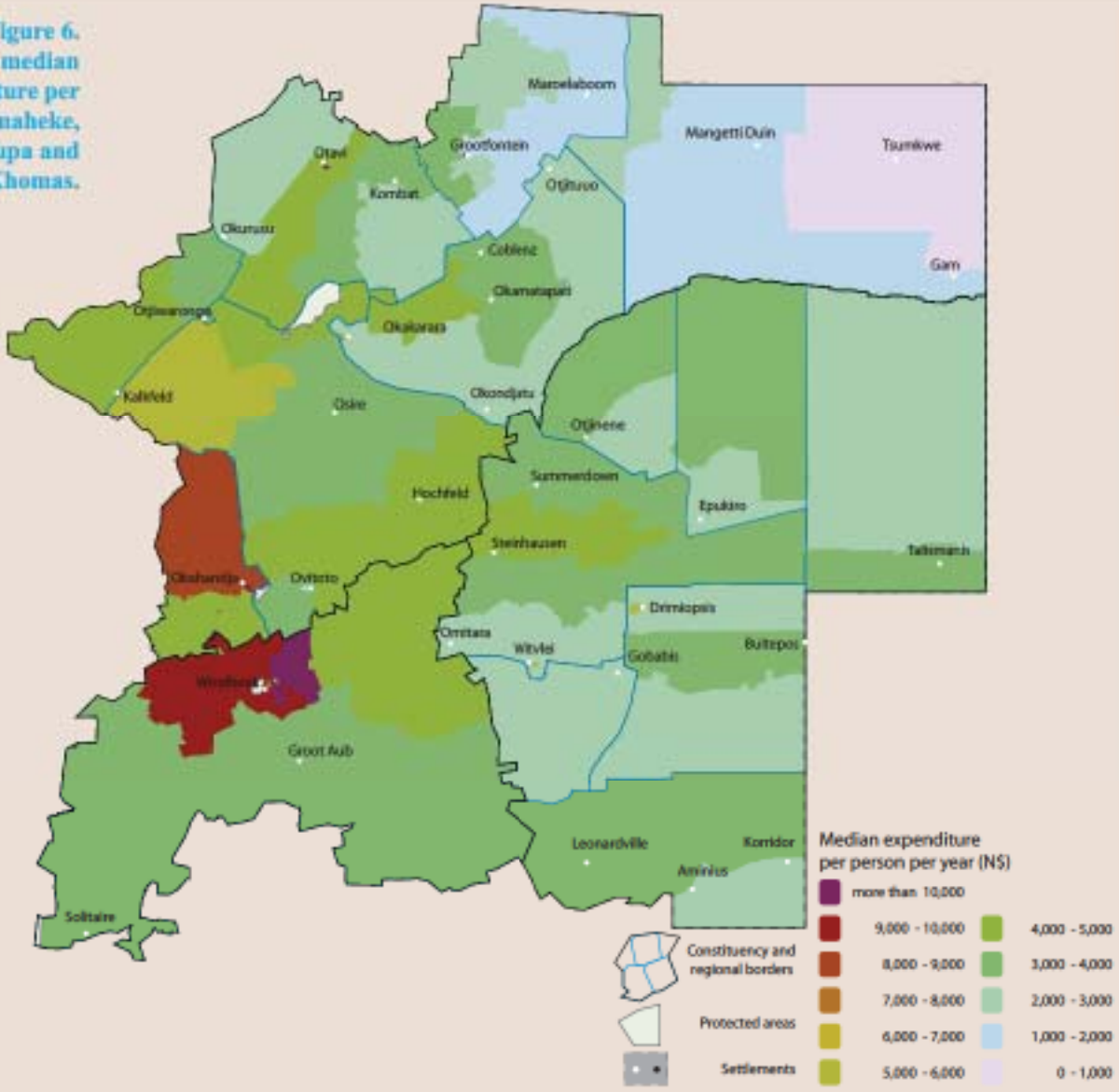


Figure 5.
Estimates of median annual expenditure per person in Kunene and Erongo.

Much of the north-western Erongo and Kunene consists of national parks where few people live. Elsewhere, population densities are low and most people are confined to towns and villages. In rural areas, expenditures per person are higher in the south than in the north.

Figure 6. Estimates of median annual expenditure per person in Omaheke, Otjozondjupa and Khomas.



The highest expenditures in the rural areas of these regions are in Khomas and in the southern areas of Otjozondjupa, while the lowest are in the former Bushmanland areas in north-eastern Otjozondjupa.

The largest numbers of people live in the large towns of Windhoek, Gobabis, Okahandja, Otjinene, Okakarara, Grootfontein, Otavi and Otjiwarongo. These urban residents also have among the highest annual expenditures in Namibia.

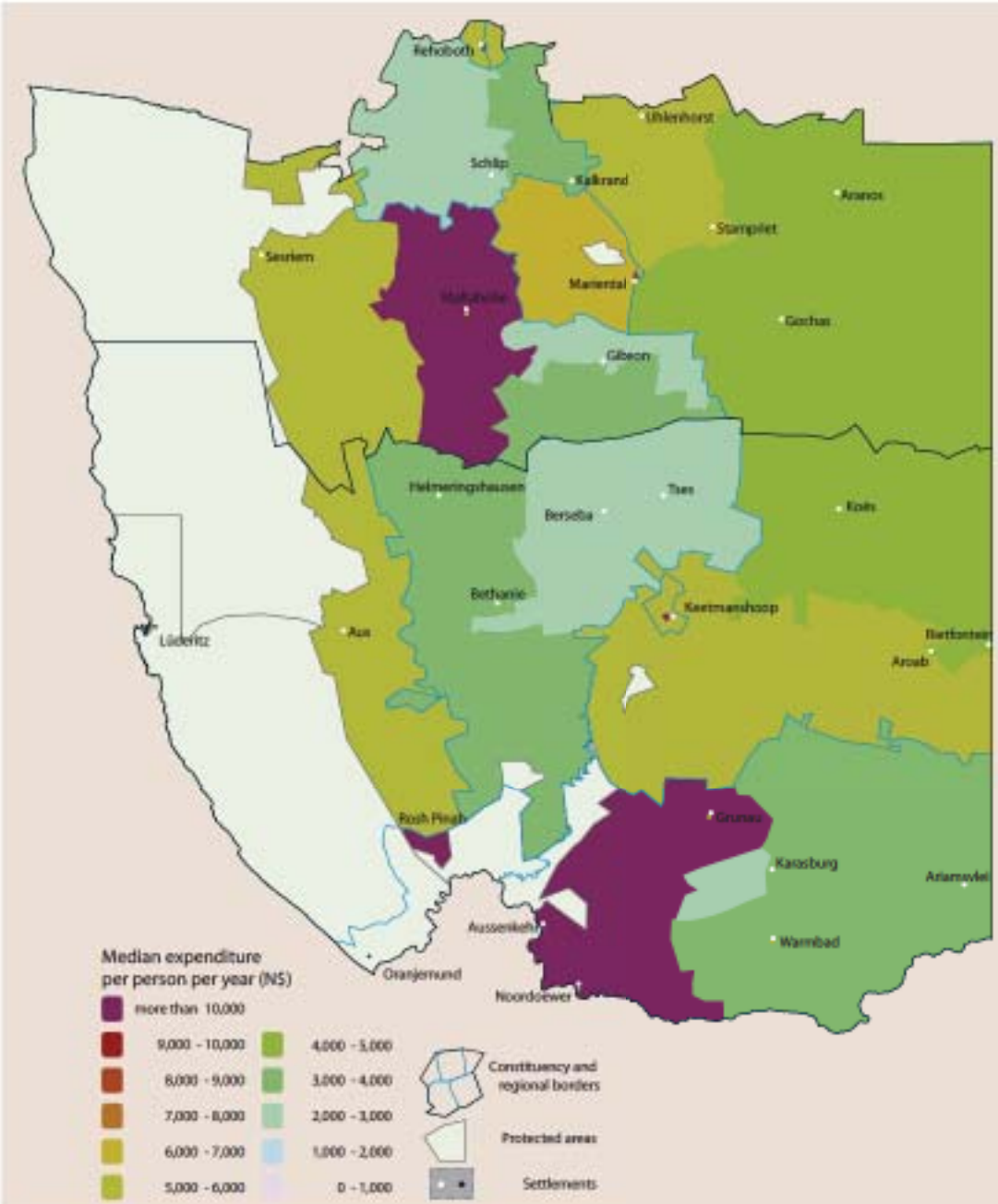


Figure 7. Estimates of median annual expenditure per person in Hardap and Karas.

Almost no-one lives in the national parks which make up the western areas of these two regions. Elsewhere, populations in the rural areas are very sparse. The highest expenditures in rural areas are in freehold farming areas, while the lowest are in the communal area that was formerly Namaland.

As elsewhere, the highest densities of people with the highest expenditures are in towns, particularly Keetmanshoop, Oranjemund, Lüderitz, Mariental and Rehoboth.

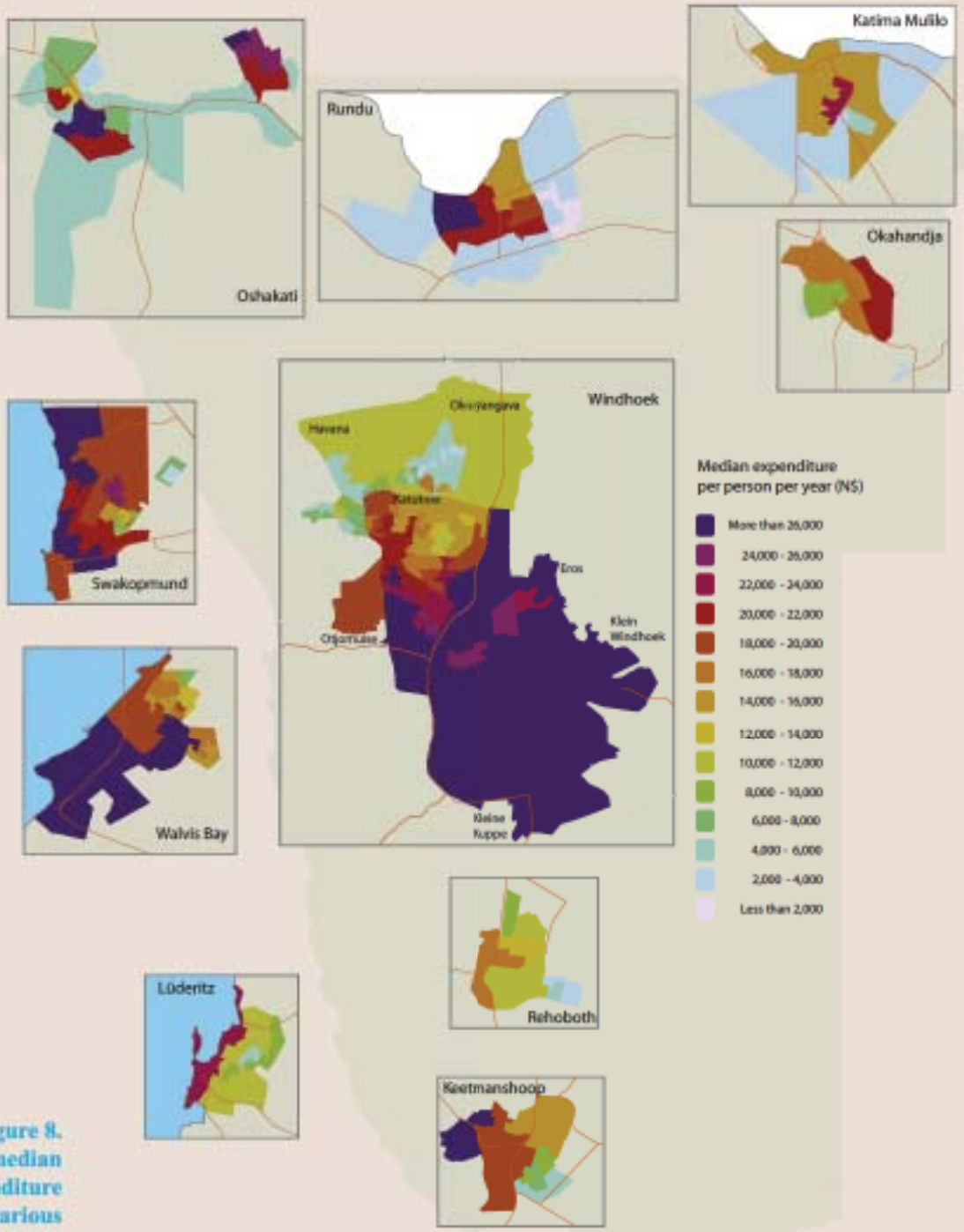


Figure 8. Estimates of median annual expenditure per person in various large towns in 2010.

The highest expenditures are in the formal suburban areas of these towns, especially those suburbs previously reserved for white residents. Expenditures in areas that were reserved for coloured people are lower, while the lowest expenditures are in townships that were established for black residents, particularly in newly established informal settlements.

4 Wealth groups

Detailed information on where the greatest numbers of poor homes are found is immensely useful when one wishes to target measures to reduce poverty and improve the welfare of the poorest segments of society. Such information is much better than figures that reflect the proportions of poor people in specific areas. For example, 90% of the 100 residents in a village may be poor, which means that there are 90 poor people there. In another village, 20% of the 1,000 residents may be poor, which means that this village has 200 people who could benefit from public service support.

For purposes of the maps that follow, all households in the country were ranked from the poorest to the wealthiest. Within that ranking, households could then be divided into three groups: the poorest third, the next third of homes with moderate levels of expenditure, and then the wealthiest third. Each group is called a tercile: the poorest tercile, the intermediate tercile and the wealthiest tercile.

People living in the poorest tercile had annual expenditures of less than N$2,121 per year in dollar values in the year 2010, while those in the wealthiest tercile had annual expenditures greater than N$7,165. People in the intermediate wealth tercile thus spent between N$2,121 and N$7,165 per year.[5]

The maps that follow show the number of households in the lowest or poorest tercile in different regions. However, the first three maps provide a national perspective on the numbers of homes in each of the terciles.

The number of households in each of the three wealth groups can be compared in the five socio-economic landscapes described on page 7. This table compares the percentages of all households in each tercile and landscape, bearing in mind that 33% of all homes are in each tercile. Thus, for example, 24% of all homes in formal urban areas are in the third tercile, whereas 23% of households in agro-pastoral areas are in the lowest tercile.

Percentages of households in each tercile and socio-economic landscape.

Landscape	Tercile		
	1	2	3
Pastoral communal	4	2	1
Rural formal	2	3	3
Urban formal	1	5	24
Urban informal	4	7	3
Agro-pastoral	23	16	3

Comparing now the proportions of households in each landscape that are in the lowest, intermediate or highest tercile, over half of all homes in the two rural communal areas (pastoral and agro-pastoral) are in the lowest tercile. By contrast, about 82% of homes in urban formal areas are in the third tercile. The percentages of homes in each tercile are spread more equally in rural formal and urban informal areas.

Percentages of people in each tercile in each socio-economic landscape.

Landscape	Tercile		
	1	2	3
Pastoral communal	60	31	8
Rural formal	27	39	34
Urban formal	2	16	82
Urban informal	25	52	23
Agro-pastoral	56	38	6

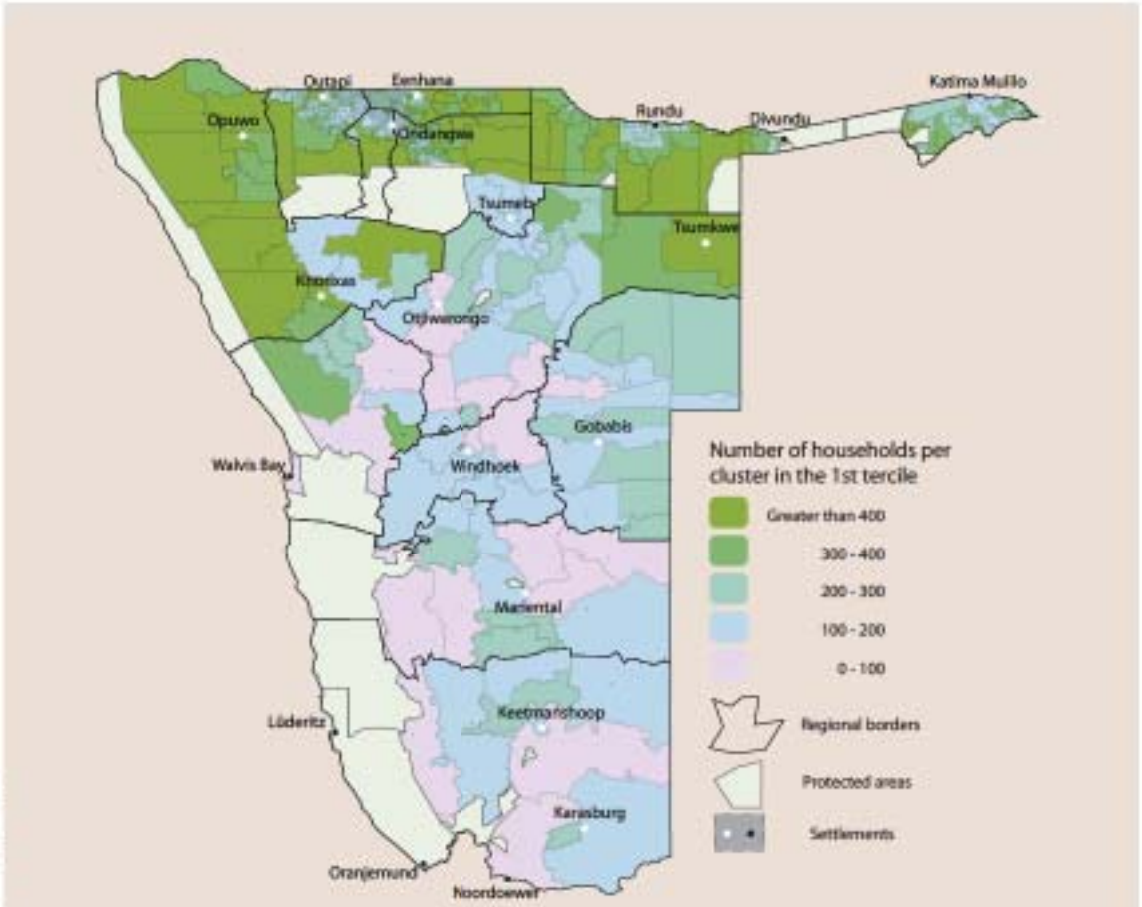


Figure 9. The number of households in the lowest wealth tercile in each cluster.

Households in the lowest wealth tercile tend to spend little on materials for housing, using locally available materials instead. Rural housing near Sesfontein (top) and Puros (bottom), both in Kunene Region.

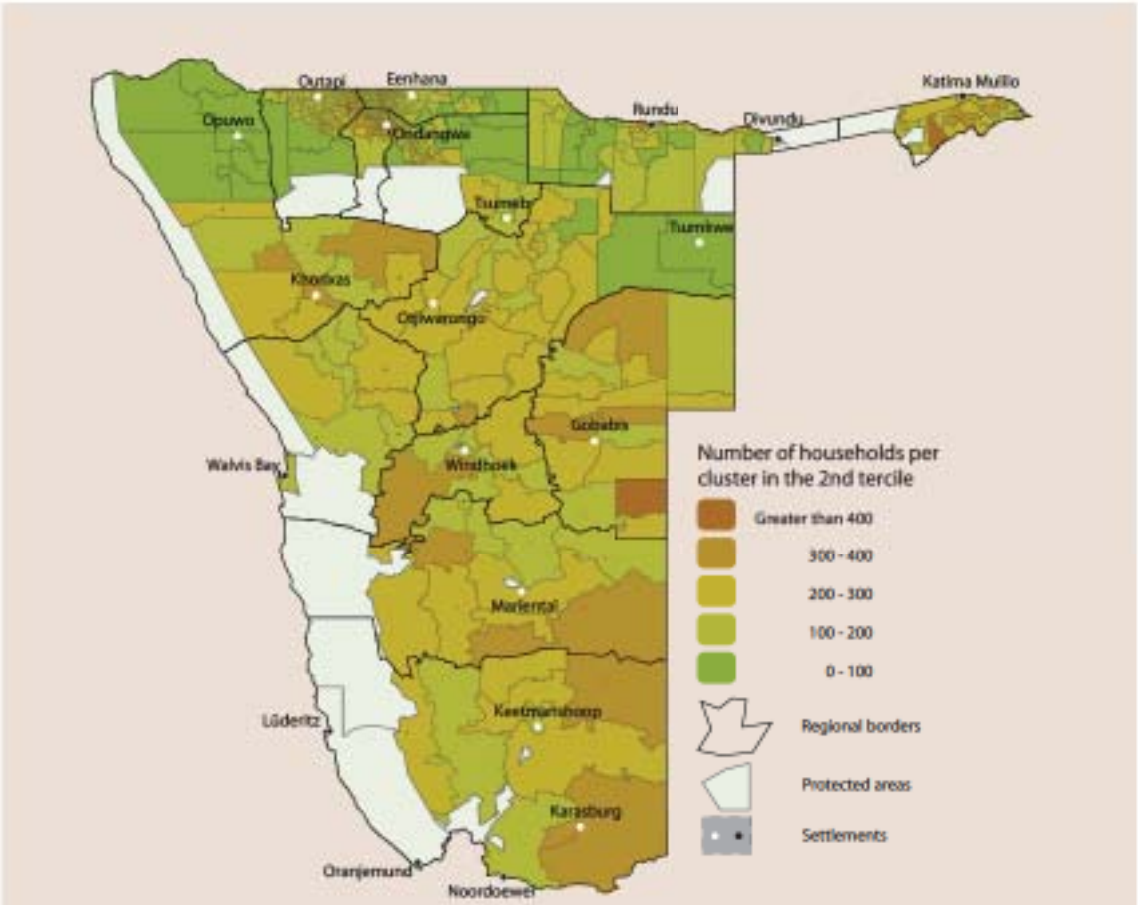


Figure 10.
The number of households in the 2nd or intermediate wealth tercile in each cluster.

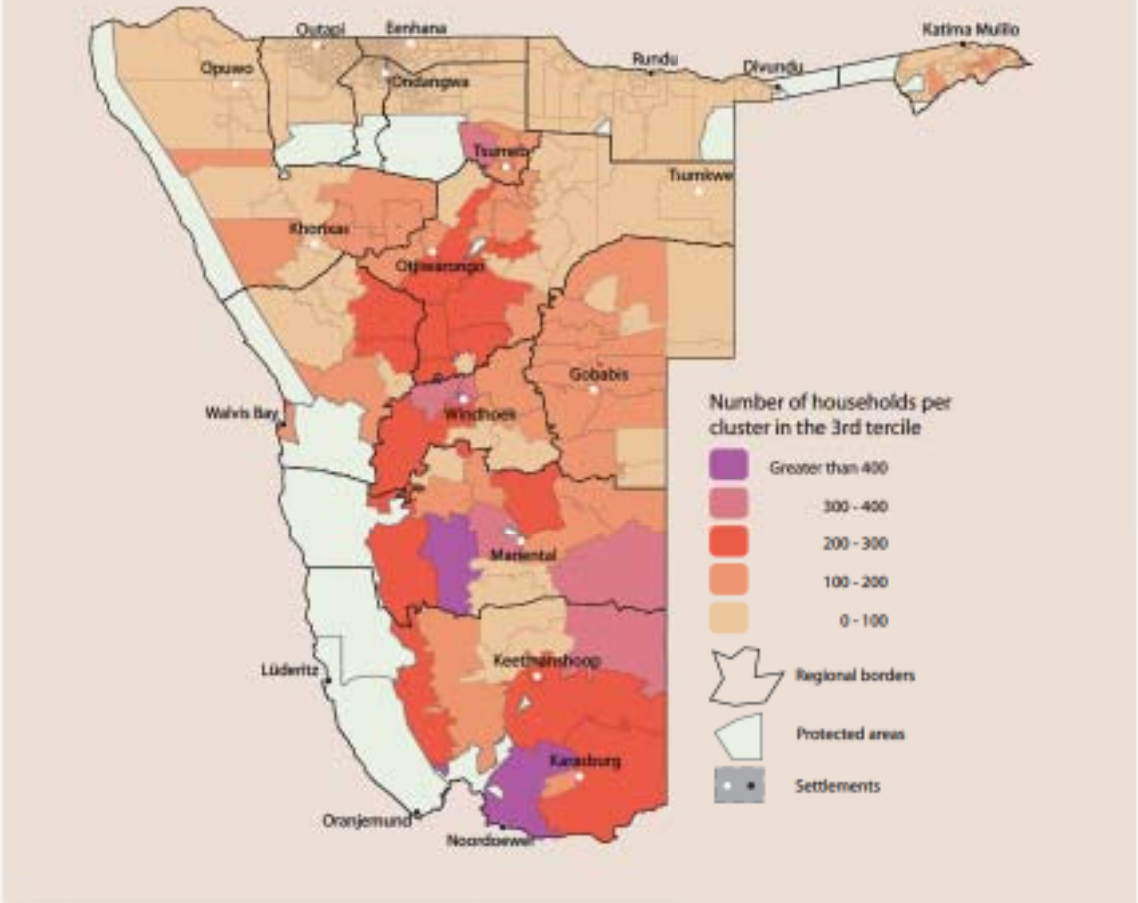


Figure 11.
The number of households in the highest wealth tercile in each cluster.

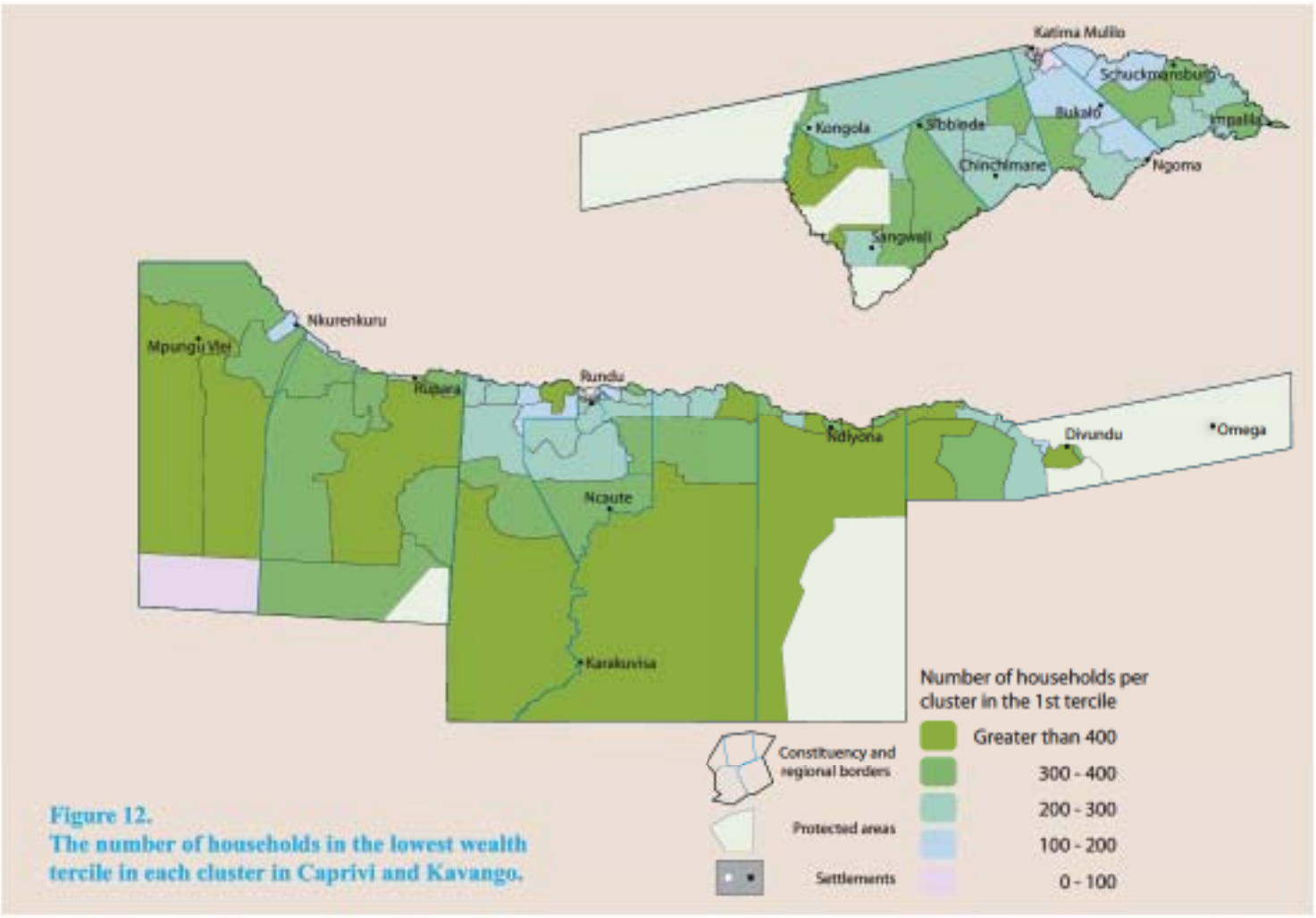


Figure 12.
The number of households in the lowest wealth tercile in each cluster in Caprivi and Kavango.

Most clusters contain fewer than 100 households in this tercile in Caprivi, whereas in Kavango most clusters have 100-300 such homes. In Kavango, there is also a greater number of poorer households in the southern parts of the region than in the densely populated swathe along the Okavango River.

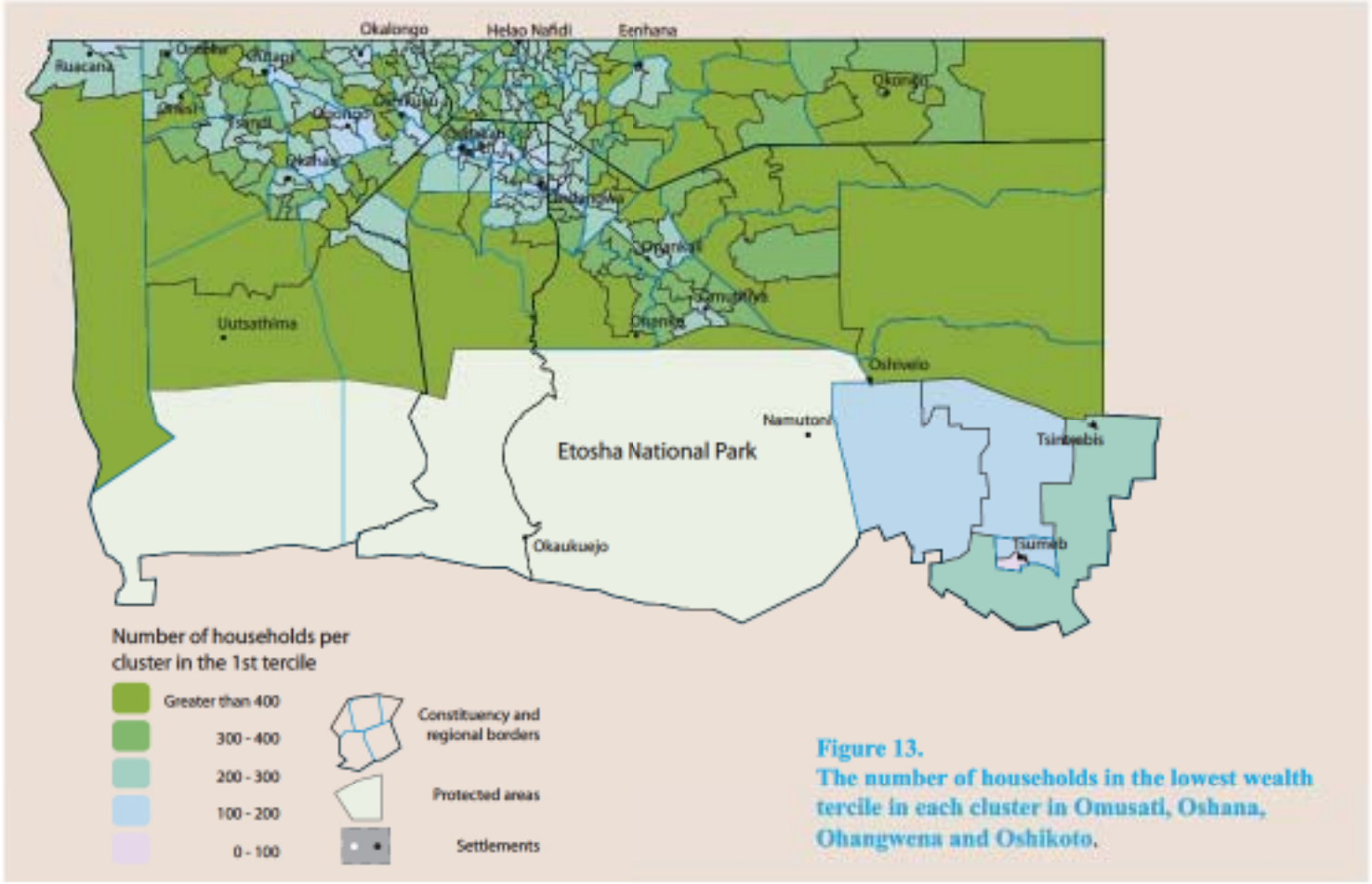
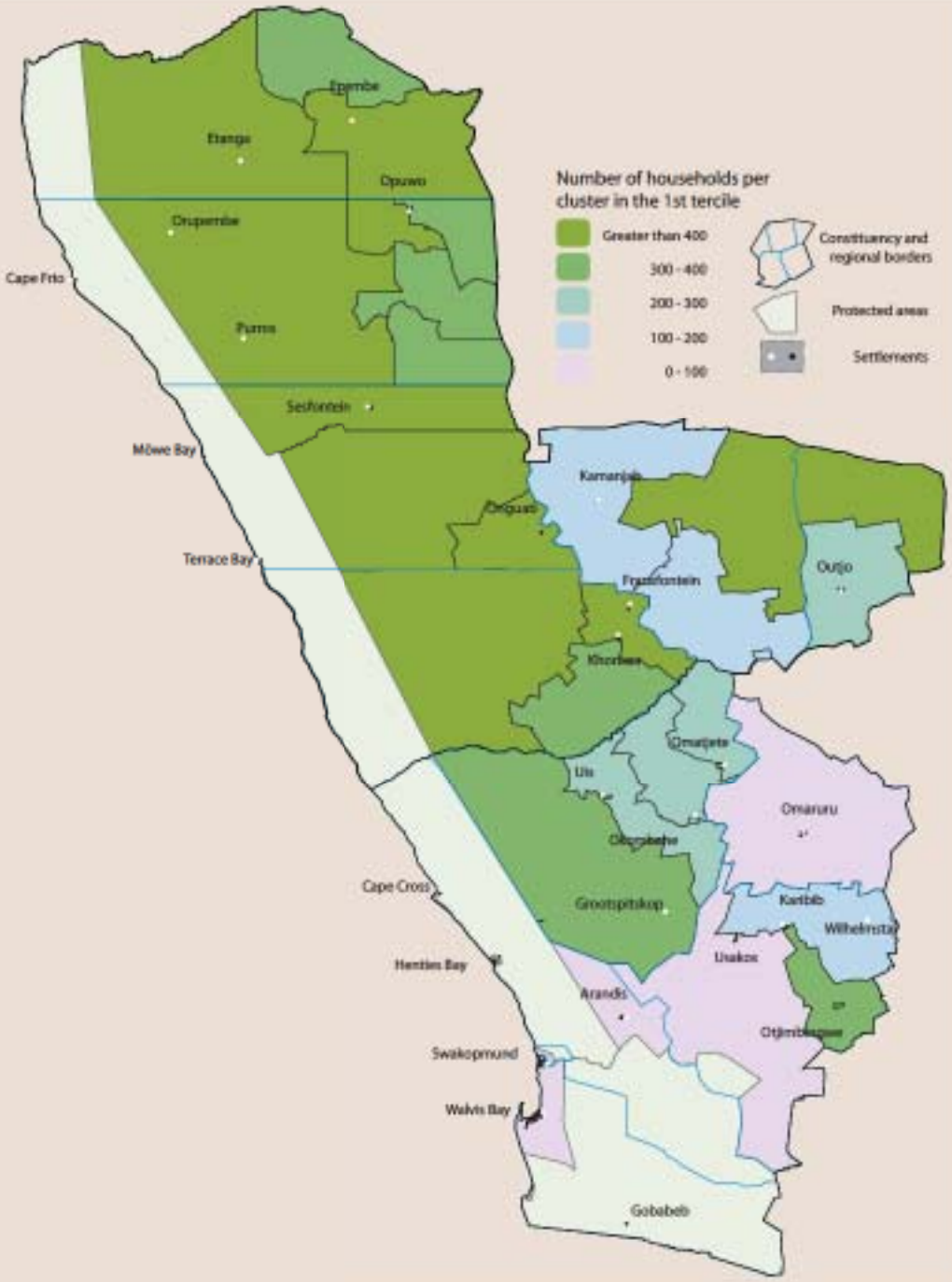


Figure 13.
The number of households in the lowest wealth tercile in each cluster in Omusati, Oshana, Ohangwena and Oshikoto.

Almost all of the larger clusters in the more sparsely populated areas have more than 400 households in this poorest tercile. There are thus substantial numbers of poor homes in these more remote areas but most of them are widely distributed in the large clusters.

The freehold and resettlement farming area in southern Oshikoto has comparatively few households in this tercile of poorer homes.

Figure 14.
The number of households in the lowest wealth tercile in each cluster in Kunene and Erongo.



There are more than 300 households in the poorest tercile in all the sparsely populated clusters in the northern and western areas of this map. To the south, there are relatively few households in this lowest tercile.

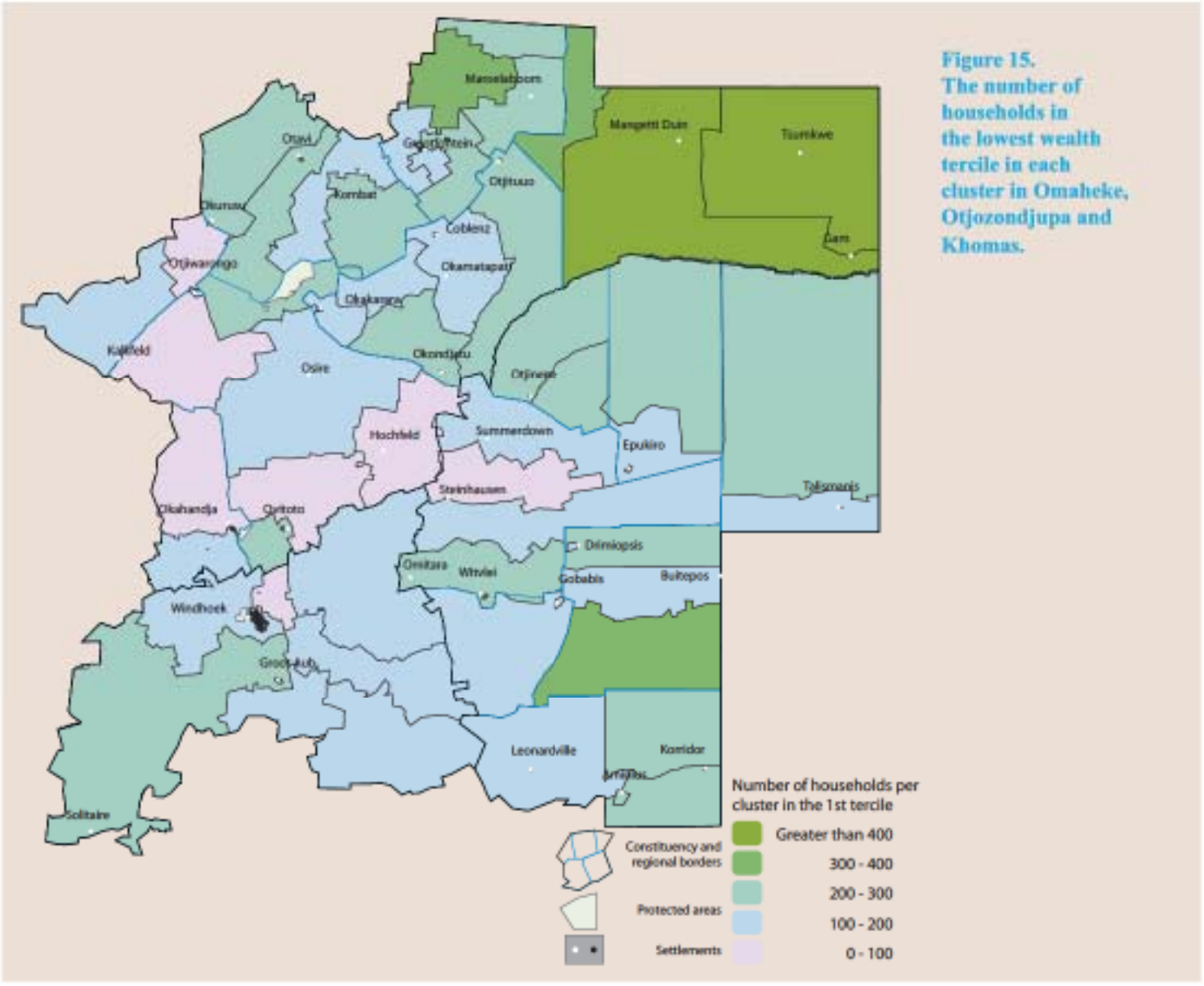


Figure 15. The number of households in the lowest wealth tercile in each cluster in Omaheke, Otjozondjupa and Khomas.

There are more than 300 households in the poorest tercile in all the sparsely populated clusters in the north-eastern areas of this map. These are the sparsely populated areas of what was formerly called Bushmanland. There are relatively few households in this lowest tercile in the south and west.

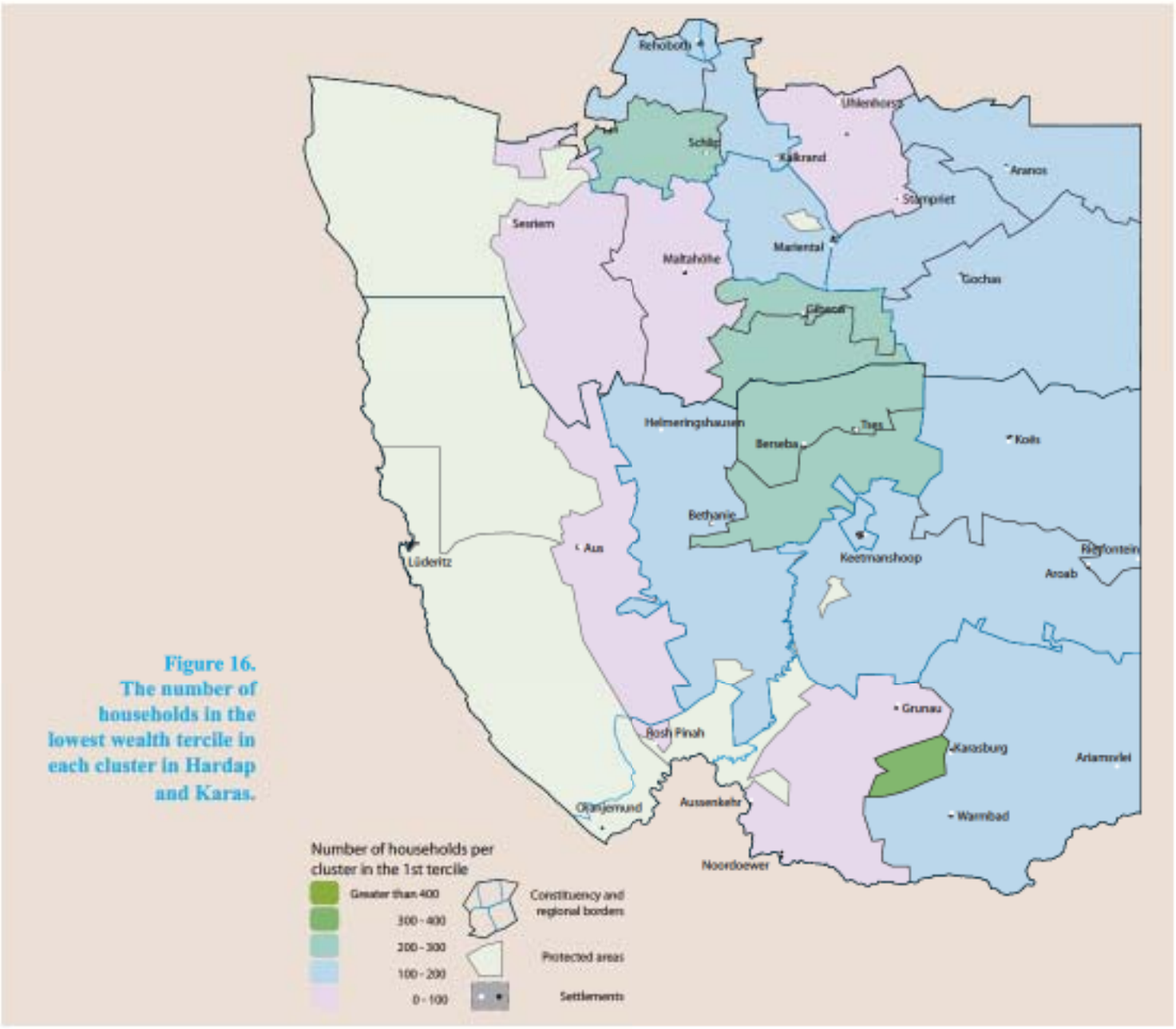


Figure 16. The number of households in the lowest wealth tercile in each cluster in Hardap and Karas.

Compared with other regions in Namibia, there are relatively few households in this lowest tercile. However, there are significant numbers of poorer homes in the communal areas west of Karasburg and between Keetmanshoop and Mariental.

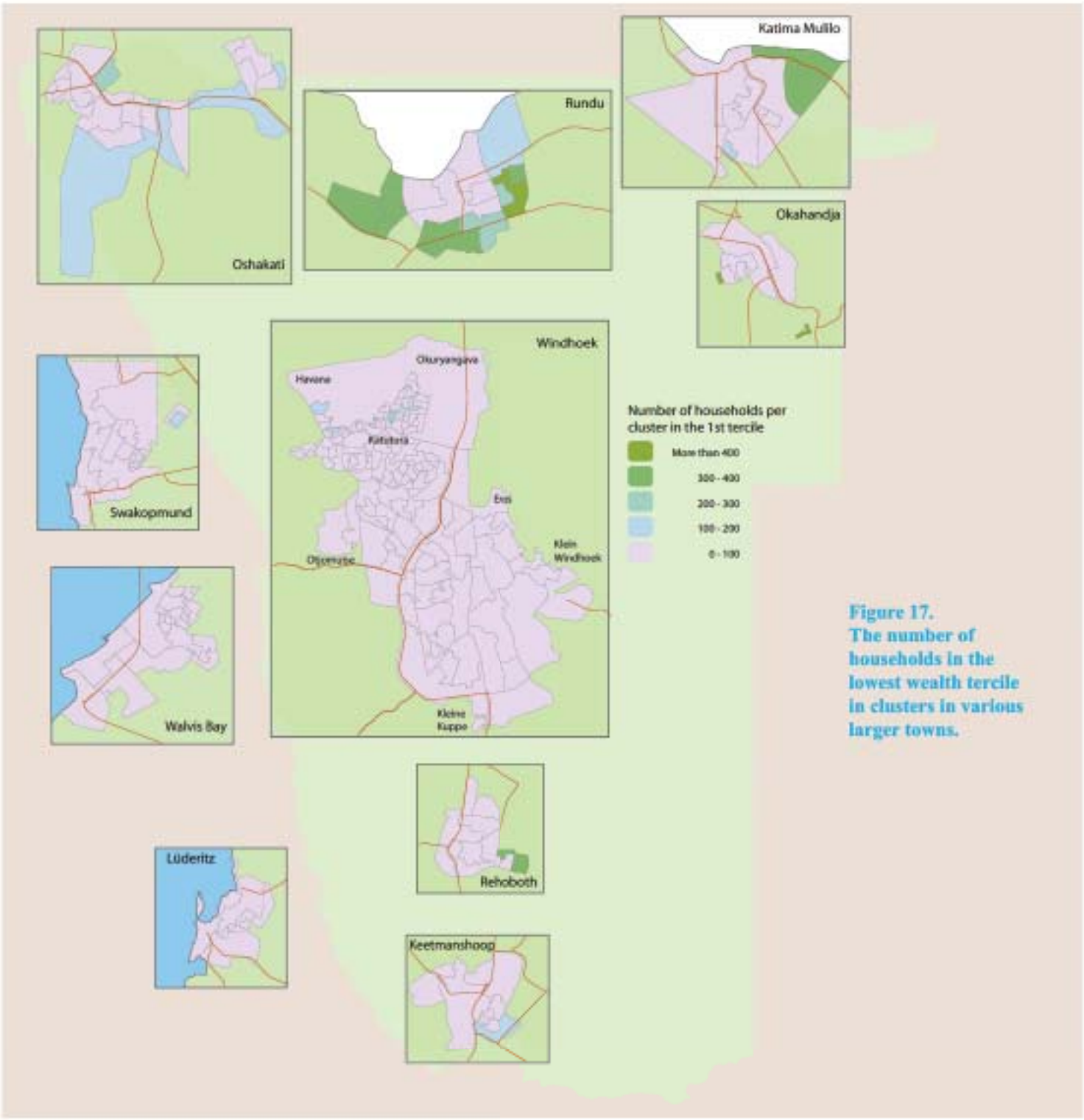


Figure 17.
The number of households in the lowest wealth tercile in clusters in various larger towns.

Relatively few homes in the lowest wealth tercile are in towns. Most of the poorer homes in towns are in informal settlements.

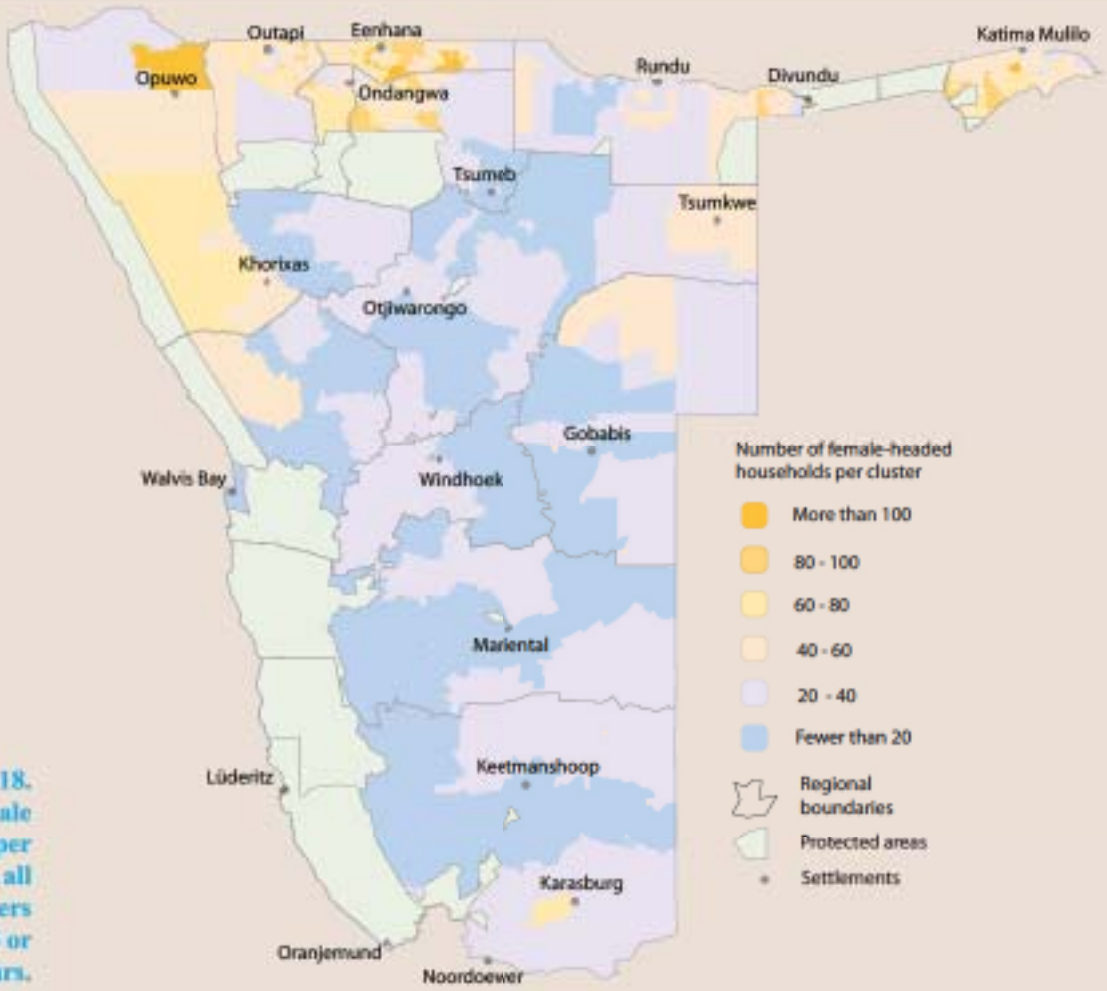


Figure 18. The number of female headed households per cluster in which all household members are younger than 15 or older than 64 years.

A major purpose of this book is to provide maps and data that show where poverty is concentrated. The previous maps which show the number of households in the lowest wealth tercile are useful in this respect.

This map presents a different measure of poverty, focusing on homes which are headed by women and in which there are no people of an age at which people are considered productive, as opposed to being dependants. Of course, not all female-headed households are necessarily poor, but a great number are especially if they are short of productive labour.

In total, there were some 26,000 such homes in Namibia in 2001. The map gives a perspective on where most of these households are located, but bear in mind there are many other homes in small urban areas that are not visible at this scale.

5 Access to safe water

Having clean water piped into homes is a service and luxury that most people in formal urban housing take for granted. But for many Namibian households, especially those in rural areas, supplies of clean water is but a wish, indeed a pipe dream unknown to those who have never experienced this service.

The main reason for having clean drinking water is to avoid water-borne diseases that cause such illnesses as gastro-enteritis, cholera, diarrohea and bilharzia. The incidence of these sicknesses can be substantial in certain rural areas of Namibia.[6]

Most homes that lack safe water are in places where clean water is not available. However, there also many people who do live close to supplies of treated water but still lack access to safe drinking water. Their households may be too poor to afford pipe systems or they live in informal housing areas which are not serviced by municipal water supplies.

The maps presented here show the proportion of households which do not have access to clean or safe water because their water comes from rivers, dams, canals or open wells. Homes that have supplies of safe water obtain them from piped treated water or from boreholes.

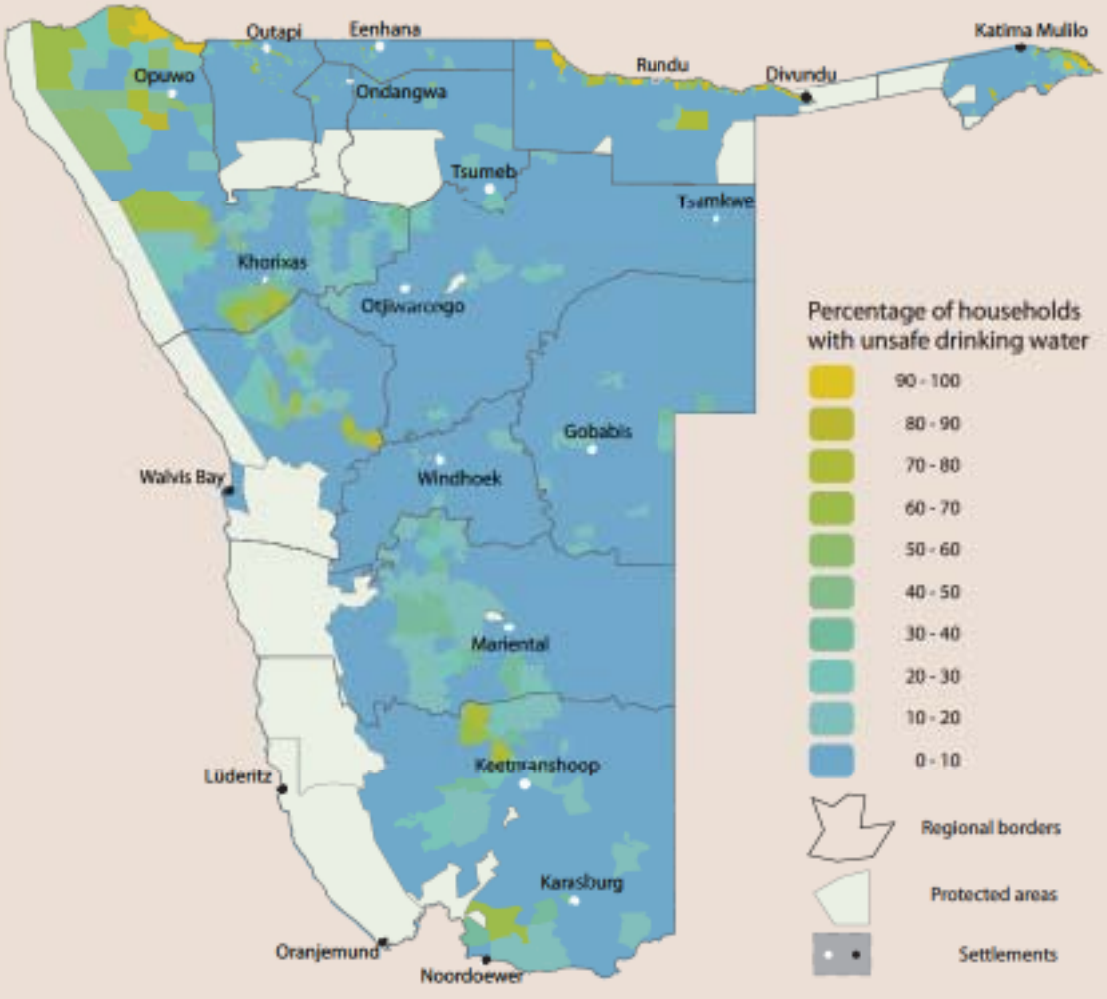


Figure 19.
The proportion of households that did not have access to safe water in 2001 because their drinking water was obtained from canals, rivers, dams or open wells. Only 7% or about 23,000 of all Namibian households did not have access to safe water in 2001.

Some general trends regarding safe water are clear from the maps. Thus, households that live close to Namibia's few perennial rivers (the Orange, Kunene, Zambezi, Kwando and Okavango) often use unsafe river water for drinking. By contrast, many rural households living in remote areas, even homes that are obviously poor in other respects, have access to safe water from boreholes. Within urban areas, there is usually a significant distinction between formal suburbs which have safe water and informal settlements that often obtain unsafe water from open canals, wells or rivers. Most poor rural homes are also a significant distance from their sources of water.[7]

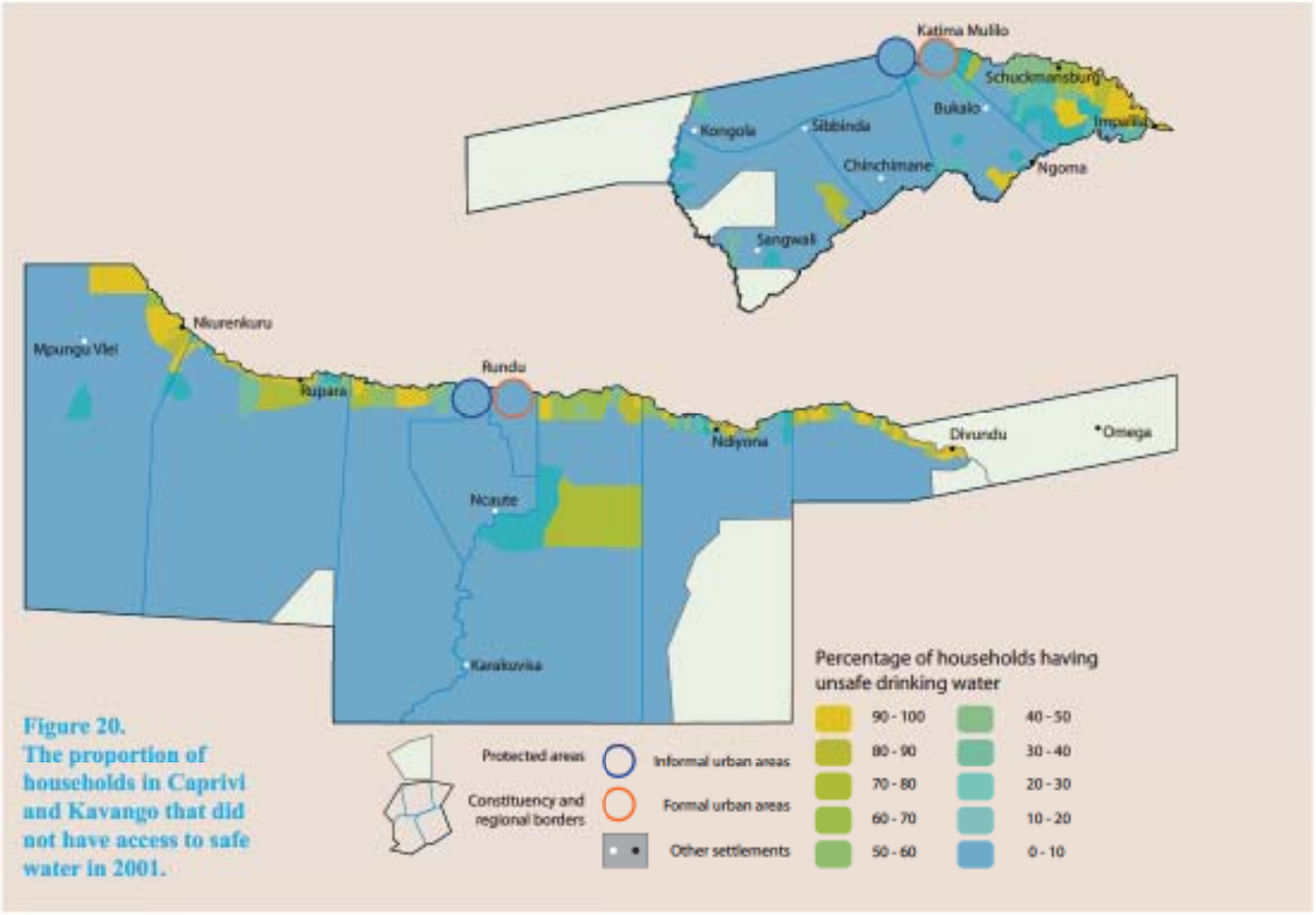


Figure 20.
The proportion of households in Caprivi and Kavango that did not have access to safe water in 2001.

Most of the homes that do not use treated or borehole water are located close to the Okavango and Zambezi Rivers, as well as to channels of the Zambezi that cross the eastern floodplains. Large numbers of people suffer from bilharzia because of their use of water from these rivers.

Away from the rivers, most rural homes use water from boreholes which is usually clean and safe to drink. Most people in both formal and informal areas of Rundu and Katima Mulilo have access to clean water.

The Kwando River is used by people and wildlife as a source of water.

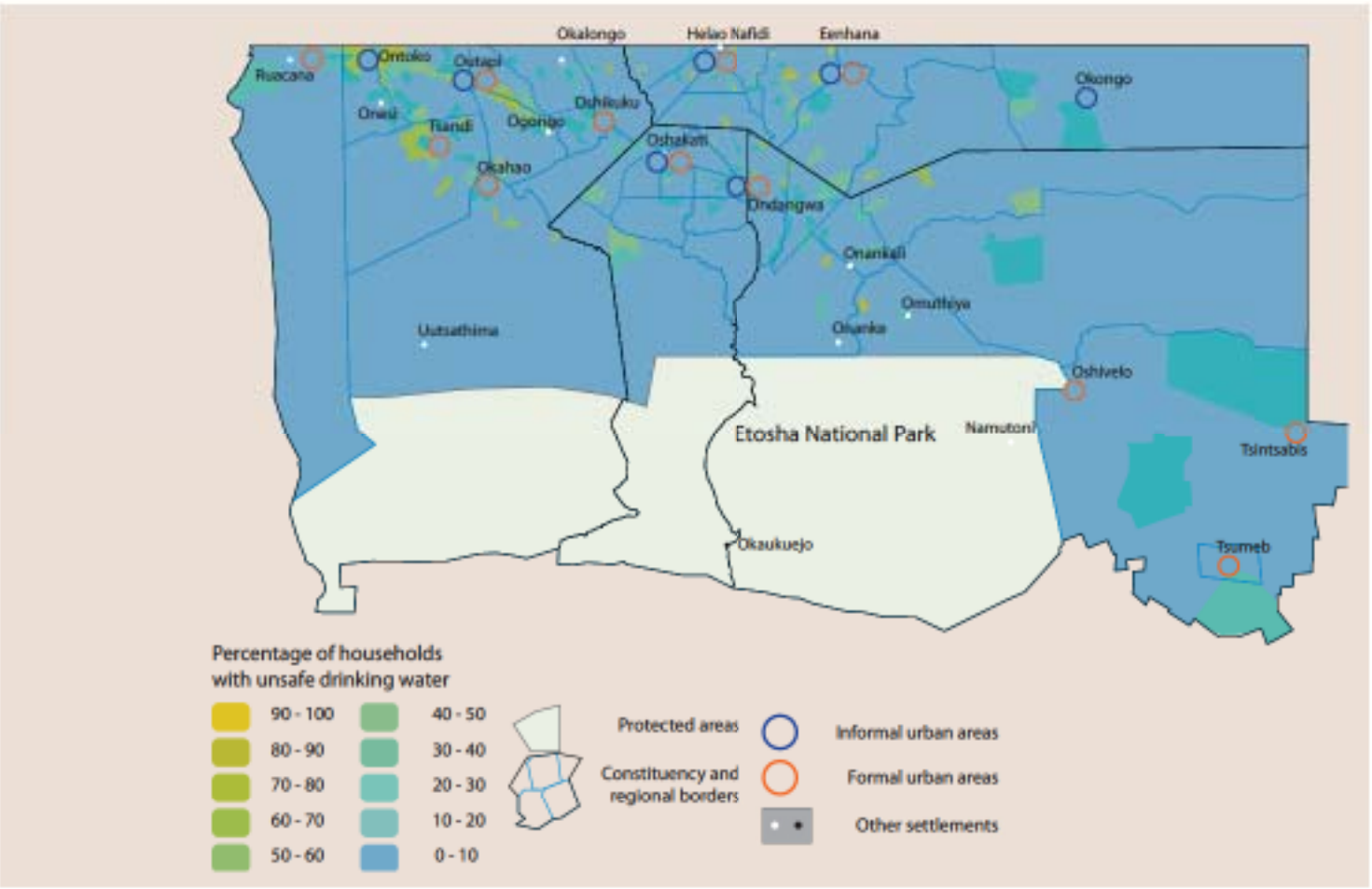


Figure 21.
The proportion of households in Omusati, Oshana, Ohangwena and Oshikoto that did not have access to safe water in 2001.

Most of the homes that do not use treated or borehole water obtain their water from hand-dug wells. Shallow wells, many of which are also used by livestock, are known as *omifima*, while deeper wells from which is drawn to the surface in buckets are called *eendungu*.

There is also an extensive network of pipelines that covers much of the densely populated area of these four regions. The water is pumped at Calueque in Angola from the Kunene River and then treated before being distributed through pipelines.

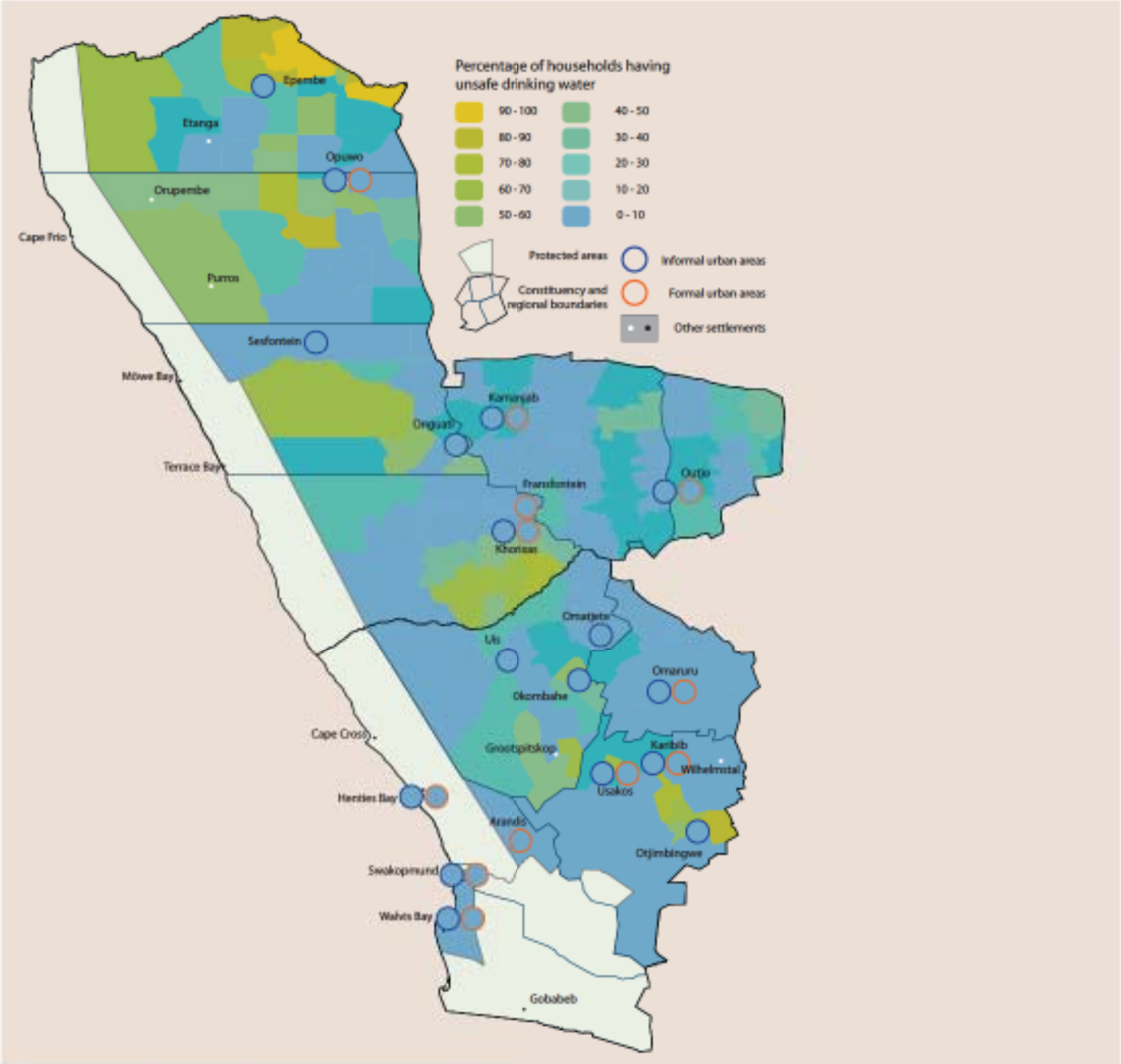
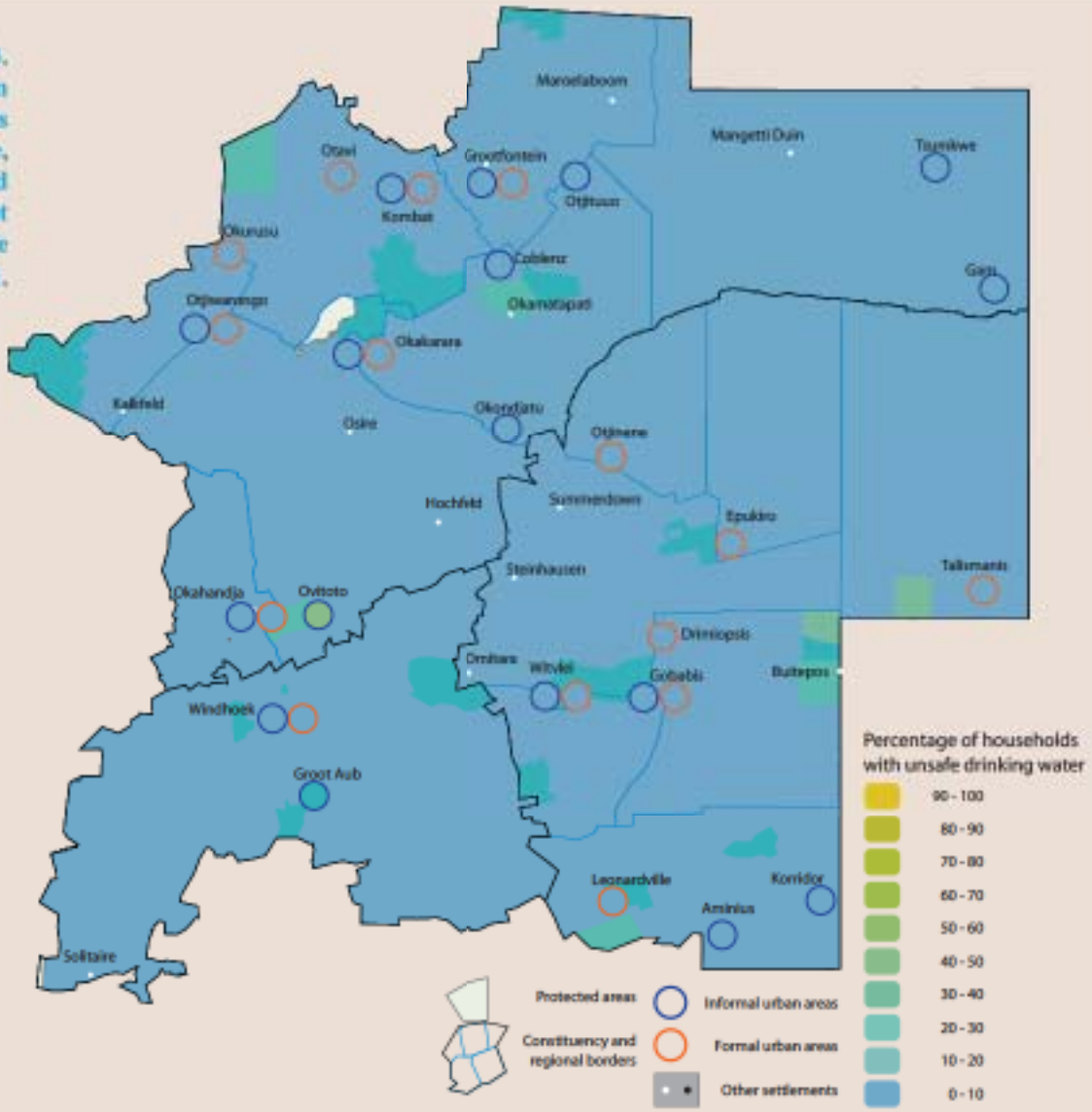


Figure 22. The proportion of households in Kunene and Erongo that did not have access to safe water in 2001.

The highest proportions of homes that use unsafe water are along the Kunene River.

Figure 23. The proportion of households in Omaheke, Otjozondjupa and Khomas that did not have access to safe water in 2001.



The great majority of homes use safe water for drinking because it is pumped from boreholes in most areas of these three regions. In addition, most larger towns have pipeline networks that distribute treated water.

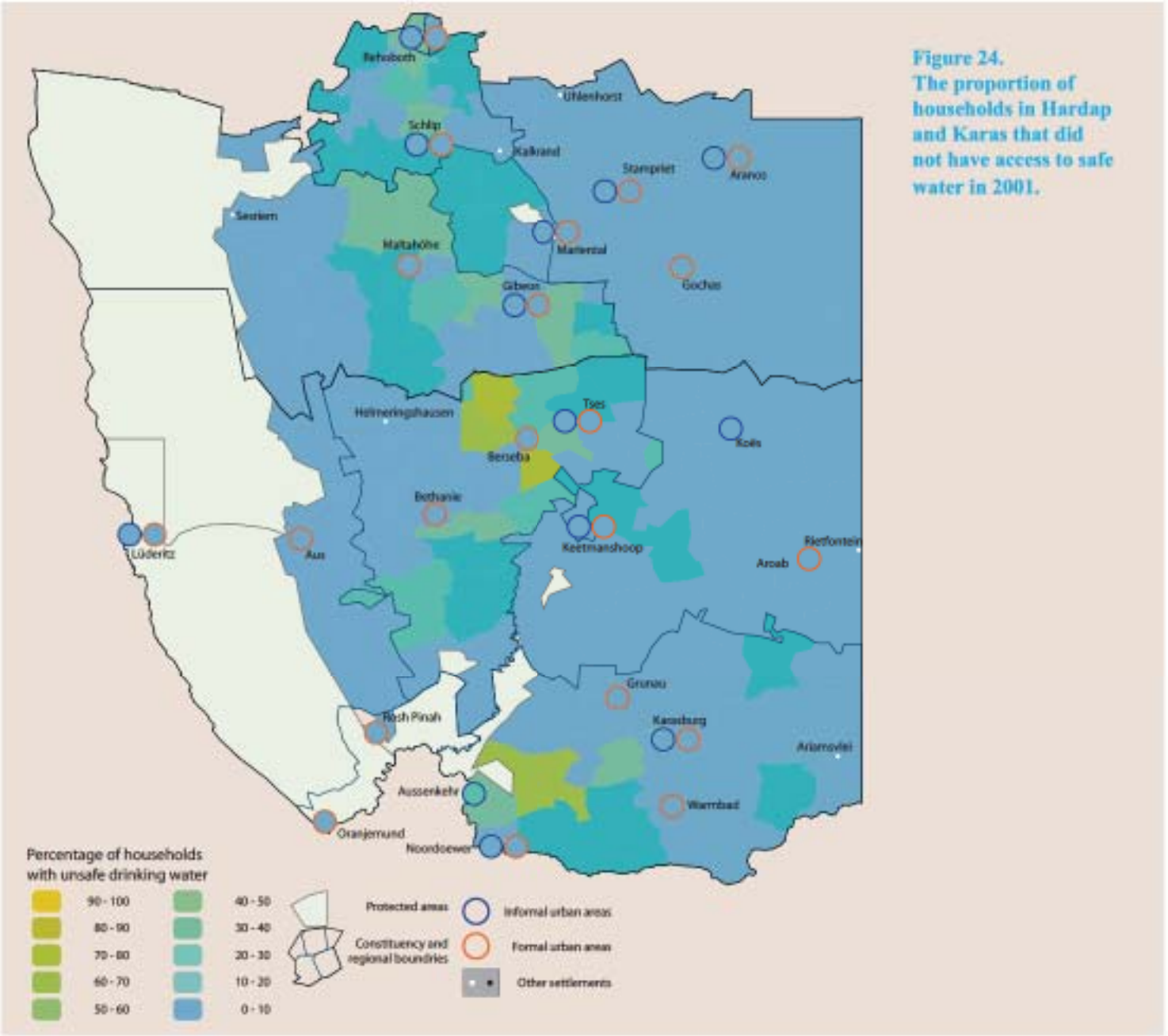


Figure 24.
The proportion of households in Hardap and Karas that did not have access to safe water in 2001.

The great majority of homes use safe water for drinking because it is pumped from boreholes in most areas of these regions. The majority of larger towns have pipeline networks that distribute treated water.

A significant number of households in the communal areas around Berseba and Tses do not have access to safe water, however.

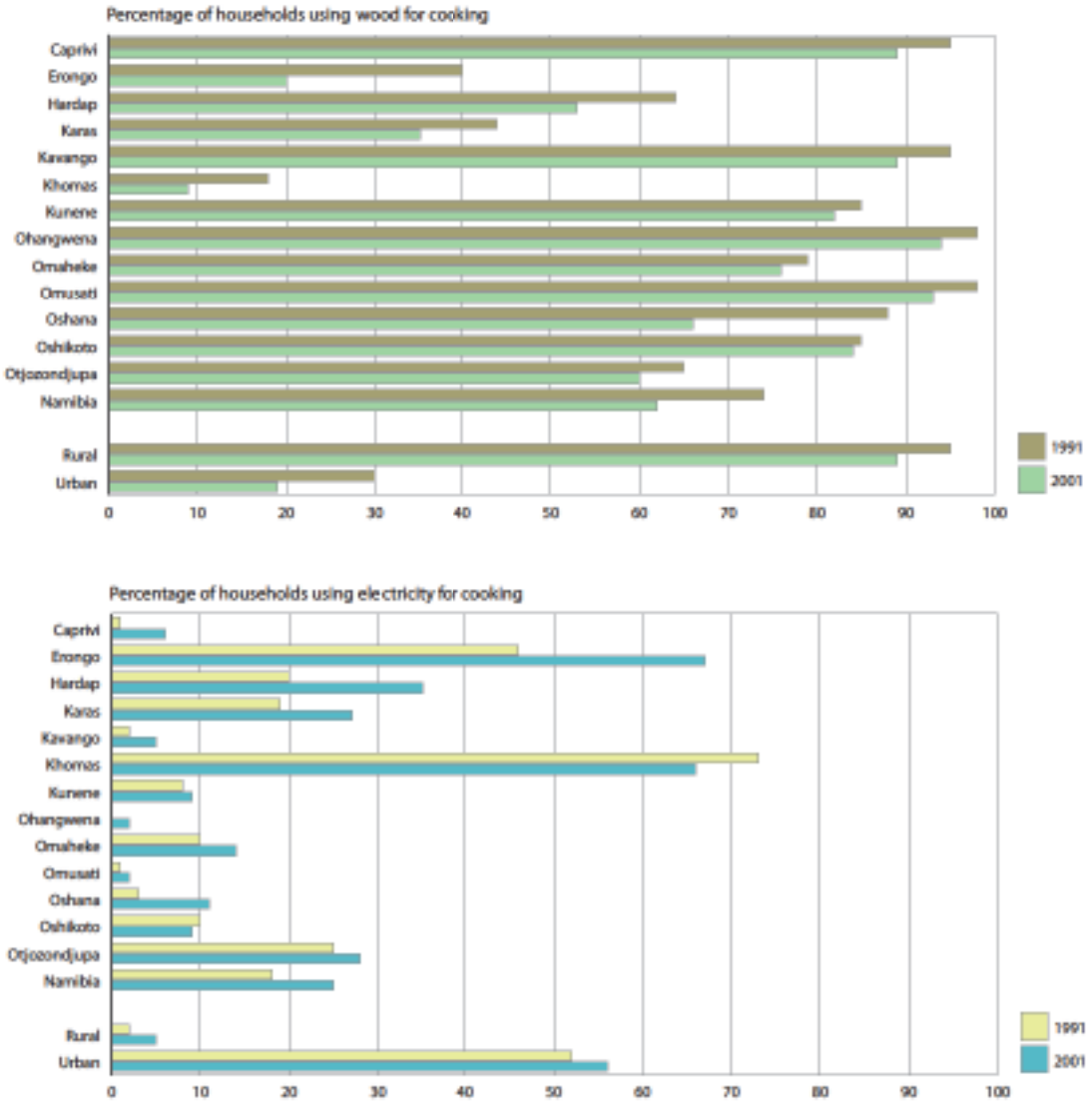
6 Cooking fuels

As is true for access to safe water, most of us who live in formal homes can afford electricity or gas to prepare our meals. Wood fuel for cooking is unknown to us, except for barbeques or braais.

The majority of Namibians, however, do not have sufficient cash to buy electrical or gas power and thus have to use wood to cook their food. This was true in 2001 for 62% of households (or 215,000 households), which is a significant improvement over the 74% of homes that cooked on wood in 1991. The decline in wood use was accompanied by an increase in the use of electricity, which reflects increasing access to cash wealth. These changes occurred to a greater or lesser extent in all the regions, as the graphs below show.

Although most fuel wood is harvested or collected for free, the use of wood comes with several costs: the time and opportunity costs incurred in searching for wood, health hazards from smoke-filled houses, and the possibility of homes being damaged by fires.

Figure 25. Percentages of households using wood (top) or electricity (below) for cooking in 1991 and 2001.



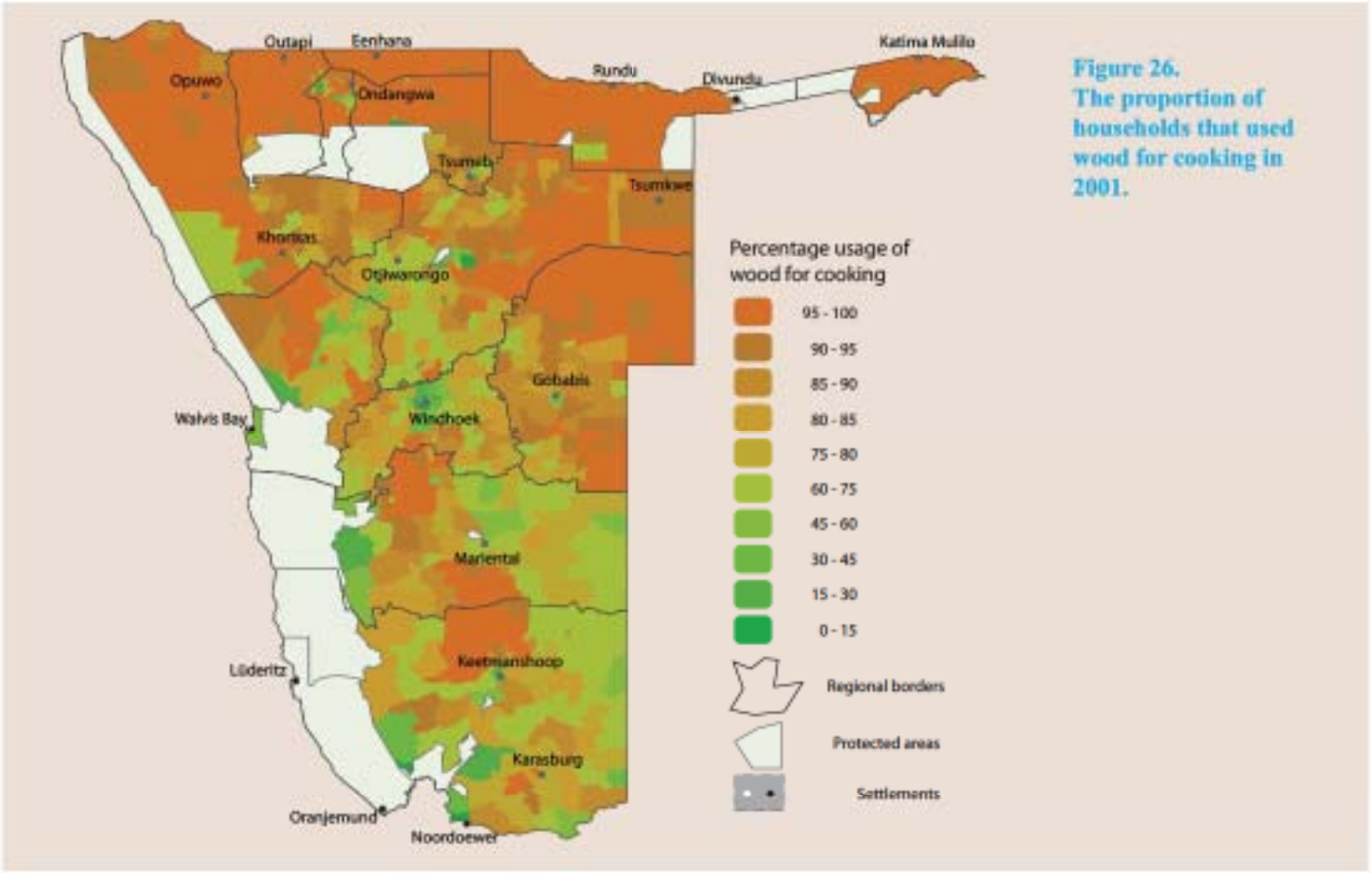


Figure 26.
The proportion of households that used wood for cooking in 2001.

Overall, the use of wood for cooking is most prevalent in northern and central Namibia where wood is relatively abundant compared to the un-wooded south, and also in communal areas where many residents cannot afford other fuels. The cost of buying electrical power is prohibitively high for most people in rural areas.

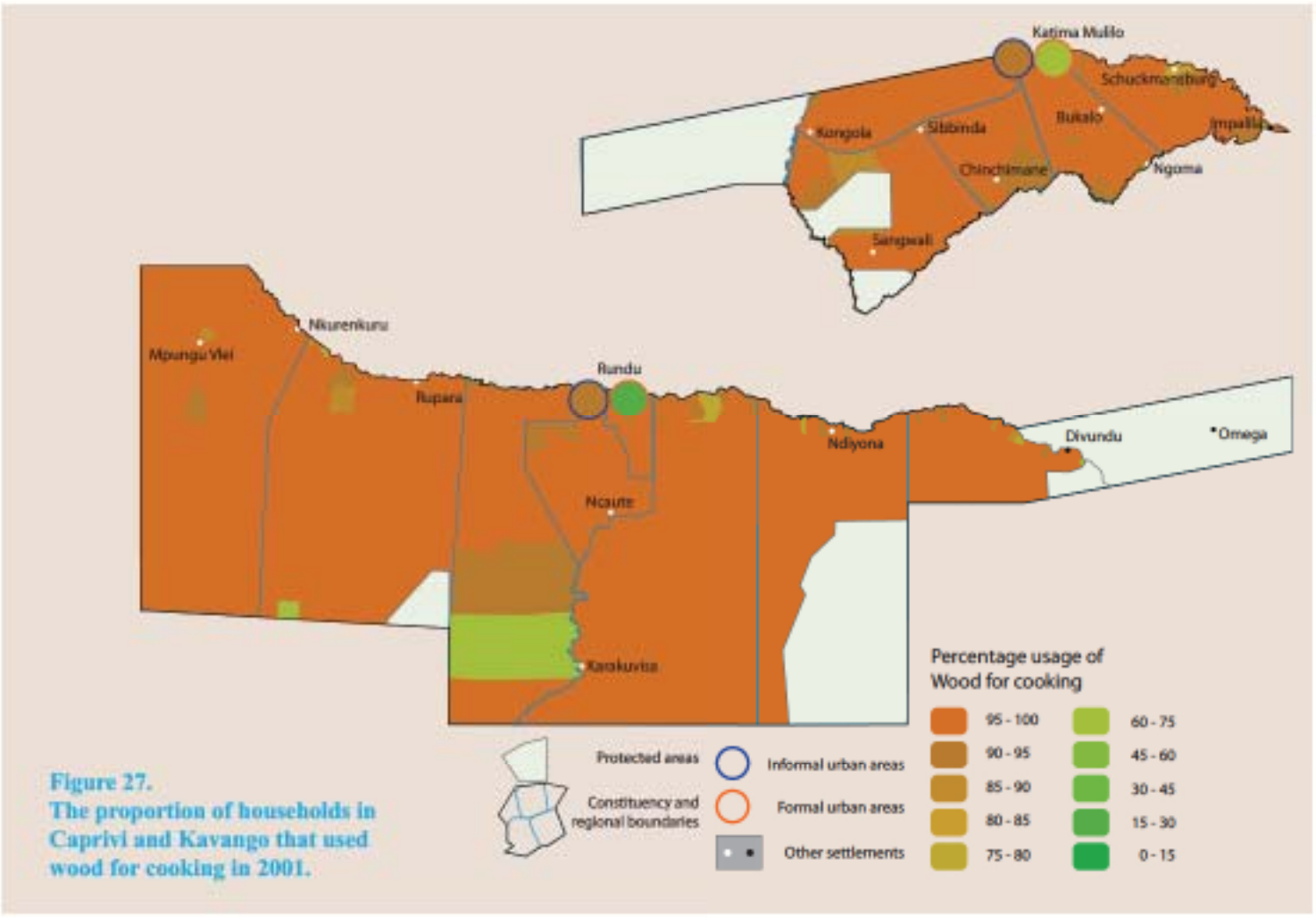


Figure 27.
The proportion of households in Caprivi and Kavango that used wood for cooking in 2001.

Almost all rural households in these two regions rely on wood for cooking. The same is true for informal homes in Rundu and Kavango, and it is only in formal housing areas that other fuels are used to a significant extent.

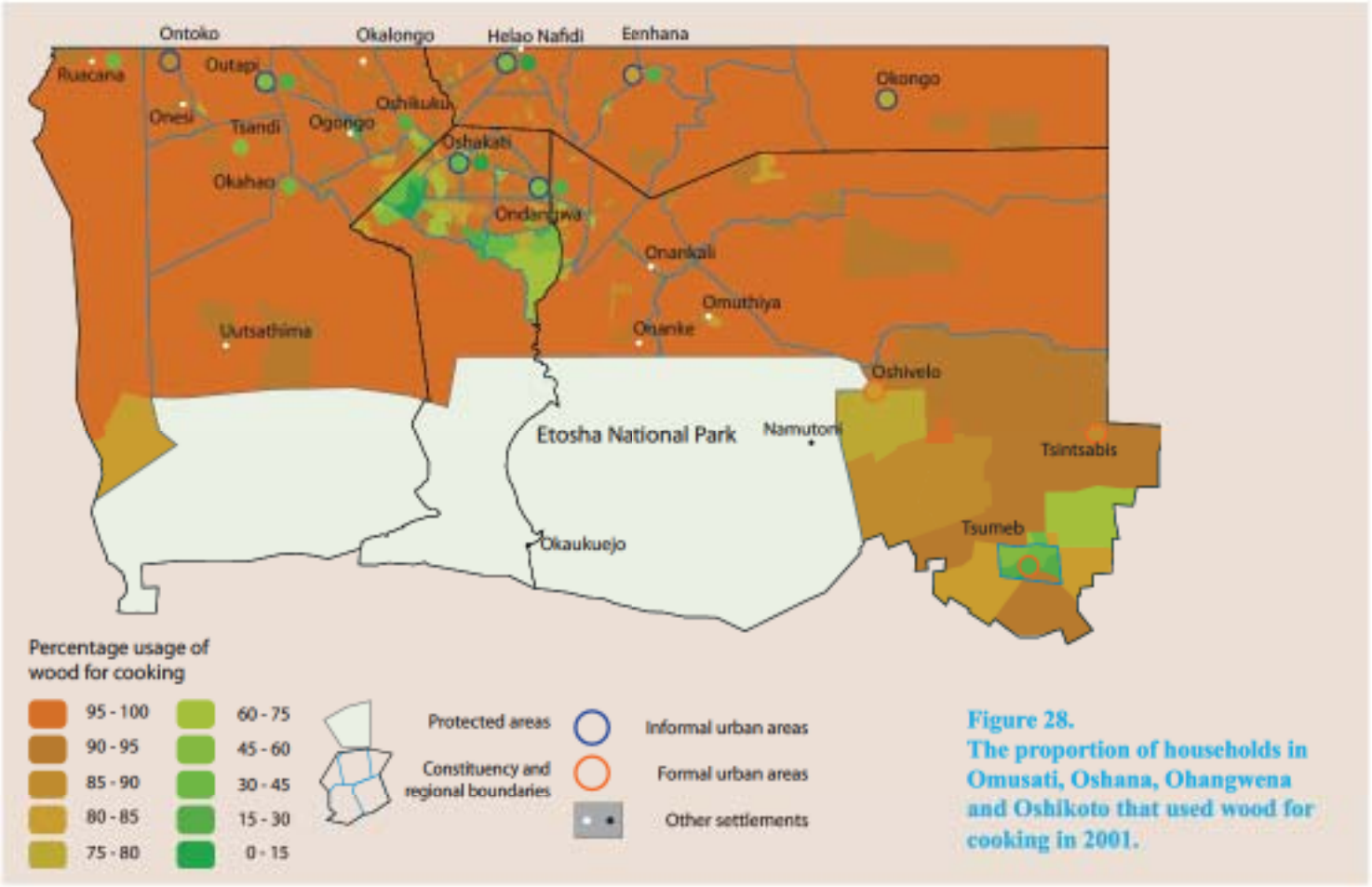
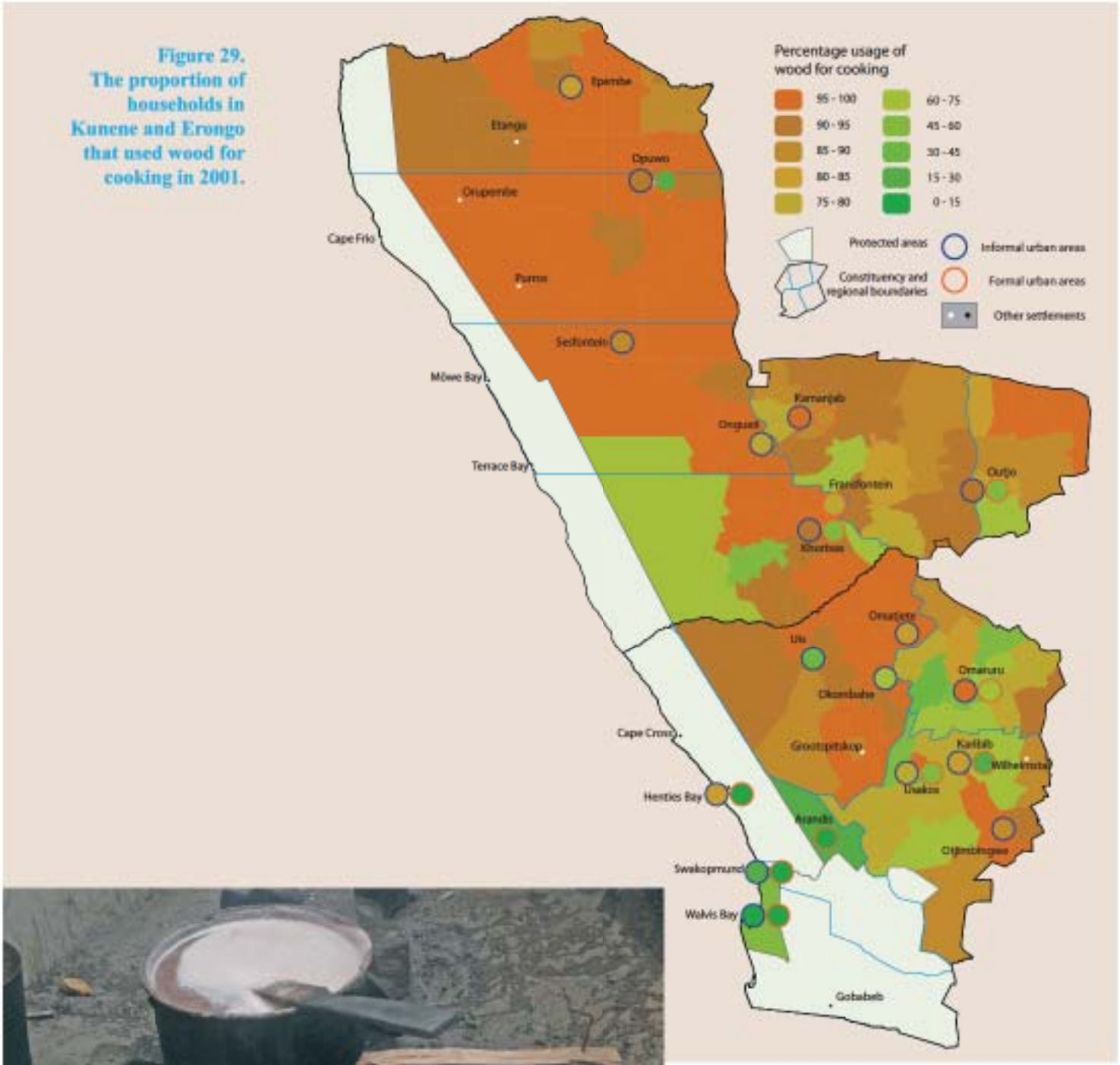


Figure 28.
The proportion of households in Omusati, Oshana, Ohangwena and Oshikoto that used wood for cooking in 2001.

Wood is used by the great majority of rural homes in these four regions. An interesting exception is in the grassland areas (called *omburga*) south of Oshakati and Ondangwa where little wood is available. Poorer households in these areas use dried cattle dung for fuel, while the significant number of comparatively wealthy homes here use gas for cooking.

Substantial numbers of rural homes on resettlement and freehold farms around Tsumeb have electricity supplies.

Figure 29. The proportion of households in Kunene and Erongo that used wood for cooking in 2001.



The greater use of wood in the northern areas is due both to the greater abundance of trees there and the higher proportion of poorer homes than further south in these regions. Residents in informal settlements in places such as Swakopmund and Walvis Bay obtain much of their wood fuel from local rubbish dumps.

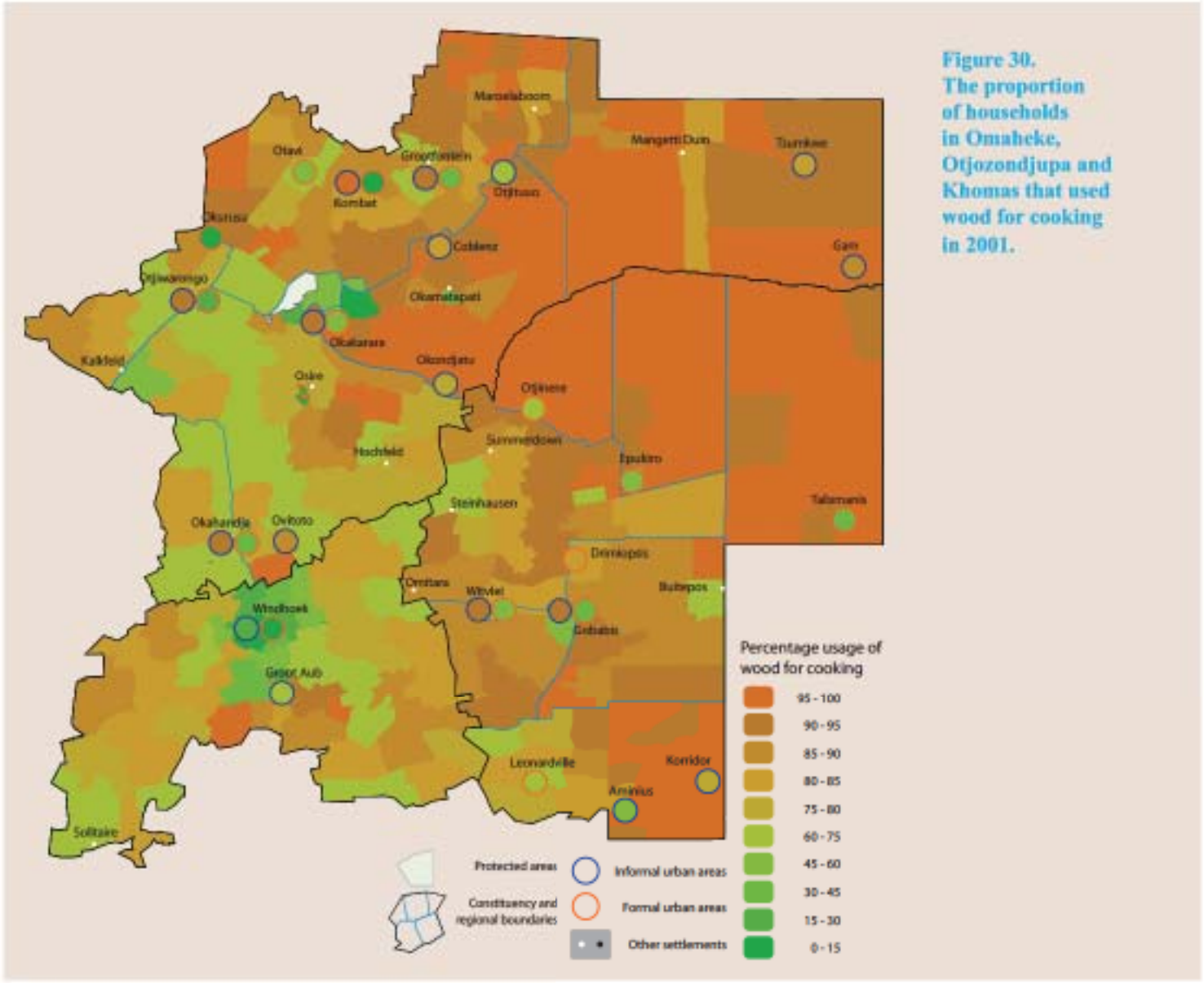
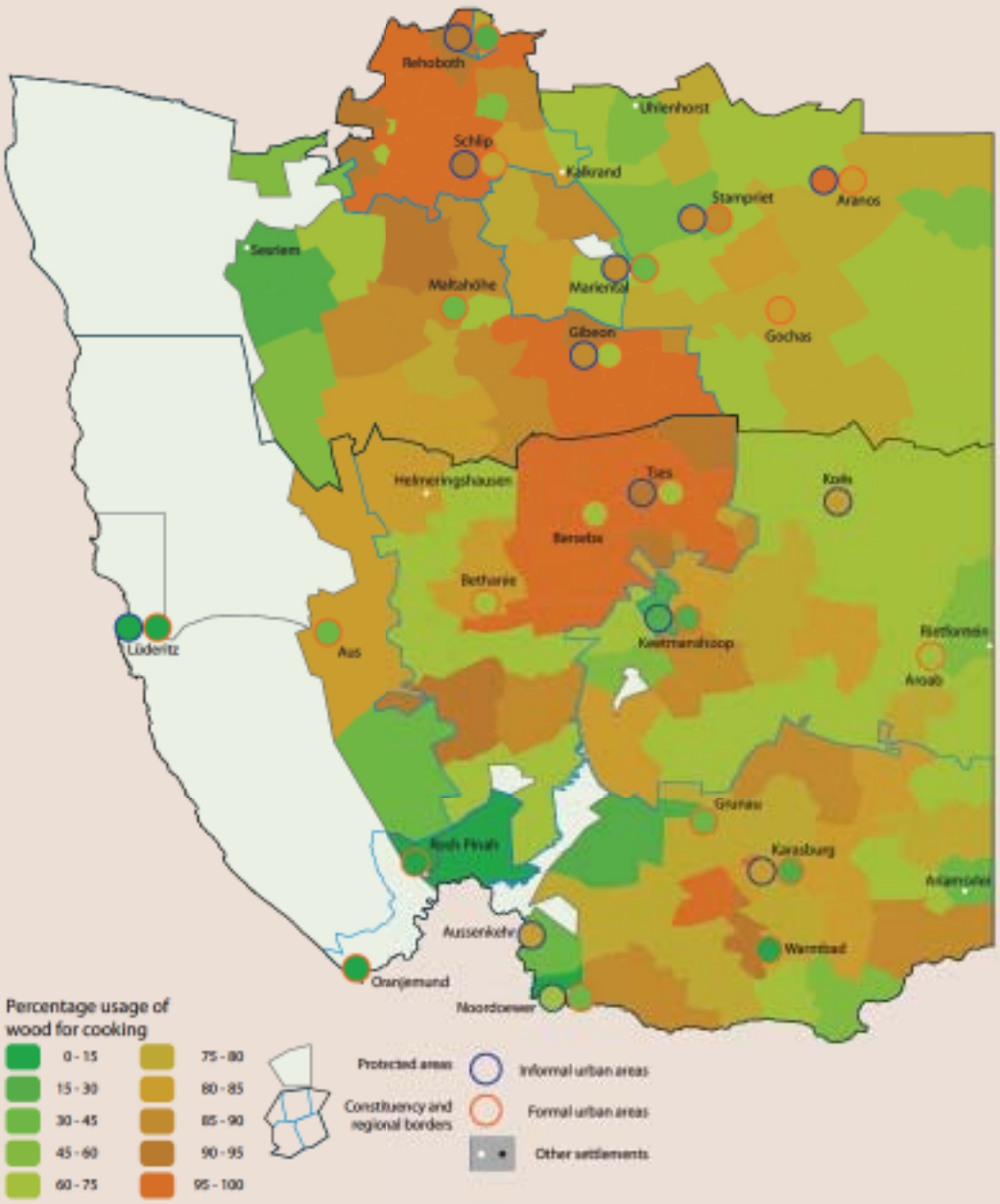


Figure 30. The proportion of households in Omaheke, Otjozondjupa and Khomas that used wood for cooking in 2001.

The greatest use of wood for fuel is in the eastern and north-eastern areas where wood is somewhat more abundant than elsewhere. Many of these wood-using areas are also on communal land.

People who live in informal urban areas use considerably more wood for fuel than those in formal housing. This difference can be seen clearly in such towns as Gobabis, Okakarara, Otjiwarongo, Okahandja and Windhoek.

Figure 31.
The proportion of households in Hardap and Karas that used wood for cooking in 2001.



Compared to other regions in the country, rather small proportions of households use wood for cooking in Hardap and Karas. The highest levels of wood use are in the Rehoboth area and the communal lands between Gibeon and Keetmanshoop.

7 Sanitation

Access to private toilet facilities is another measure of the welfare of Namibians, and the figures and maps provided below show that much of the country's population is divided between those who have their own sanitary facilities and those who use open, outside places as 'bush' toilets.

As is the case with many other measures of poverty, the most conspicuous difference is between high rates of 'bush use' in communal areas and informal urban areas compared with greater access to private facilities that are linked to sewage systems and pits in formal town areas and freehold land. The 2001 Population & Housing Census used the following categories of toilet facilities: Flush toilet not shared, Flush toilet shared, Ventilated Improved Pit (VIP), Pit long drop, Bucket/pail, Bush and other. The figures given here are for "Bush".

An improvised toilet in the informal DRC settlement in Swakopmund.

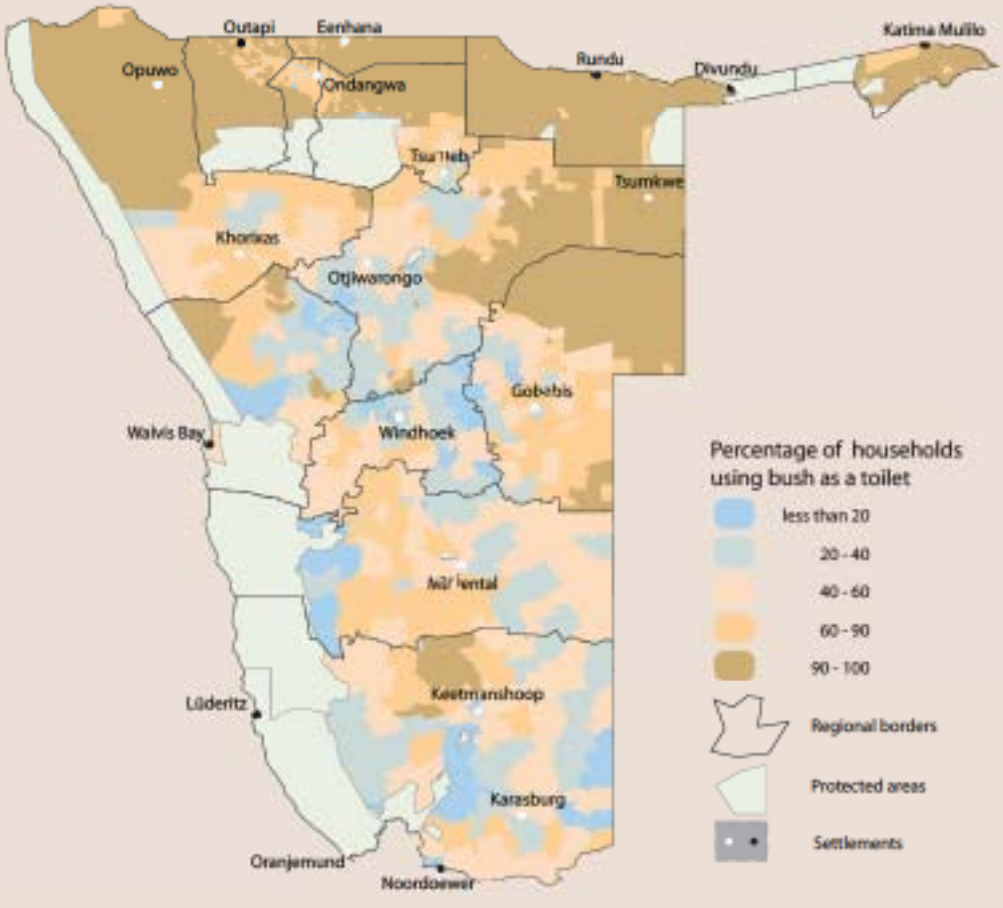


Figure 32.
The proportion of households that used the bush as a toilet in 2001. In the country as a whole, 54% or about 187,400 households relied on bush toilets.

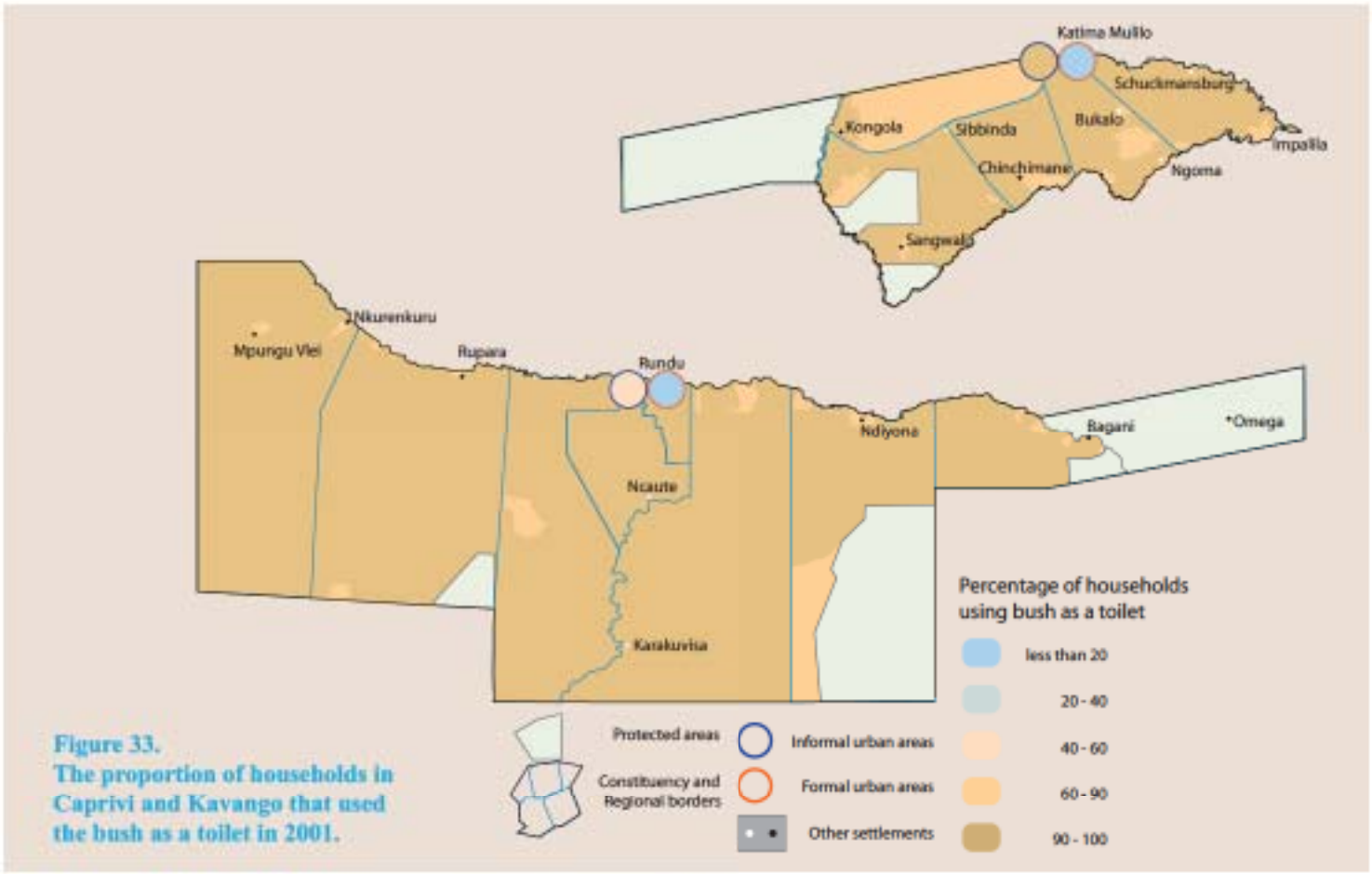


Figure 33.
The proportion of households in Caprivi and Kavango that used the bush as a toilet in 2001.

Almost all households use the bush as a toilet in the rural areas of these two regions. The same is true for homes in informal housing areas of Katima Mulilo. Most households in the formal areas of Katima Mulilo and Rundu have private toilets and sewage systems.

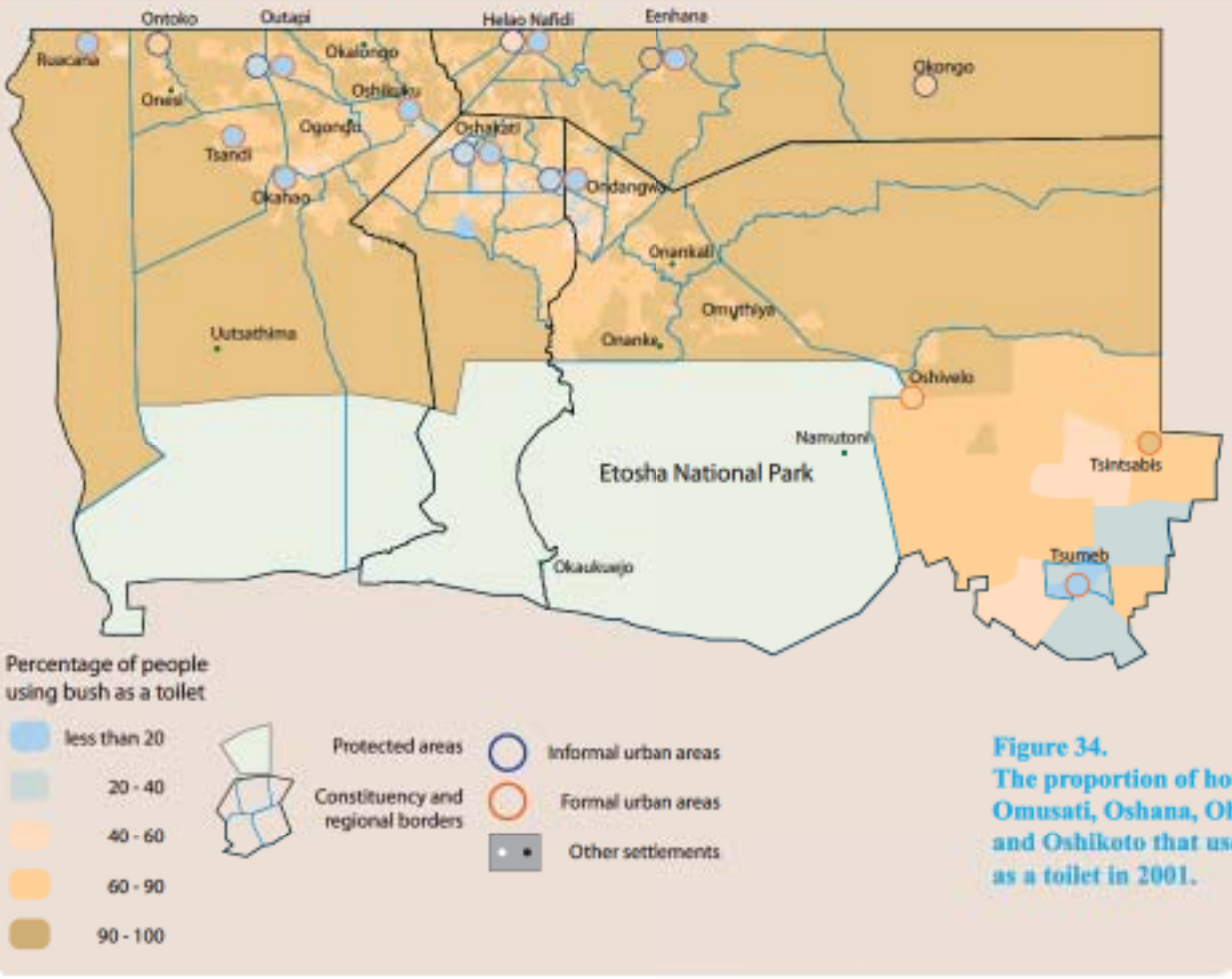
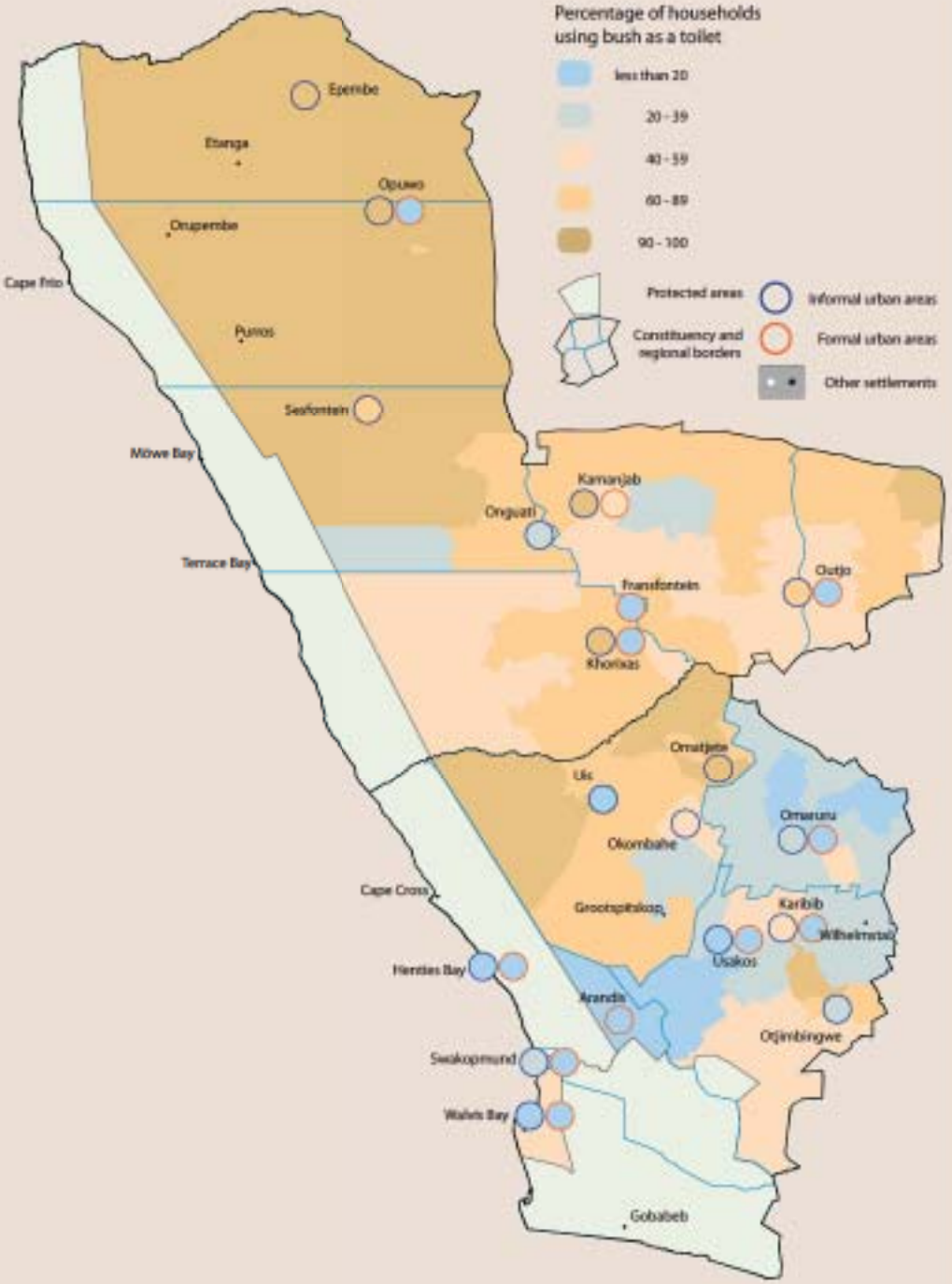


Figure 34.
The proportion of households in Omusati, Oshana, Ohangwena and Oshikoto that used the bush as a toilet in 2001.

Aside from freehold and resettlement farms around Tsumeb, the majority of rural households have no formal sanitation or sewage systems. However, a significant number of homes in the densely populated swathe between Ondangwa and Outapi do not use the bush for their relief, and thus have other private toilet facilities.

Most urban areas, even those that are informal settlements, have private toilet facilities. Exceptions to this are seen in the high proportions of 'bush toilets' in Helao Nafidi and Ontoko.

Figure 35. The proportion of households in Kunene and Erongo that used the bush as a toilet in 2001.



The highest proportion of open air bush toilet use is in the northern rural areas of these two regions. To the south in the Erongo region, most households have private toilet facilities.

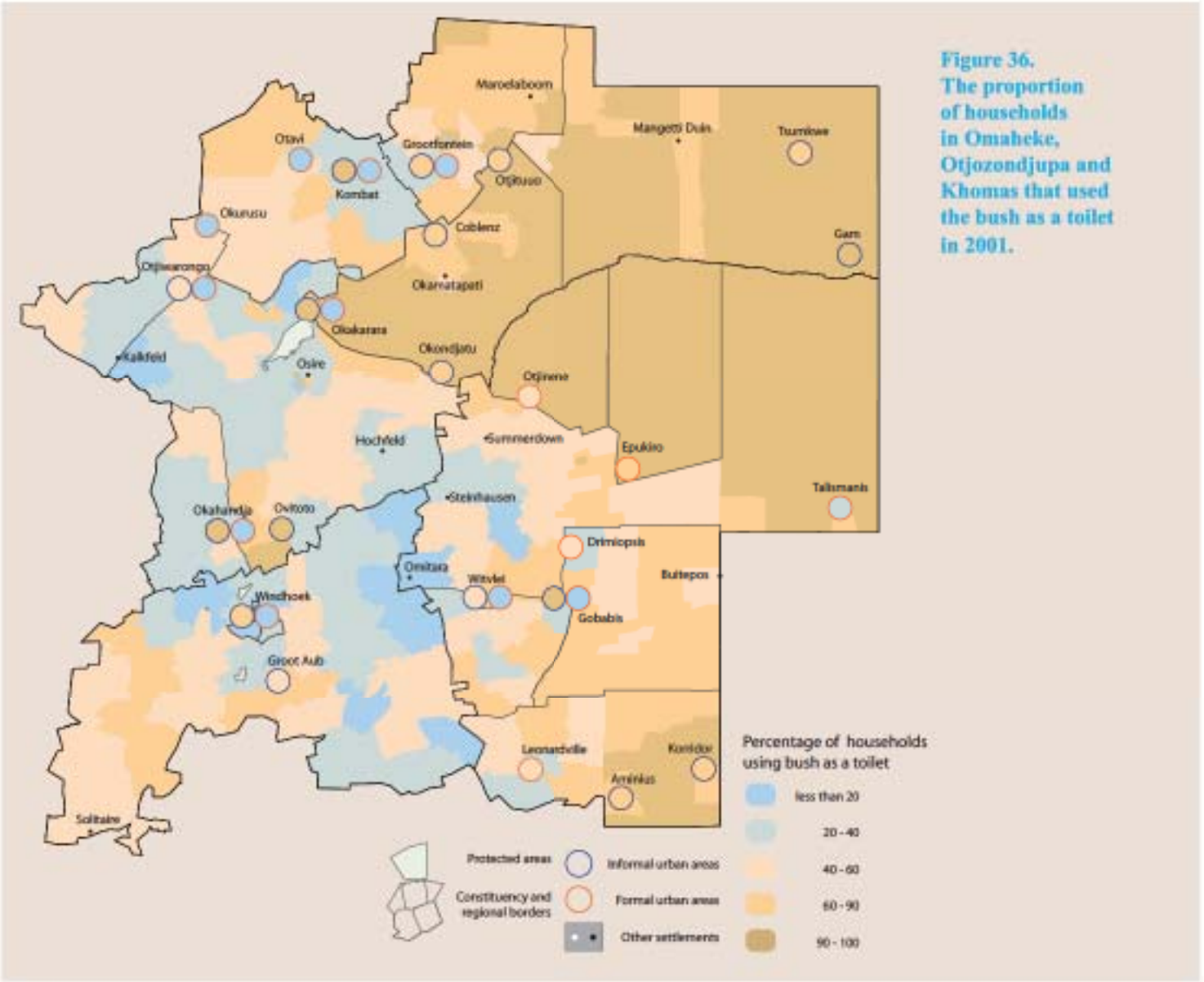
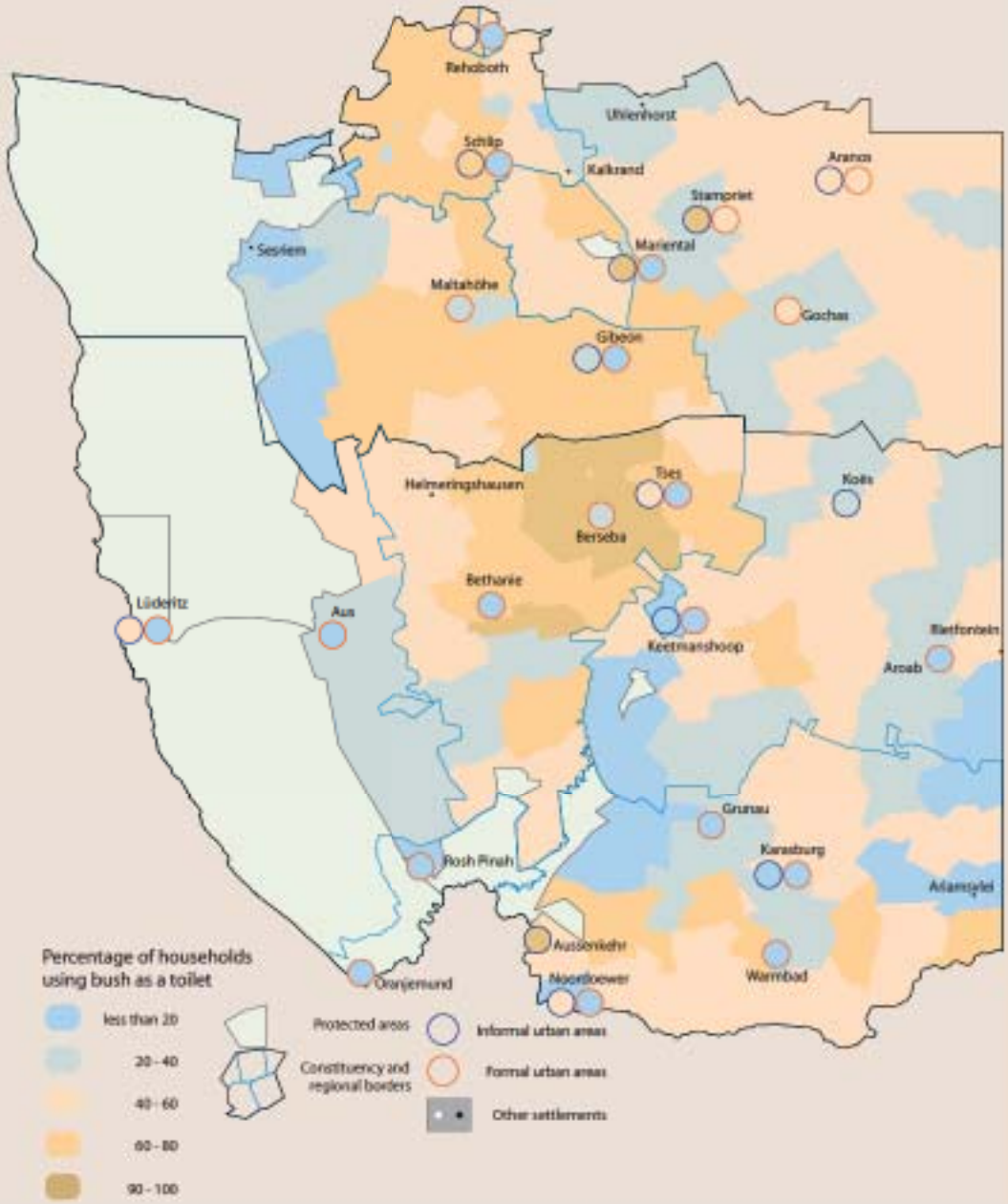


Figure 36. The proportion of households in Omaheke, Otjozondjupa and Khomas that used the bush as a toilet in 2001.

There is a marked difference in the frequency of bush toilets versus private facilities between the communal and freehold areas, as well as between informal and formal housing in urban areas.

Problems of sanitation are often most severe near densely populated informal settlements. For example in 2001, the members of about 8,400 households used the bush for their toilet in and around the informal settlements of Windhoek.

Figure 37.
The proportion of households in Hardap and Karas that used the bush as a toilet in 2001.



Residents in the two southern regions generally have greater access to private facilities and formal sewage systems than elsewhere in the country. However, the majority of people in informal urban households relieve themselves in the bush. The same is true for people living in the former Namaland communal area.

8 Building Materials

Materials used to build the walls of homes vary greatly. On the one hand are a range of manufactured materials such as burnt bricks and cement blocks, prefabricated panels and corrugated iron. All these materials are generally obtained by cash purchases. On the other hand materials harvested from local resources, such as poles, thatch, mud, and reed mats are acquired using manual labour. Wealthier homes with adequate financial resources therefore usually have walls made of purchased materials, and those which lack buying power use domestic labour to collect and assemble their own walls. Many people in informal settlements collect and build their homes from scrap, such as metal sheeting and wood panels.

One of the most significant measures to reflect improving welfare is shown in the following graph. In almost all areas of the country there has been a major switch from harvested materials to those purchased from the suppliers of building materials. The percentage of households with walls of poles, mud and the like halved in some regions. These were in the northern regions where trees are relatively abundant, while the smallest changes occurred in the southern, central and western regions where trees suitable for building are rare.

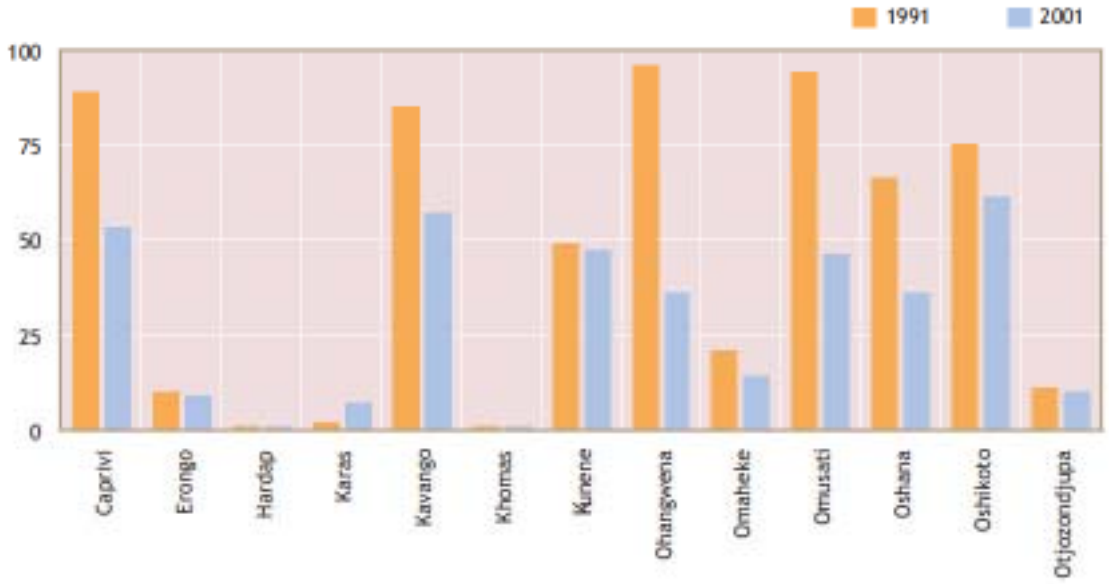
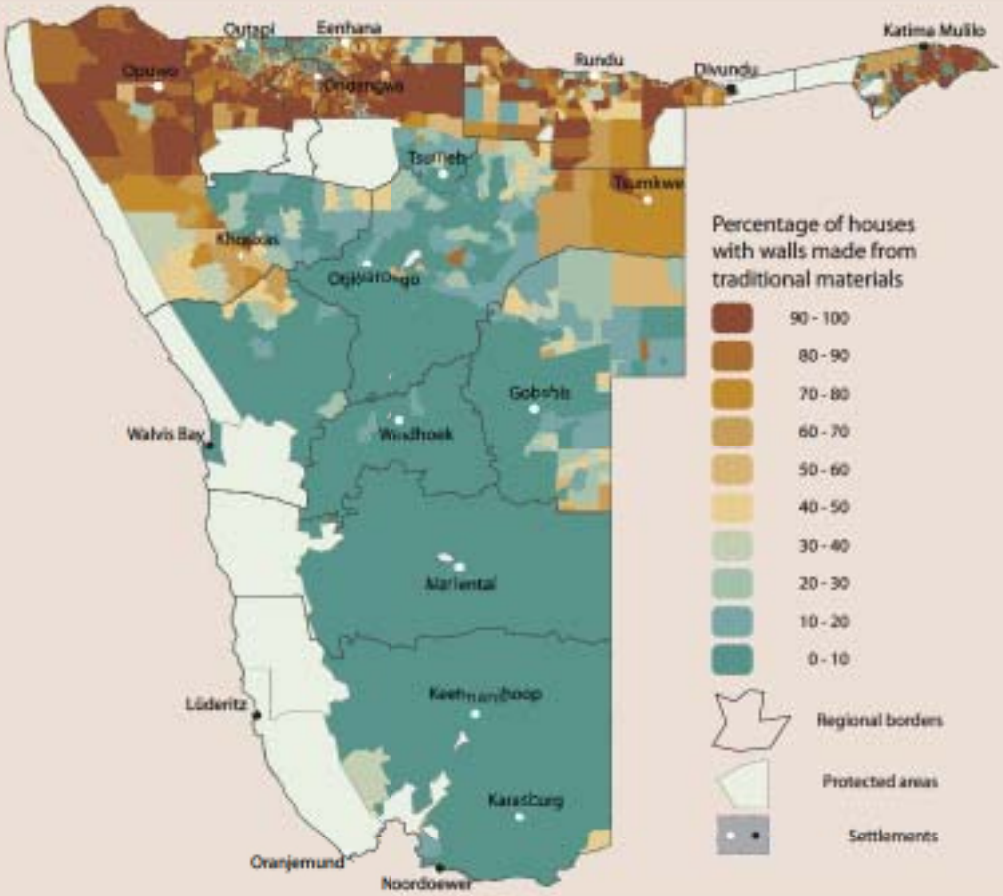


Figure 38.
The proportion of households in 1991 and 2001 per region having walls built using wood, sticks, grass, mud or cattle dung. All other homes have walls of bricks, blocks and prefabricated materials. In 2001, 99,220 or 29% of all homes had walls built of traditional materials.

This housing along the Orange River is constructed using locally available reeds.

Figure 39. The proportion of Namibian homes in 2001 having walls built using wood, sticks, grass, mud or cattle dung.



Traditionally, most homes in the central northern regions were built using mopane poles which are extremely durable and also resistant to damage caused by termites. These poles were also used for the extensive palisade walls which surround the whole homestead. As a result large areas of these regions were deforested, especially during the 20th century when the population in that area of Namibia grew rapidly. However, observations suggest that the number of trees, particularly mopanes, appears to be increasing in the central-northern regions as a result of the change in building materials.

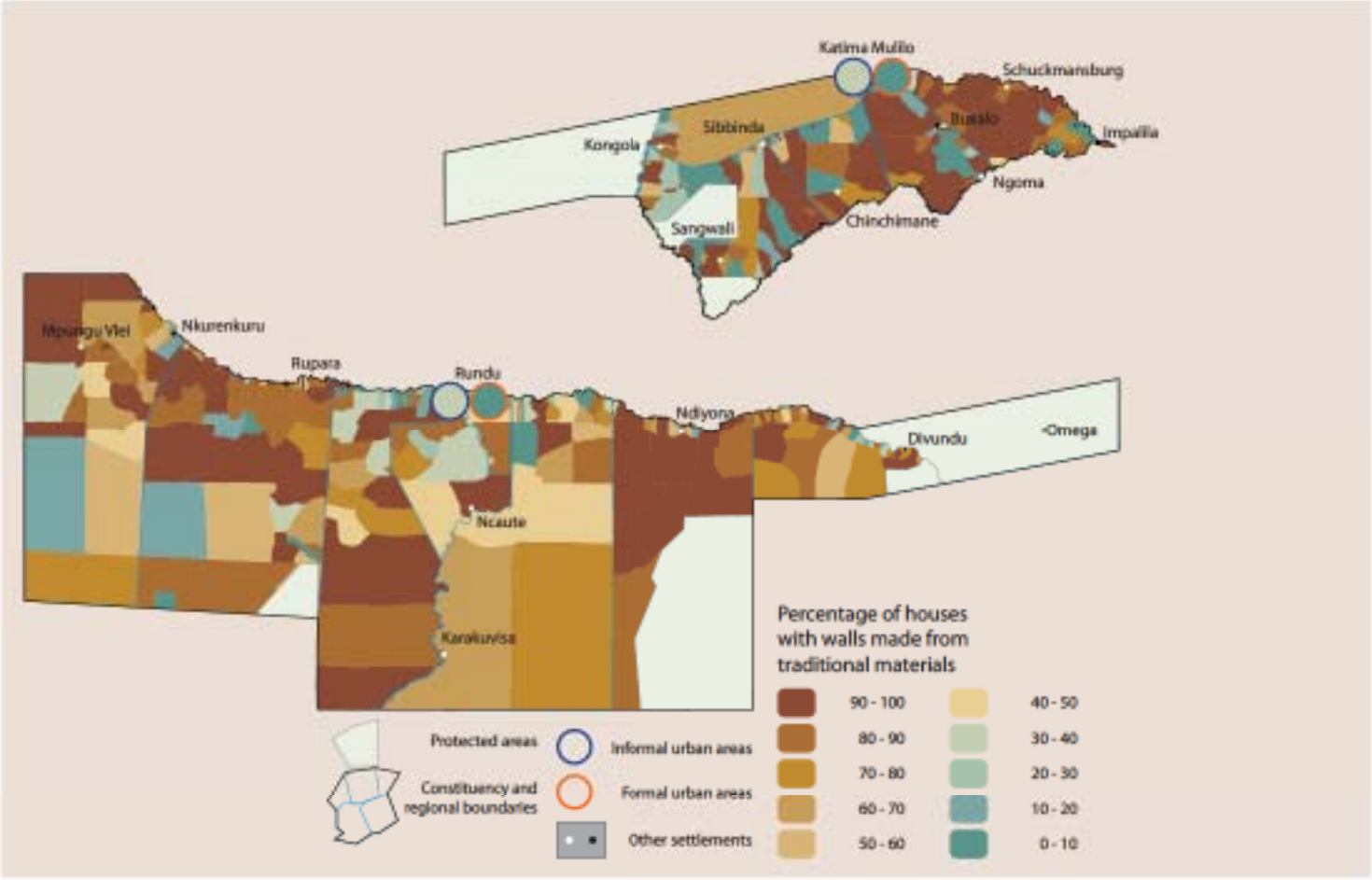


Figure 40.
The proportion of homes in Caprivi and Kavango in 2001 having walls built using wood, sticks, grass reeds, mud or cattle dung.

Most homes in Katima Mulilo and Rundu have walls of bricks or prefabricated materials, but a significant number of households in the informal settlements of those towns have walls of poles, sticks and mud.

While almost all rural homes have walls of traditional materials in many enumeration areas, many other nearby rural enumeration areas curiously have a low proportion of such homes. Reeds are often used for palisade and huts walls for homes situated close to the Okavango, Zambezi and Kwando/Linyanti Rivers.

Nowadays, most rural homes are constructed of materials locally acquired by labour and others obtained through cash purchases.

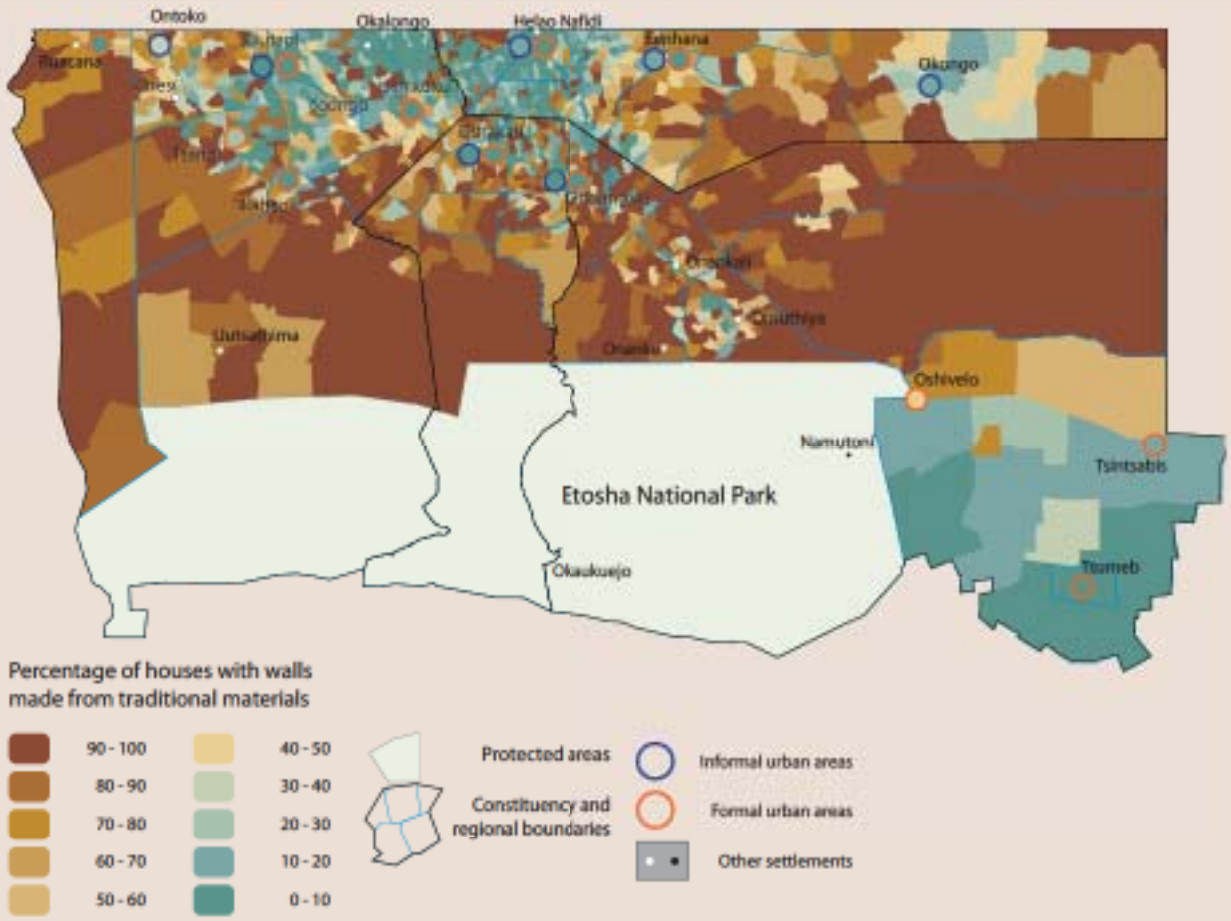


Figure 41. The proportion of homes in Omusati, Oshana, Ohangwena and Oshikoto in 2001 having walls built using wood, sticks, grass, mud or cattle dung.

The concentration of enumeration areas with high proportions of rural homes with walls of purchased building materials is also in the most densely populated area of these four regions. Most homes on the freehold farms around Tsumeb are also built of bricks.

It is in the more remote and sparsely populated areas that most homes have been built using poles and other local materials. Not only are most homes in these areas poor, but trees are also more abundant than in the central zone that roughly stretches between Ondangwa, Helao Nafidi, Outapi, Okahao and Oshakati.

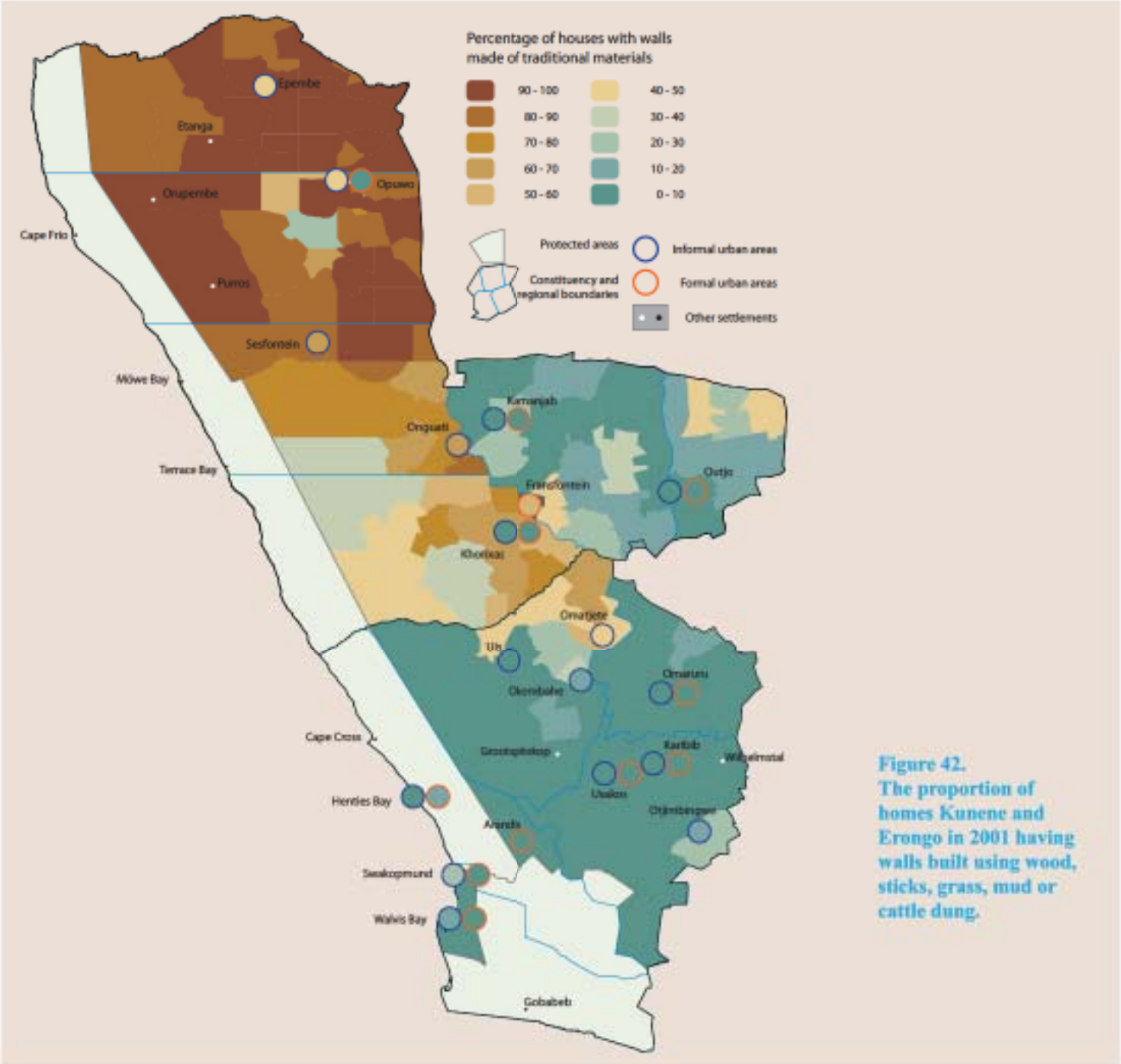
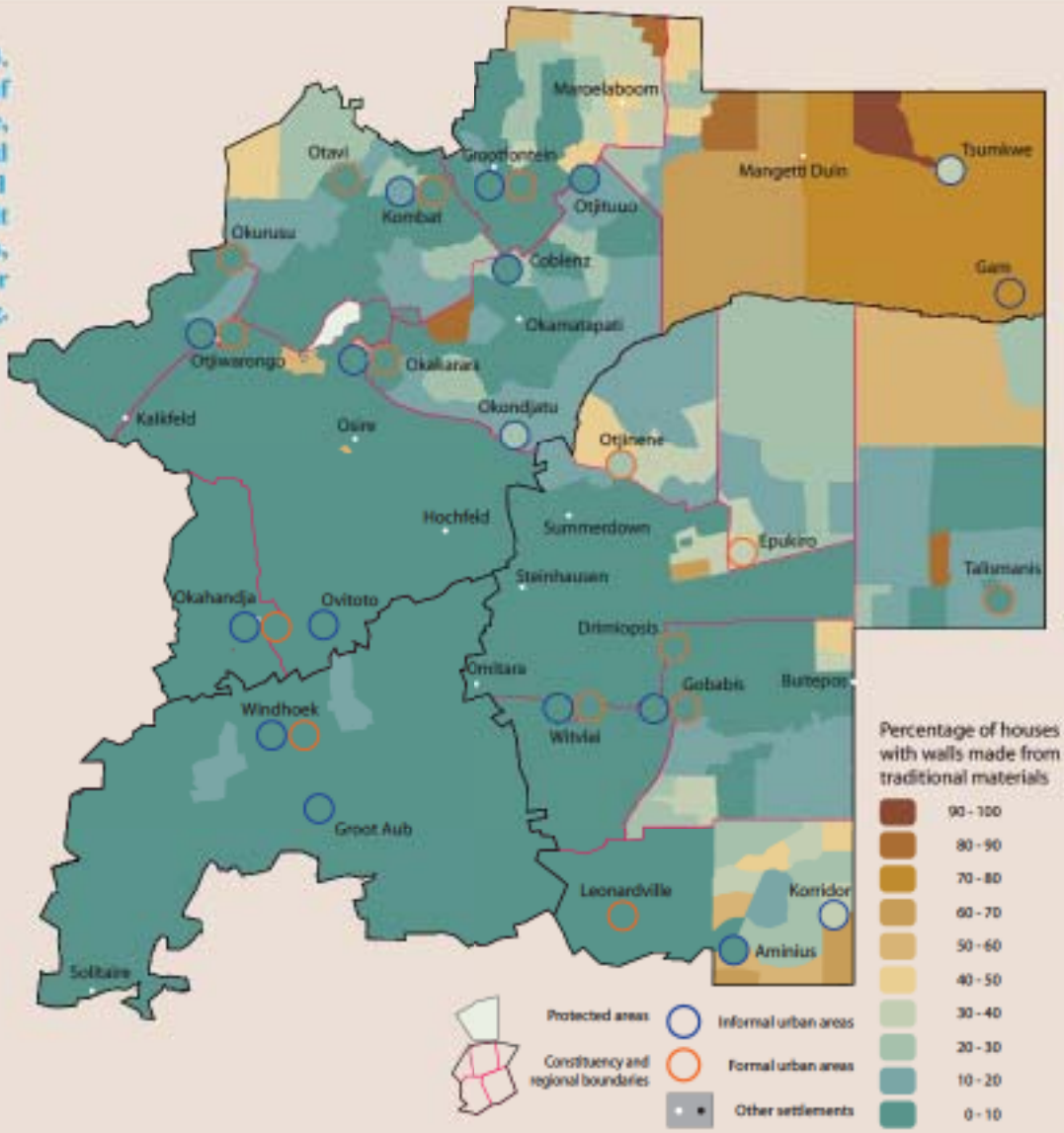


Figure 42.
The proportion of homes Kunene and Erongo in 2001 having walls built using wood, sticks, grass, mud or cattle dung.

The difference in use of building materials between the northern and southern areas of these two regions is extreme and conspicuous. While part of this difference is due to the greater availability of trees in the northern areas, differences in land tenure and wealth are more important. Thus, the greatest use of traditional materials is by poorer households in communal areas, whereas rural homes in the southern freehold areas are usually built with brick or prefabricated walls.

Figure 43. The proportion of homes in Omaheke, Otjozondjupa and Khomas in 2001 having walls built using wood, sticks, grass, mud or cattle dung.



The greatest proportion of poor homes built with traditional materials is in the north-eastern former Bushmanland area of Otjozondjupa. This is a communal area, but so too is the large area of former Hereroland where most homes have walls of materials that have been purchased. The same is true for the Aminuis Block in the south-east, suggesting that many households in those areas have access to considerable cash resources.

A high proportion of houses in informal settlements have walls assembled from scrap materials which have often been collected from refuse dumps.

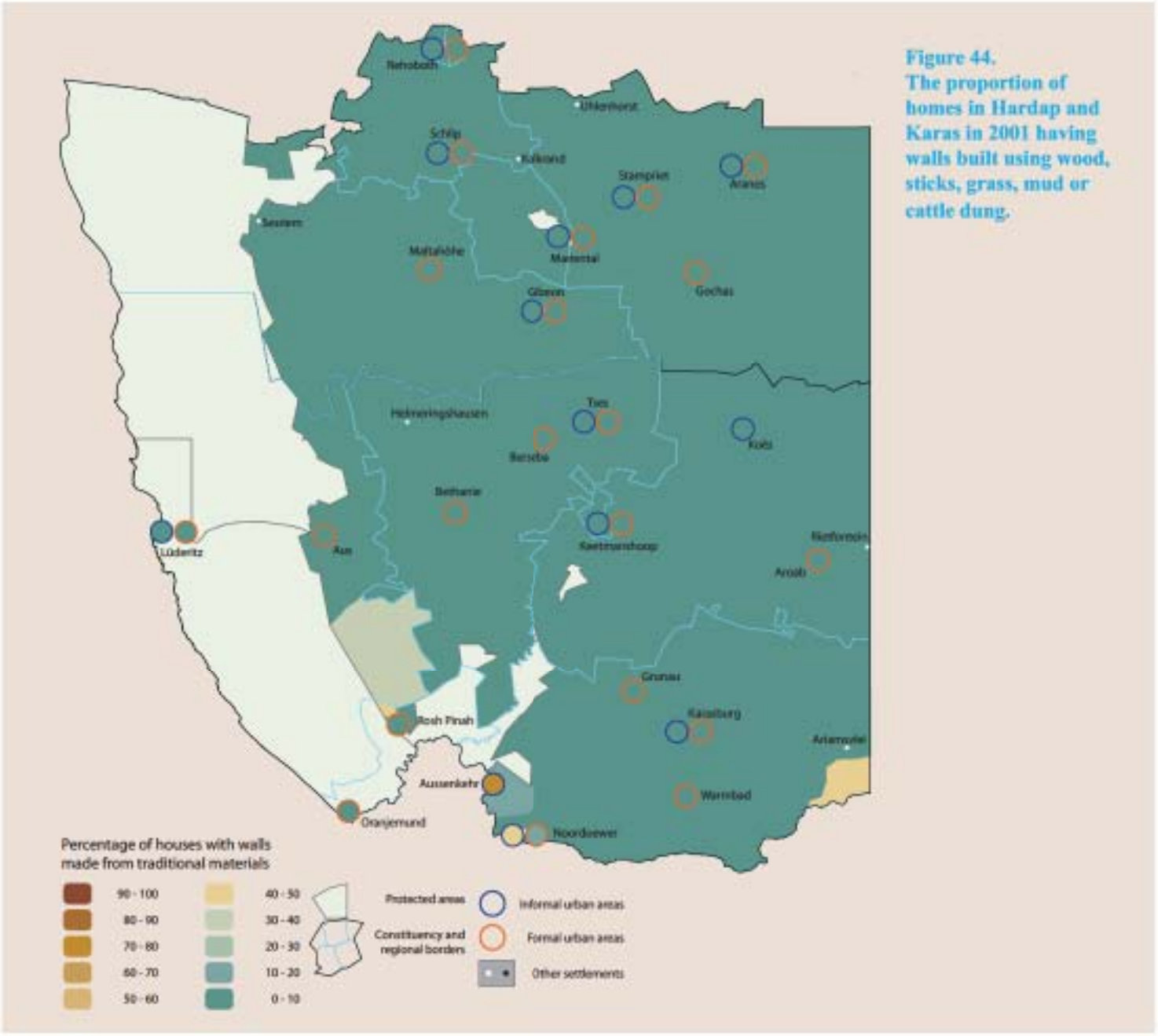


Figure 44.
The proportion of homes in Hardap and Karas in 2001 having walls built using wood, sticks, grass, mud or cattle dung.

In the absence of trees and reeds almost everywhere in Karas and Hardap regions, the great majority of homes have walls of bricks and prefabricated materials. One notable exception is the high proportion of traditional structures among the informal houses at Aussenkehr as shown in the photograph on page 47.

Not shown in this map is the high percentage of poor homes in the rural communal areas that have walls of scrap metal and corrugated iron.

9 Education

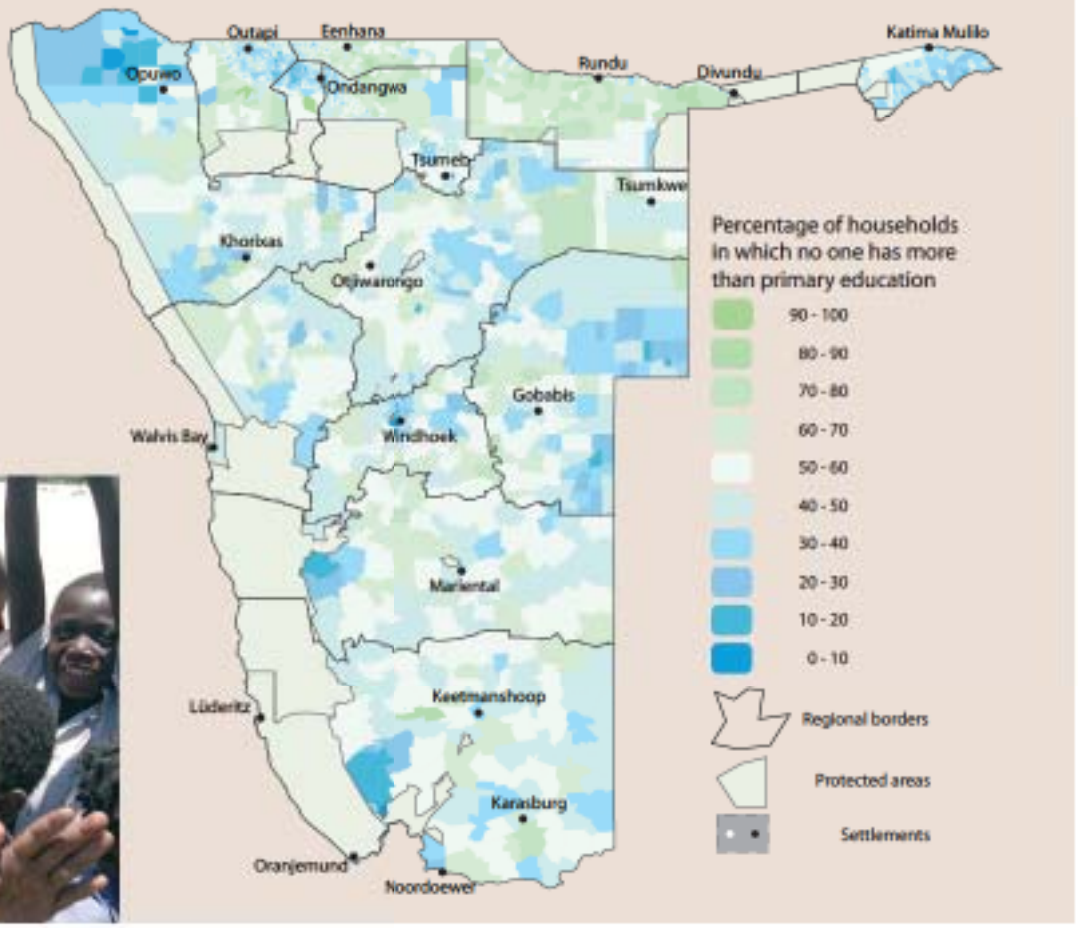
A lack of or poor education contributes to poverty in various ways, for example, in not equipping people with skills, and in people being unable to read, write and think critically. Many of the differences shown in Figure 45 and the maps that follow reflect differences in levels of educational instruction, with older people and those in rural communal areas often having received little or no schooling.

However, other differences and particularly those between urban and rural areas are due to the migration of more schooled people to towns.

Typically, those people with only a primary school education remain in their rural homes, those who completed secondary schooling are in major regional towns, while those with a tertiary education are in the biggest urban centres where opportunities for skilled labour are greatest.

In Namibia as a whole, there were 130,972 households in which no member had more than a primary schooling in 2001. That is equivalent to 38% or over one third of all homes.

Figure 45. The percentage of homes in 2001 in which no household member had progressed beyond primary school or Grade 7.



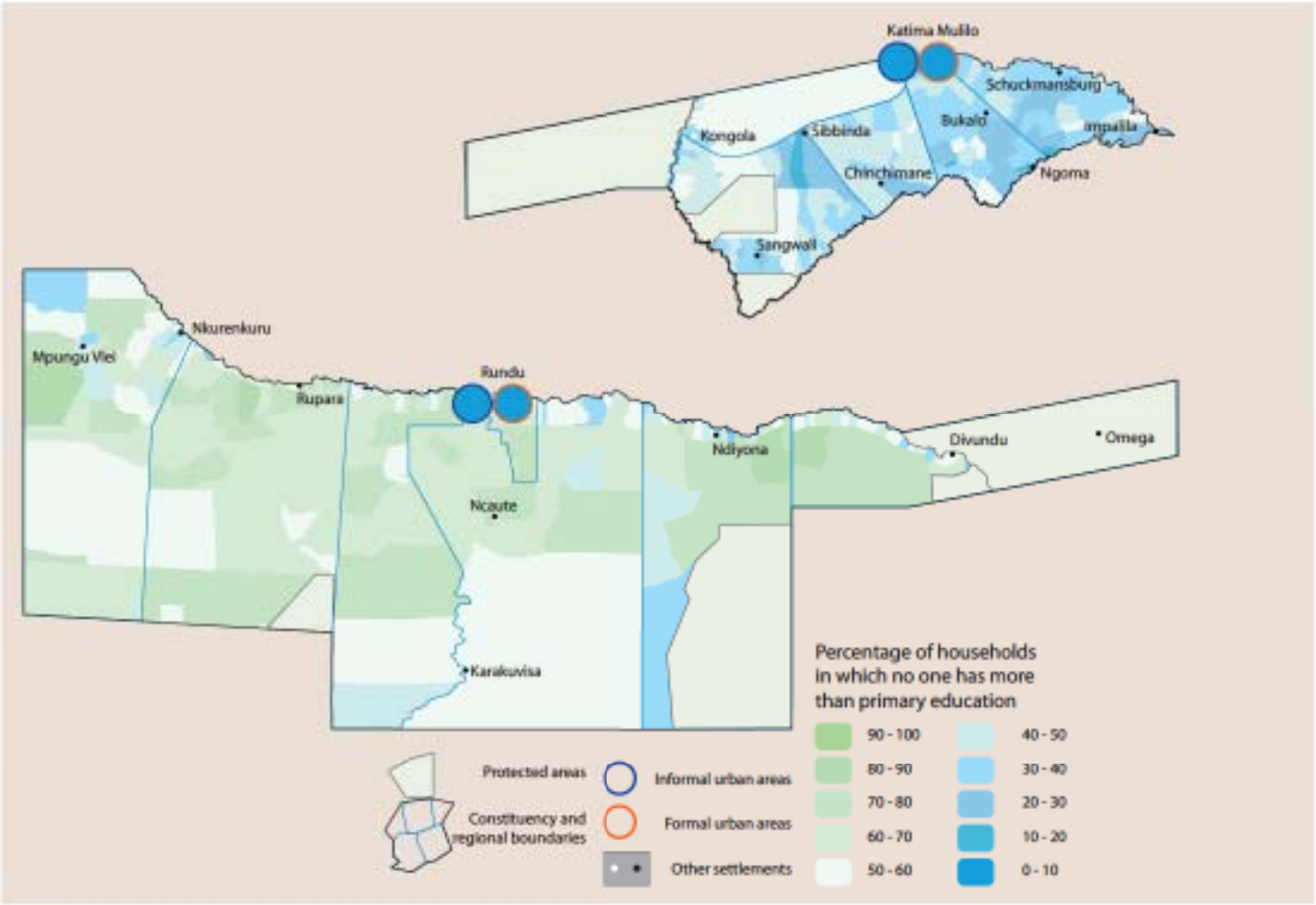
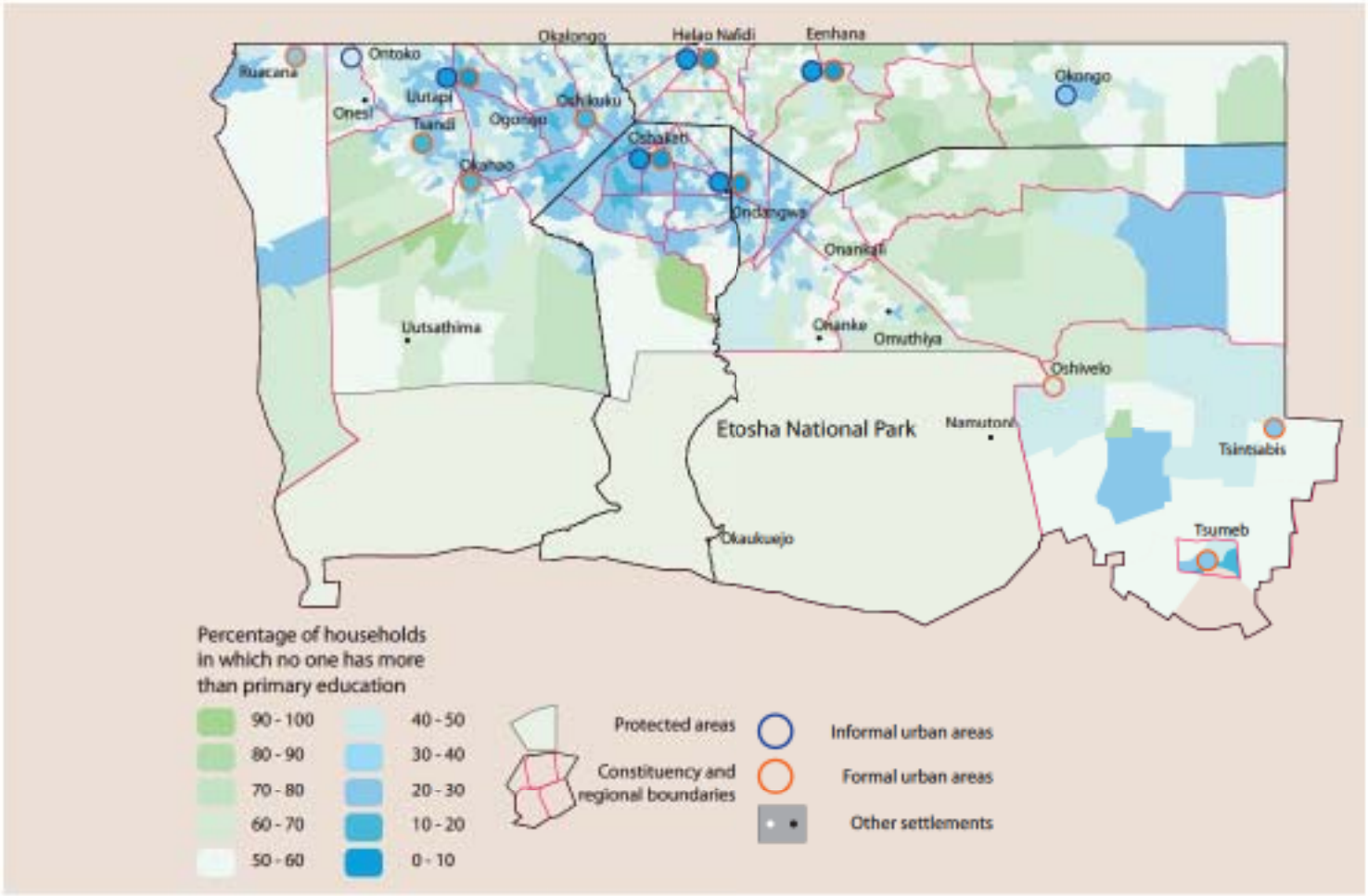


Figure 46.
Percentages of homes in 2001 in Caprivi and Kavango in which no household member had progressed beyond primary school or Grade 7.

Differences as a consequence of more educated people moving to towns are very evident in these two regions. As a result, almost all homes in Rundu and Katima Mulilo have at least one household member with more than Grade 7.

Levels of education in rural homes in Caprivi are considerably higher than those in Kavango. Rather more homes along the Okavango River have household members with more than Grade 7 than those households in areas further south in Kavango.



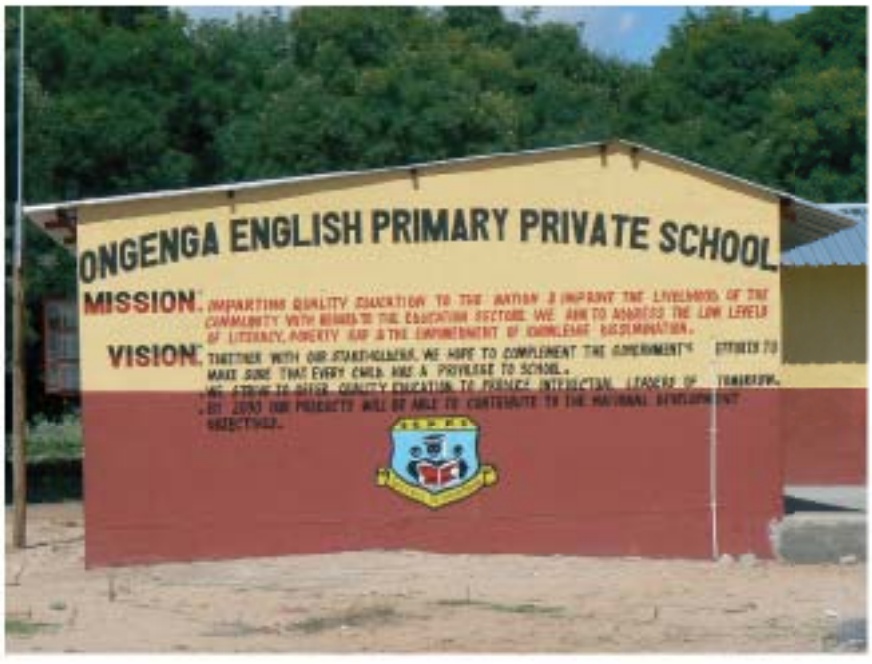


Figure 47.
Percentages of homes in 2001 in Omusati, Oshana, Ohangwena and Oshikoto in which no household member had progressed beyond primary school or Grade 7.

Most homes in the remote rural areas in this part of Namibia do not have family members who have gone beyond the final grade of primary schooling. This is partly due to the absence of schools that offer secondary grades in many of those areas, but the migration of educated people away from remote rural areas is a more significant factor.

The majority of homes in the densely populated rural rectangular zone between Ondangwa, Helao Nafidi, Outapi, Okahao and Oshakati have at least one household member with more than Grade 7. This is by far the most densely populated rural area in Namibia.

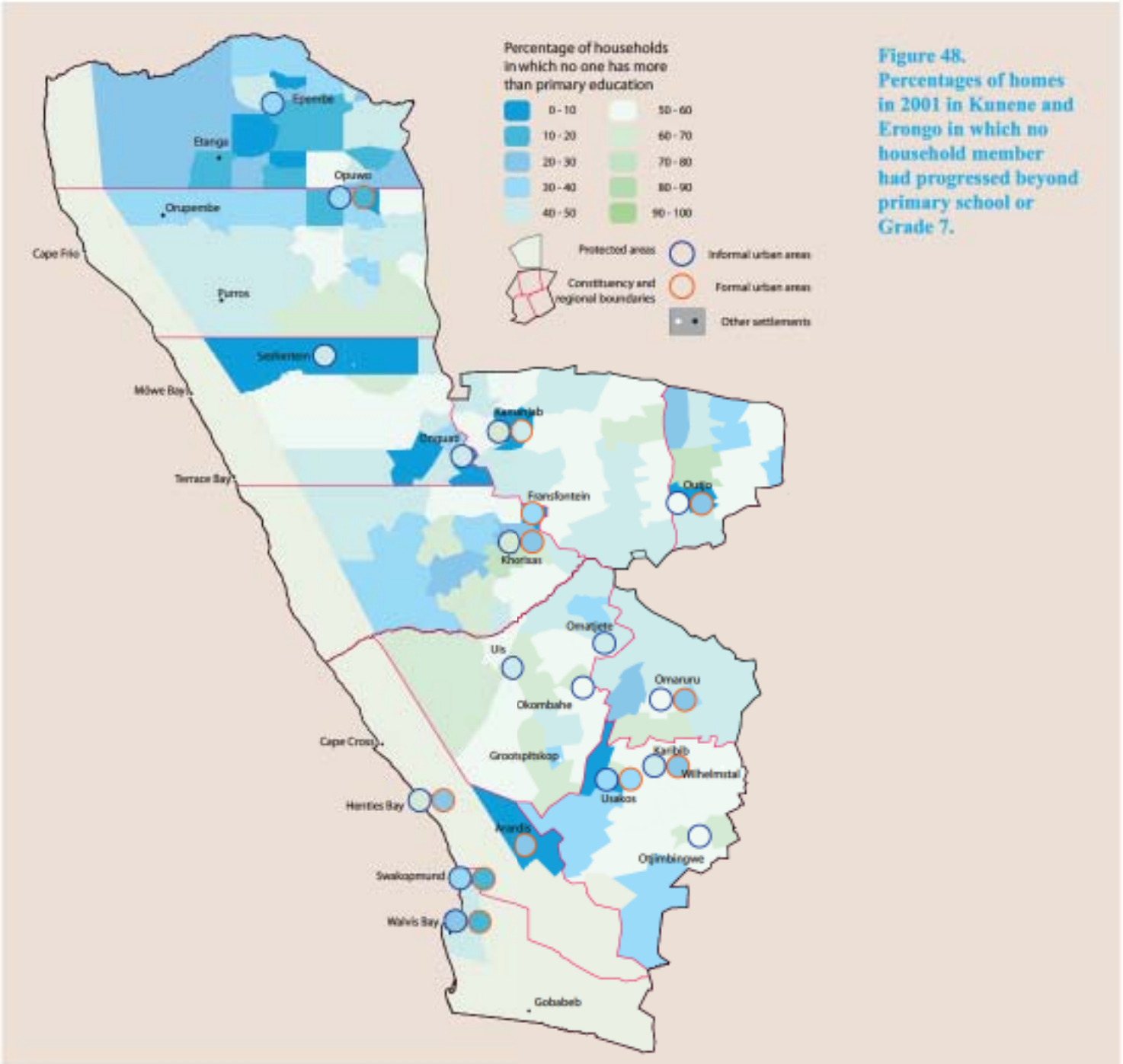
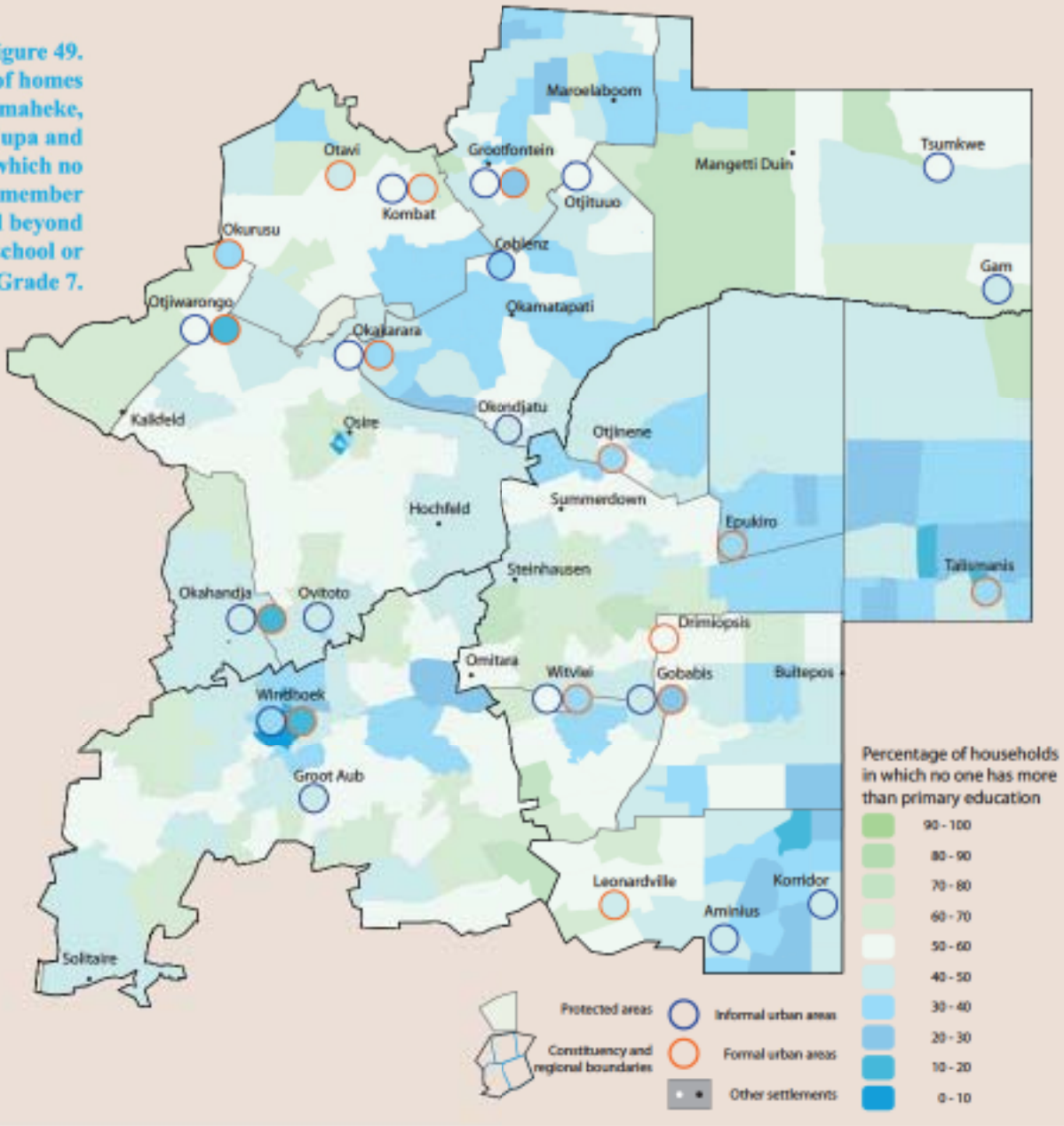


Figure 48. Percentages of homes in 2001 in Kunene and Erongo in which no household member had progressed beyond primary school or Grade 7.

Most homes in all the larger urban centres have at least one household member who has completed more than Grade 7. Many smaller towns, by contrast, have substantial proportions of homes where no one has achieved that level of schooling.

The high proportion of households with at least one member with more than primary schooling in northern Kunene is surprising, since people that live there are typically regarded as educationally marginalized because many of them do not attend school for any significant period.

Figure 49. Percentages of homes in 2001 in Omaheke, Otjozondjupa and Khomas in which no household member had progressed beyond primary school or Grade 7.



In most areas of the country, the most significant differences in levels of education are between rural and urban areas, with few differences between informal and formal urban areas. However, many of the towns in these three regions show just these differences, with significantly more homes in informal settlements having no household member with more than a primary education. This dichotomy is particularly conspicuous in Grootfontein, Otjiwarongo and Okakarara.

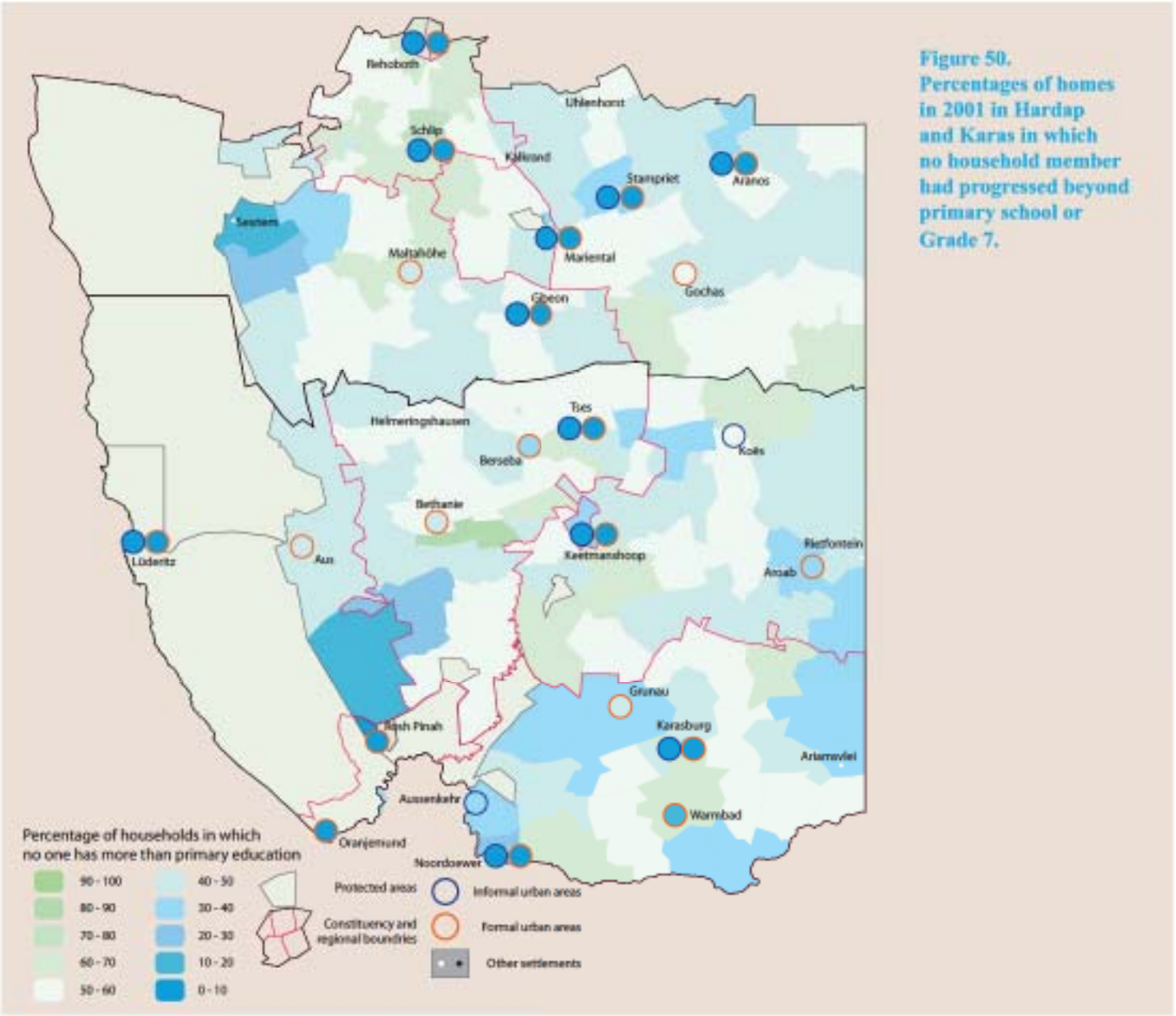


Figure 50. Percentages of homes in 2001 in Hardap and Karas in which no household member had progressed beyond primary school or Grade 7.

Almost all urban households in both formal and informal areas have at least one member with more than Grade 7. Exceptions are in the very small towns, such as Bethanie, Koës, Gochas, Aus, Maltahöhe and Grunau.

Most of these small towns do not have secondary schools, a factor which may also lead to somewhat lower levels of education than in the bigger towns.

10 Some other geographical aspects of welfare

The main purpose of the preceding maps is to provide perspectives on how welfare and indices of poverty vary across Namibia. A secondary purpose is to identify places where large numbers of poor people live to which programmes seriously interested in alleviating the plight of the poorest Namibians can be directed.

Comments have also been offered to draw attention to some factors that contribute to poverty. Several of these factors and other geographical features associated with welfare are presented below.

Communal land tenure is an inherited consequence of traditional or customary practice and the homeland policy of the South African administration. The tenure system is thus a product of social and political circumstances, but its continuation has a major impact on the welfare of Namibians because all communal land has no capital asset value. Residents in communal areas are therefore unable to use capital based on property to develop, assign, transfer or move their assets. These are benefits that everyone in freehold areas takes for granted.

The spatial and demographic aspects of communal tenure are relevant to the geography of poverty since over one third or some 38% of the country's surface area is under communal tenure (Figure 51). The approximately 50% of all Namibians that live on rural communal land therefore do not have access to values associated with capital assets in land. The same is true for another 15-20% of the total population that live in informal urban settlements where they lack legal tenure and the capital values that go with titled land ownership.

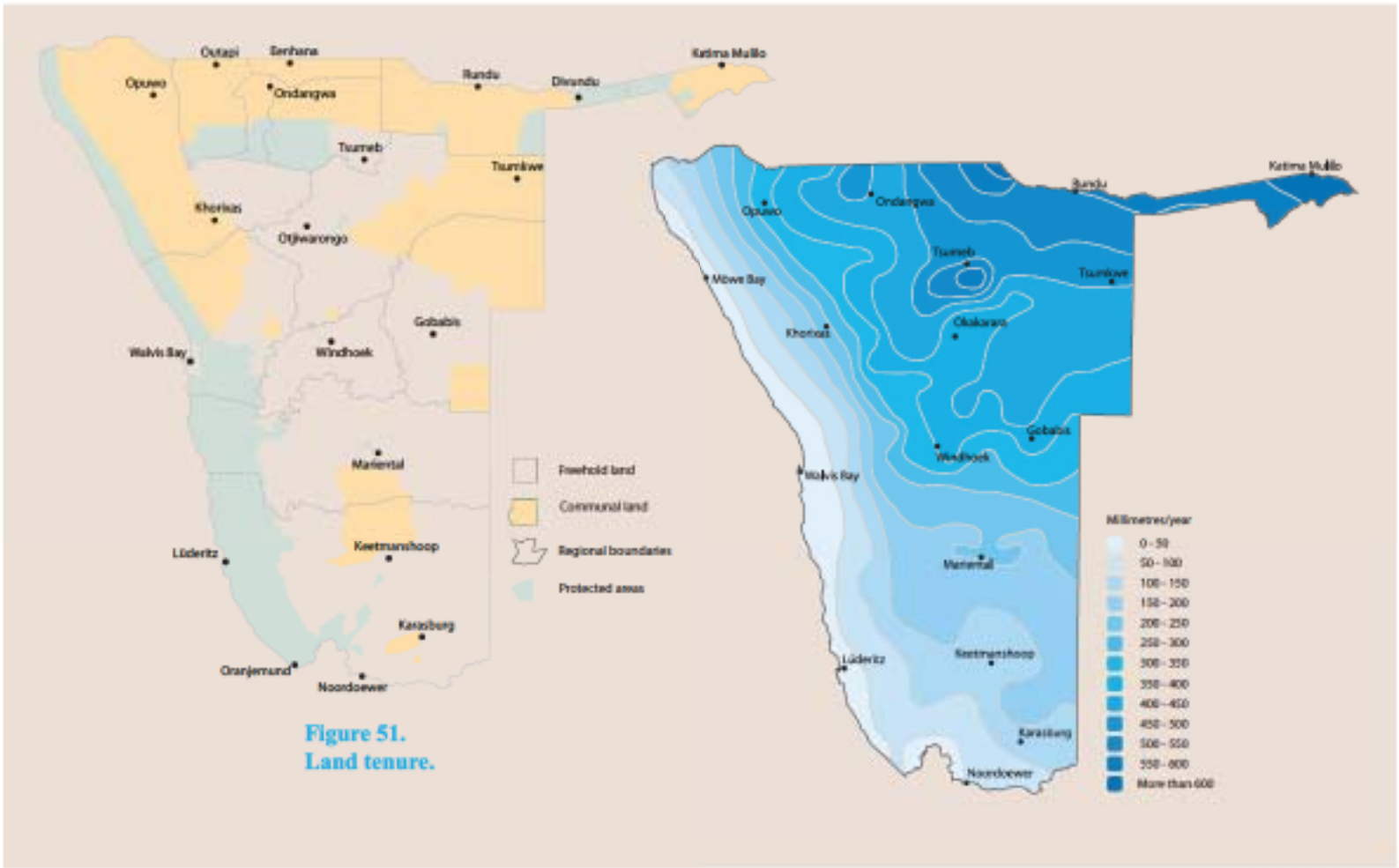


Figure 51.
Land tenure.

It is often said that Namibia suffers from low rainfall. This is true, but high evaporation rates – caused by very low humidity, high temperatures and wind – are an equally important reason for the country's aridity. And so it is a combination of low rainfall and the loss of water to evaporation that limits crop growth and pasture production for livestock and wildlife. Conditions for farming are thus hard, and this is one reason why it is virtually impossible for rural families to make a decent living from agriculture unless they have very large areas of rangeland or the resources and opportunity to irrigate their crops. As a result it is not surprising that most rural households in communal areas obtain most of their income from off-farm sources.

Aridity as a result of low rainfall and high evaporation is one constraint on rural production. Another is the low fertility of soils in most areas. Much of the country has, indeed, very little soil because only thin layers have been formed from the decomposition of underlying rocks. There is thus little substrate in which soil moisture can accumulate and where plants can root themselves. Elsewhere in the deep sands that cover much of northern and eastern Namibia, the porous sand holds almost no nutrients, and rain water soon percolates away beyond the depths which the roots of grasses and crops can reach.

The only areas where soils are moderately suited to crop growth are in central-northern Namibia and on small patches of luvisol soils in and around the Otavi-Grootfontein-Tsumeb hills. Elsewhere, significant crop production is only possible if the soils are managed intensively with the application of fertilisers and irrigated water. Both fertilisers and irrigation are extremely costly.

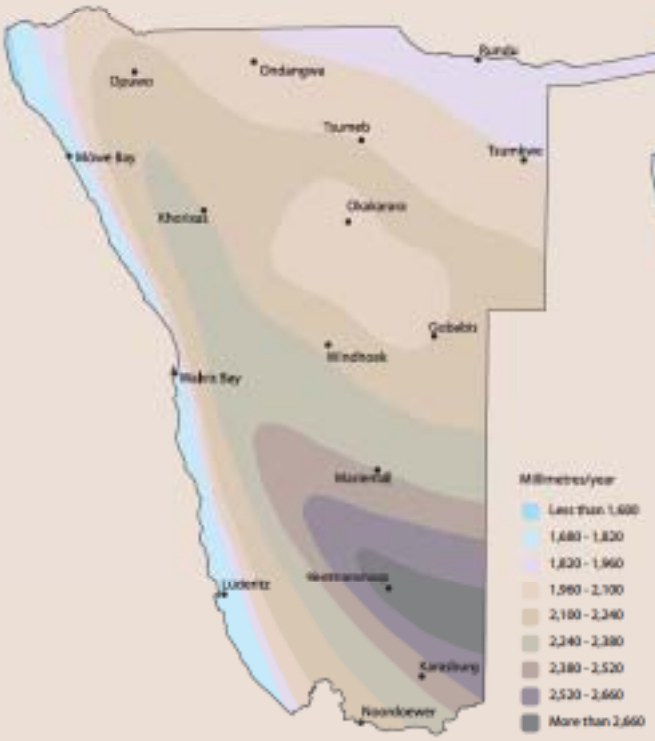


Figure 52.
Average rainfall (left) and evaporation (right).

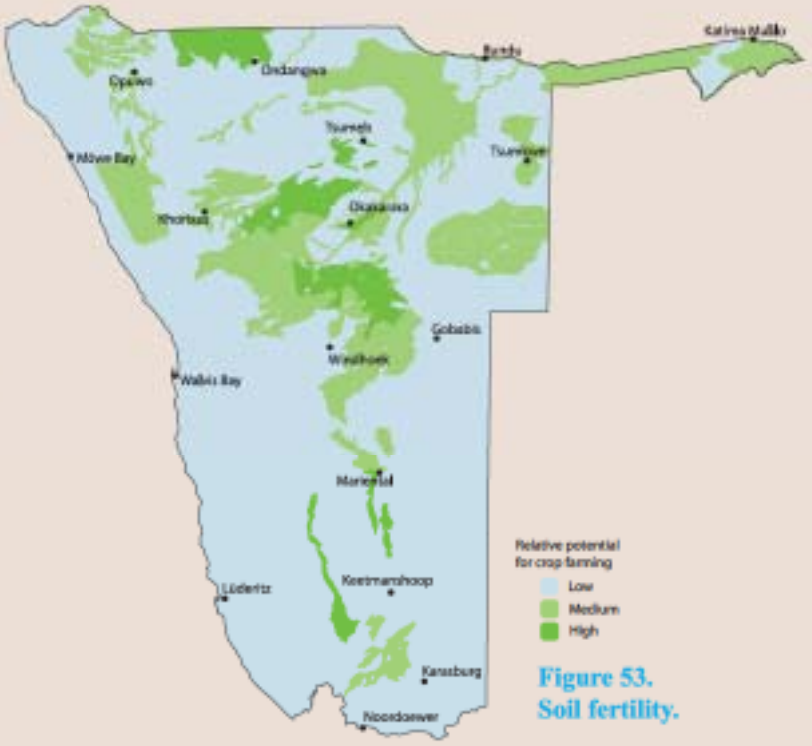


Figure 53.
Soil fertility.

A decent living for a farming family requires that it can feed itself and produce a surplus that can be sold to supply cash needed for basic services and all commodities that cannot be harvested or gathered: clothes, telephone costs, school fees, transport costs, sugar, salt and so forth. Even if limits that stem from aridity and soil fertility were to be overcome, obtaining cash from surpluses remains difficult because of poor access to markets.

Thus a third reason that so many rural families are poor is that the costs of transportation are high and need to be added to retail prices which often become uncompetitive. In addition, usually only durable goods can be transported over long distances, and farmers have little control over their goods once they reach and are made available for sale in remote markets.

The map in Figure 54 provides an indication of areas in the country that have greater or lesser access to markets. Windhoek is of course the biggest market, but it is very small compared to the large number of consumers and customers in Luanda, Lubango, Lusaka, Harare, Johannesburg and Pretoria, and Cape Town. To reach those large faraway markets will always be expensive.

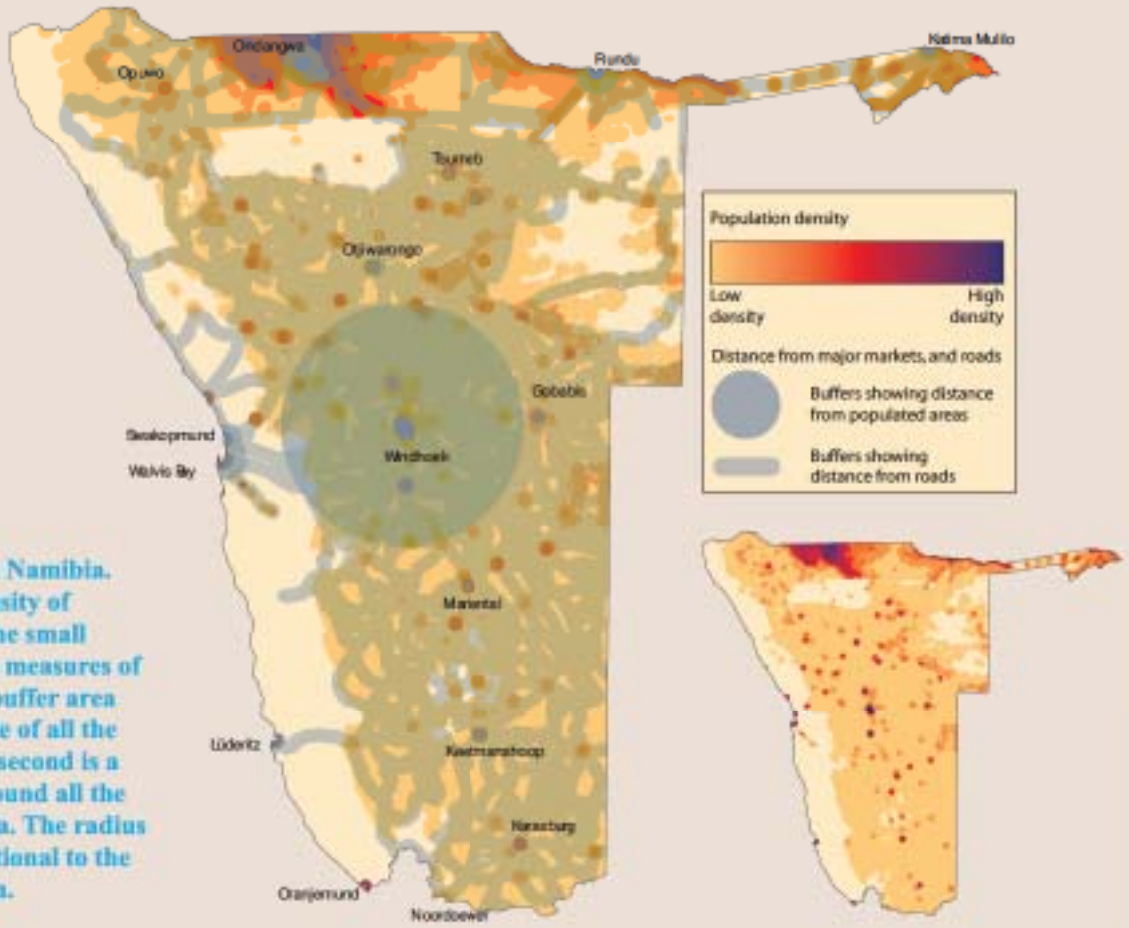


Figure 54.
Distances to markets in Namibia. The map shows the density of people (also shown in the small map) overlaid with two measures of distance. The first is a buffer area 10 kilometres either side of all the official roads while the second is a circular buffer zone around all the major towns in Namibia. The radius of each circle is proportional to the population of each town.

In summary, conditions over much of Namibia limit agricultural production and income generation. Most families may not develop capital assets over their land, rainfall is low and evaporation high, soils have low fertility and profitable markets are hard to reach. As a result, many of Namibia's poorest people are to be found in rural areas, trying to eke out a living using resources which cannot improve their livelihoods by any significant margin. They may produce enough to feed themselves, but they are unable to produce cash incomes for basic necessities.

Not surprisingly, rural people try to escape this cash poverty. They use two main strategies. One is to move to urban centres where jobs and formal and informal business opportunities are more available than in rural areas. It is for this reason that urban populations in Namibia are growing at an average rate of 5% per year, compared to rural growth rates of less than 1.5% in most regions.

Another strategy is to attract and depend on cash from sources independent of their farms, such as pensions, remittances, business earnings from local enterprises and wages from local jobs. For example, a rural family that has one member earning N$50,000 as a teacher is in a completely different wealth league from a family that has no dependable cash income.

The absence of family members who can earn incomes is a major reason why small female-headed households are amongst the poorest in Namibia. Figure 18 on page 26 shows where most of these households occur, and serious poverty reduction programmes could use that information to find and alleviate the plight of these people, for example. Other maps in this book can be used to find areas where other needy people live. Finally, policies can be adopted and implemented to promote livelihoods that are not constrained by the geographical factors that contribute to poverty.

Several people from a large household are able to weed (above), but all the weeding is done by one person in the small female-headed household (below).

Appendix 1
Important references concerning poverty in Namibia

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Van Rooy G, !Naruseb G, Maasdorp M, Eele G, Hoddinot J & Stone S. 1994. *Household Subsistence Levels: Three Selected Communities in Namibia*. Social Science Division Research Report, No 9. Windhoek: University of Namibia.

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Appendix 2
Data preparation and POVMAP analyses

Data Preparation

Two data sets were obtained from the Central Bureau of Statistics: 2001 Population & Housing Census and the 2004 Household Income & Expenditure Survey. These datasets were imported into two separate MS Access databases (due to size and speed limitations) and appropriate relationships were set up between household level data and individual level data. These databases were named Pov_NHIES.mdb and Pov_PHC.mdb. The complete relationship hierarchy followed the pathway:

socio-economic zone

↓

cluster

↓

enumeration area

↓

household

↓

individual

Twenty variables (regressors) which were common to both data sets and for which codes were compatible, were identified.

For each categorical regressor, codes were combined wherever possible to reduce the number of categories. For example with toilet type, the four original categories of flush toilet were amalgamated into one. Look-up tables were used to recode each regressor into the more simplified grouping.

For each data set an output query was developed which exported the data into a .csv file in a format compatible with PovMap. The first field in the output contained the 10 digit concatenated 'PovID' code made up from the socio-economic group (1 digit), the cluster ID (3 digits) and the household ID (6 digits). For example: PovID 1624113006 = socio-economic zone 1, cluster 624, household 113006.

The dependent (Y) variable used in the Household Income & Expenditure Survey dataset was per capita expenditure. Fields for both unadjusted and logged (logarithmic) per capita expenditure were included in the output query.

Variable	Type
House type	Category
Sex of head of household	1 or 2
Age of head of household	Number
Level of education of head of household	Category
Highest level of education in the household	Category
Number of working household members 15-64	Number
Major source of income	Category
Tenure over house	Category
Type of walls	Category
Type of flooring	Category
Type of roof	Category
Cooking fuel	Category
Heating fuel	Category
Lighting fuel	Category
Water source	Category
Toilet type	Category
Radio access	1 or 2
TV access	1 or 2
Phone access	1 or 2
Computer access	1 or 2

PovMap Analyses

For each of the five socio-economic zones, two .csv files were produced: one from the Household Income & Expenditure Survey and one from the Population & Housing Census. Taking each socio-economic zone in turn, the following procedures were followed to derive predicted per capita expenditure values for all households in the census data set.

The two .csv files (census and survey data) were imported into PovMap and the PovID field was selected as the Hierarchical ID. Once imported each regressor in the survey data set was matched to its counterpart in the census data set (step 1 Checker). In the subsequent step (step 2 Consumption model) the 'stepwise' option was selected from the choice of statistical procedures provided and all regressors chosen by PovMap were accepted. In preliminary analyses it became evident at the Cluster effect screen (step 3) that the unadjusted expenditure values produced extremely skewed prediction plots which prevented a successful results output from being produced at the simulation stage.

In order to obtain a more normal plot distribution the log of per capita expenditure was used. This produced a greatly improved plot.[9]

In step 4 (Idiosyncratic model) which assesses location effects, the stepwise option was again chosen and all selected regressors were accepted. No changes were made to the distribution model at the Household effects screen (step 5).

At the Simulation screen (step 6) the default settings were adopted. Since the focus of the project was to produce maps depicting relative poverty we were not concerned with the choice of indices available which provide a measure of the proportion of households above or below a given poverty line. Therefore, to enable PovMap to proceed with its simulation an arbitrary value of 5 (roughly the lowest of the logged expenditure values) was entered into the poverty line box.

The appropriate field in the data sets for household size i.e. 'Householdsize' was selected in the Household size box.

Summary simulation results produced by PovMap include a table which comprises various statistics for each cluster. These include number of households, number of individuals, and maximum, minimum, mean and standard error logged per capita values.

In addition to mapping the mean per capita expenditure of clusters it was desirable to map the median values per cluster and to also derive tercile values of expenditure for households across the country (i.e. the number of households in each cluster falling within the bottom third, middle third and top third of all household per capita expenditure values across the country). In order to obtain these statistics the 'Saving all estimates of Y' box was ticked on the simulation screen. This produced an output (ydump) of all predicted Y (Yhat) values for each household.

Each Ydump output for each socio-economic zone was imported into a new database so that the data could be easily manipulated and desired statistics could be derived from the Yhat values.

A Visual Basic for Applications (vba) module was created in the database to calculate deciles from the Yhat values for each cluster. By definition, the 50 % decile corresponded to the median.

In order to calculate terciles across the country the Yhat values were ranked from lowest to highest and the expenditure values for the 1/3 and 2/3 points were extracted. These values were then used to calculate the number of households in each cluster falling into each of the three tercile groups.

All logged per capita expenditure values from simulations were converted back to 'real' N$ values for mapping purposes.

Notes

[1] Elbers C, Lanjouw JO & Lanjouw P. 2002. *Micro-Level Estimation of Welfare. Policy Research Working Paper 2911.* Development Research Group, The World Bank, Washington D.C.

Elbers C, Lanjouw JO & Lanjouw P. 2003. Micro-Level Estimation of Poverty and Inequality. *Econometrica* 71: 355-64

[2] Central Bureau of Statistics. 2006. *Namibia Household Income and Expenditure Survey 2003/2004.* Windhoek: National Planning Commission.

[3] Although enumeration areas are planned to each have about 100 households, in practice considerably fewer or more homes may be counted during a census. As a result, most enumeration areas have between 50 and 150 households.

[4] In such a skewed set of data, the high incomes of the few rich people distort the average or mean so that levels of wealth of the whole population appear higher than they really are for the majority of people.

[5] The equivalent threshold figures in dollar values estimated in 2004, the year of the Income & Expenditure Survey, were N$1,475 between the lowest and second tercile, and N$4,983 between the second and third tercile.

[6] El Obeid S, Mendelsohn JM, Lejars M, Forster N & Brulé G. 2001. *Health in Namibia: progress and challenges.* RAISON, Windhoek.

[7, 8] Central Bureau of Statistics. 2010. *An atlas of Namibia's population: monitoring and understanding its characteristics.* Central Bureau of Statistics, National Planning Commission, Namibia.

[9] r^2 values for the consumption models in each of the socio-economic zones were:
agro-pastoral 0.5489; pastoral communal 0.5714; rural formal 0.7490; urban formal 0.6239; urban informal 0.4895

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P-NM


Elderly People

An Atlas of Poverty in Namibia **presents mapped information from the 2001 Population & Housing Census and 2003-4 Income & Expenditure Survey to provide perspectives on the distribution of poverty in Namibia. The maps should help to direct alleviation and economic development programmes to the poorest areas and people in Namibia.**