

THE SOCIOECONOMIC PROFILE

**PROPOSED PETROLEUM (OIL AND GAS) EXPLORATION, DRILLING OF
MULTIPLE STRATIGRAPHIC WELLS IN THE PETROLEUM EXPLORATION
LICENSE (PEL) 73 COVERING BLOCKS 1819 AND 1820
IN THE NCAMANGORO CONSTITUENCY, KAVANGO WEST REGION AND
MASHARE CONSTITUENCY, KAVANGO EAST, NAMIBIA**

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Report By:

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1 INTRODUCTION

The socio-economic report entails the relevant information on the social and economic environment for areas of PEL 73 Blocks 1819 and 1820 (*Figure 1*). Reconnaissance Energy Namibia (Pty) Ltd (the proponent) and subsidiary of Reconnaissance Energy Africa Ltd (ReconAfrica) holds 90% interest in the petroleum exploration rights under the Petroleum Exploration License (PEL) No. 73 covering the latitude and longitude degree square Blocks 1719, 1720, 1721, 1819, 1820 and 1821. The remaining 10% is held by National Petroleum Corporation of Namibia (Namcor), a State owned company (Parastatal) with costs carried to the development stage.

Reconnaissance Energy Namibia (Pty) Ltd is the operator of the license situated in the Kavango Basin which is the eastern extension of the greater Etosha Basin in northern Namibia and the greater Kalahari Basin of Southern Africa. PEL 73 cover parts of the Kavango West and Kavango East Regions of northern Namibia.

Two potential drilling areas has been identified within PET 73 Blocks 1819 and 1820 (*Figure 1*) which are located in two different constituencies and two different regions. The immediate communities of interest are the following:

- Ncamangoro Constituency in Kavango West Region; and,
- Mashare Constituency in Kavango East Region.

Both drilling sites will be located to the south of Rundu town, the regional headquarters of Kavango East Region.

The Kavango West Region covers an area of 24,591.27 km² and lies directly south of Angola and the Kavango River and east of Ohangwena and Oshikoto Regions, north of Otjozondjupa Region and west of the Kavango East Region. The boundary between Kavango East and West generally follows the Omatako-Omuramba River.

Kavango East Region covers an area of 23,987 km² and is bordered by the Kavango West, Otjozondjupa and Zambezi Regions. The constituencies in Kavango East Region include: Rundu Urban, Rundu Rural, Mashare, Mukwe, Ndiyona and Ndonga Linena.

The information and data used for the compilation of this report are derived from secondary data sources. The report does not comprise of any additional primary research and data collection.

The latest Census data of 2011 was collected before the creation of Kavango West and Kavango East Region. Kavango region was split into Kavango East and Kavango West Regions in 2013. The inter-census data was collected for both regions in 2016. The highlights of the economic and social environment of the regions are incorporated.

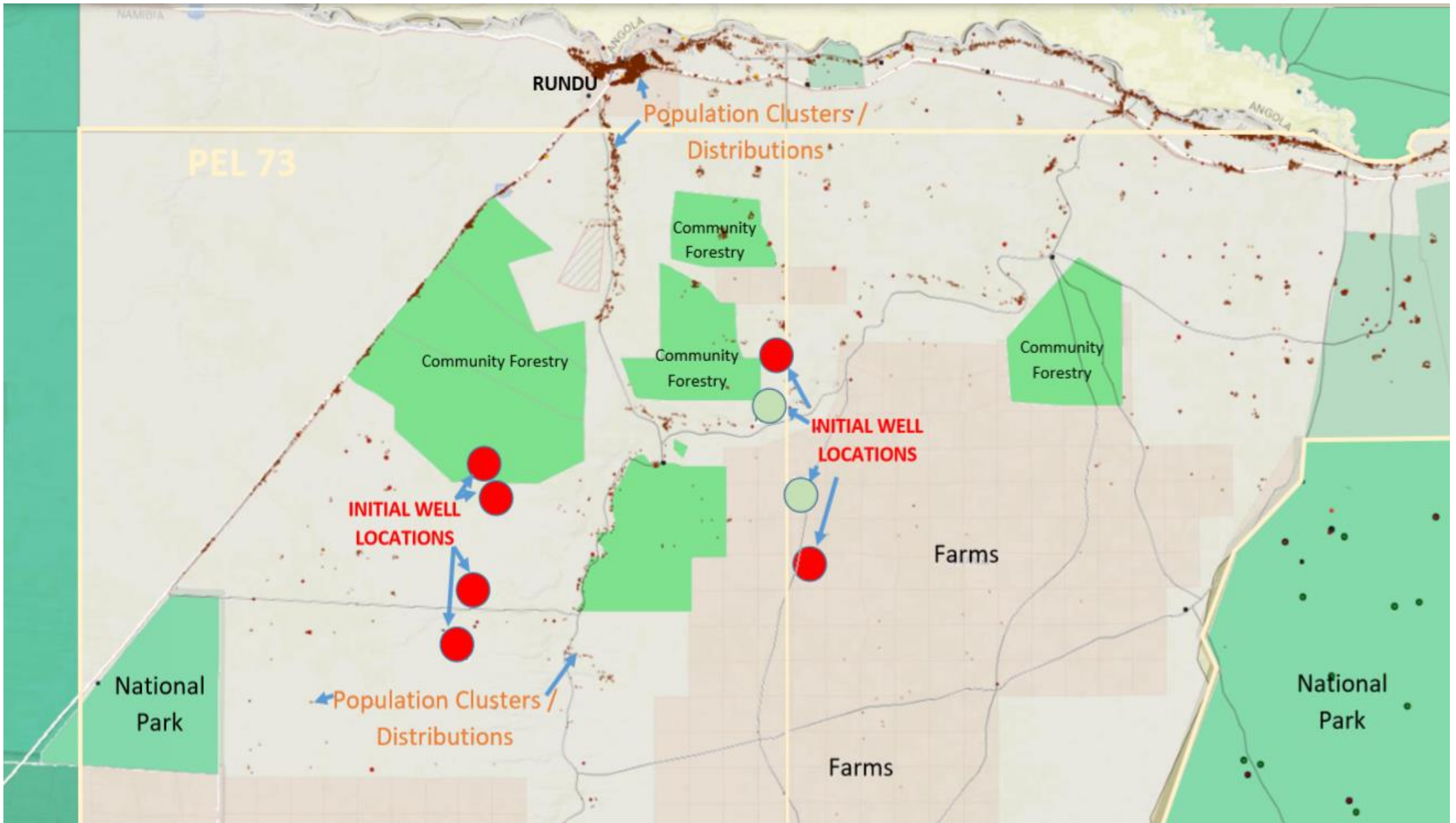


Figure 1: Location of drilling sites for PEL 73 Block 1819 and 1820 Geographic location

2 METHODS

The socio-economic profiles of Ncamangoro and Mashare Constituencies were compiled based on the accessibility and availability of secondary data sources.

A comprehensive literature review was conducted between 3rd December 2018 and 24th January 2019 and is largely based on existing documentation published by both the public and private sectors. The majority of statistical data was obtained with the guidance of the 2011 Population and Housing Census, Kavango West and Kavango East Regional Tables Based on 4th Delimitation, Namibia Inter-censal Demographic Survey 2016 Report, Namibia Labour Force Survey 2016 Report and Baseline Reports for Integrated Land Use Planning in Kavango East and Kavango West Regions.

The national Census was completed for Kavango Region in 2011. In 2013, with the recommendations by the 4th Delimitation Committee, the Kavango Region was split into the Kavango West and the Kavango East Regions. Likewise the changes occurred in constituency level. The Ncamangoro Constituency was created in 2013, with the separation from a larger Kapako Constituency. The census data at the time was collected without distinguishing the Ncamangoro Constituency. The borders of Mashare Constituency has been adjusted since. Nevertheless, the obtained data and information is sufficient to guide and embody the project proponent as the Namibia Inter-censal Demographic Survey occurred in 2016.

The objectives of the literature review are:

- Determine the existing socio-economic environment of the surrounding community, including Ncamangoro and Mashare Constituencies.
- Determine the socio-economic issues relevant to the above mentioned proposed exploration areas according to the available literature.
- Provision of mitigation measures where applicable.

References consulted during the literature review are listed in Reference Section of this Report.

3 SOCIAL ENVIRONMENT

The drilling locations are nested in two constituencies - Mashare Constituency in Kavango East Region and Ncamangoro Constituency in Kavango West Region.

3.1 POPULATION PROFILE – SIZE, STRUCTURE AND COMPOSITION

According to the 2011 Population and Housing Census data, Kavango West Tables that are based on 4th Delimitation), the total population size of Ncamangoro Constituency is 7043 people (NSA, 2014a&b), which is 8.1% people of Kavango West Region. Mashare Constituency has 8885 people, which is 11.2% of Kavango East population (KERC, n.d.).

At the Regional level there are 148466 people in Kavango East Region which makes 3.8% of total population of Namibia and 89313 people in Kavango West making 6.4% of total population of Namibia (NSA, 2017a). In a period between Census 2011 and Inter-census 2016 the growth rate of population is positive, yet at a slow paste, particularly for Kavango West

Region. The growth rate for Kavango East was 1.6% and Kavango West 0.6%. Kavango East is second among the lowest growth rates after Omusati Region (0.5%) (NSA, 2017a).

2011 Census (NSA, 2014a&b) and 2016 Inter-Census data (NSA, 2017a) revealed larger share of female population in both regions (*Figure 2*). In 2011 Kavango East Region had 53.3% of females and Kavango West – 52.8%. In 2016 the percentages of female population are very similar to 2011 (Kavango East Region had 53.5% of females and Kavango West – 52.7%). However during this period, Kavango West experienced an insignificant 0.1% drop and Kavango East experienced 0.2% growth of female population.

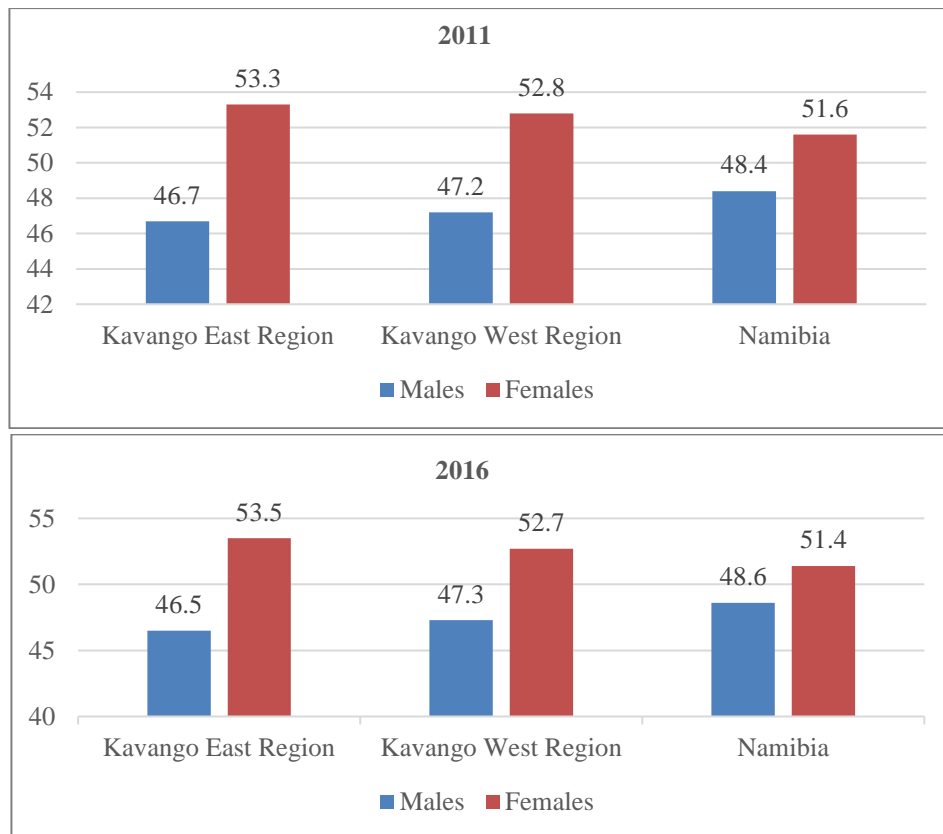


Figure 2: Percentage (%) distribution by gender group and area (Source of data: NSA, 2017a)

At the constituency level, Mashare Constituency in Kavango East had 52% of female and 48% of male and Ncamangoro Constituency in Kavango West had 51.9% female and 48.1% male (*Figure 3*).

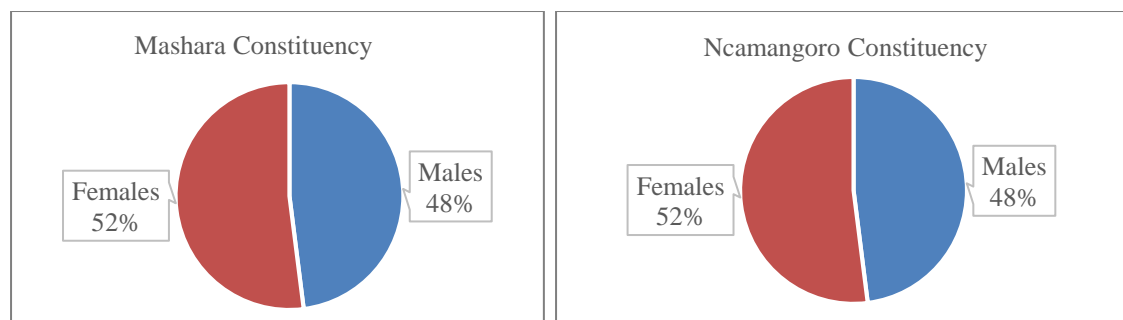


Figure 3: Percentage (%) distribution by gender group in Mashare Constituency and Ncamangoro Constituency (Source of Data: NSA, 2014 and KERC, n.d.)

The population age data (*Figure 4*) reveals that Kavango East has 52.7% and Kavango West 47.2% of people are in working-age (between 15-59 years of age). The percentage of age group 15-59 for Namibia is 57.3%, thus this makes both regions below the National average in terms of percentage of people in working-age category.

Northern regions of Namibia has largest proportion of youth in younger age groups of 15-24. The population of both Kavango Regions is very youthful, around 41.4% of people in Kavango East and 46.5% of people in Kavango West are youth from 0 to 14 years. The national average for this age group is 36.4% (NSA, 2017a).

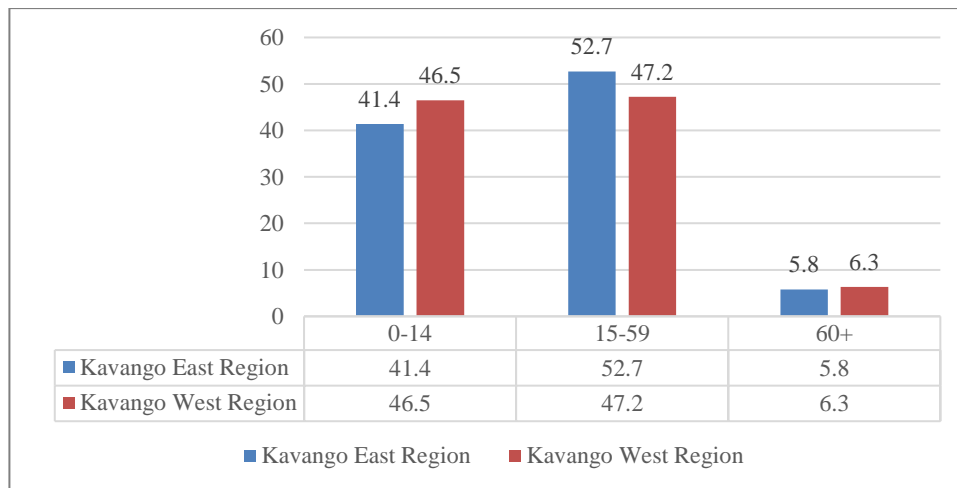


Figure 4: Population age profile of Kavango East and Kavango West Regions, 2016 (Source of data: NSA, 2017)

Inter-census recorded that both Kavango Regions have high proportion of persons with disabilities, particularly high was in Kavango West (7.6%). This is the highest in Namibia, followed by Ohangwena (6.8%). Kavango East recorded 6.0% of persons with disabilities. Average for Namibia is 4.7% (NSA, 2017a).

Likewise, Kavango Regions scored high on percent distribution of orphans aged 18 years and below. The inter-census has recorded highest levels of orphan hood in Zambezi Region with 16.6 percent and followed by Kavango East with 15.9% of children who were orphaned. Kavango West recoded 14% of children who were orphaned. The national average stands at 12.5% (NSA, 2017a).

Regarding the population density that shows the relationship between the population and the size of the area. In 2016. The population density in Kavango East was 6.2 people for km² and Kavango West had 3.6 people for 1 km². The population density for Namibia was 2.8 people for km² (NSA, 2017a). Thus the population density in both regions is above national average and increasing from 2011 to 2016 (*Figure 5*). Kavango East has larger increase than Kavango West. Kavango East is among the most densely populated areas in Namibia.

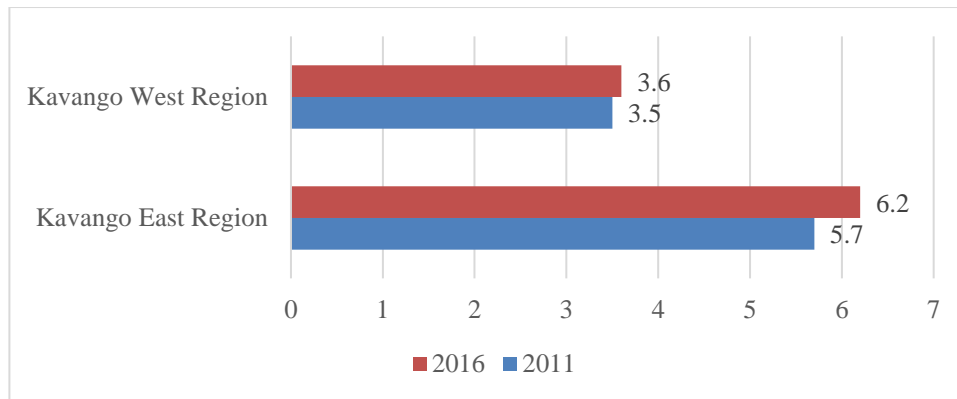


Figure 5: Population densities (persons per km²) of Kavango East and Kavango West Regions in 2011 and 2016 (Source of data: NSA, 2017)

No figures were available for the urban/rural rate for the Kavango West and Kavango East Region and as such, the overall Kavango Regional urban/ rural rate for 2011 is used to show that the majority of the people in the two regions still live in the rural areas (71%) on Communal land (NSA, 2011). Although communal land is owned by the State under the Communal Land Reform Act, the Act also makes provision for Traditional Authorities to have a certain degree of control over the communal land within their jurisdiction.

Ncamangoro Constituency falls within the Mbunza Traditional Authority and the second drilling site in Mashare constituency falls within Sambyu Traditional Authority.

Traditional authority leadership in the Kavango Regions consists of chiefs (hompa/fumu), senior headmen, headmen and community leaders. A chief /hompa/ fumu is usually a member of the “royal family” that will be appointed by the current chief/hompa. The headman has the responsibility for several communities or villages and they are elected by community members where after the chief then ratify their appointment. Tribal areas are divided into wards, each of which is headed by a senior headman who is appointed by the Chief (MLR, 2015a and Mendelsohn, 2009).

Rukavango-speaking people constitute by far the largest language group in Kavango (79.4% of the population), and San constitute just 0.4% of the region’s population.

3.2 SOCIO-ECONOMIC CHARACTERISTICS OF POPULATION

The literacy rates present the data on the ability to read and write with understanding in any language for the population aged 15 years and above.

The literacy rate for the Kavango East and Kavango West Regions is well below the national average of 89%. In 2011 Census Kavango East Region had 74.4% and Kavango West Region had 77.3% (NSA, 2014a&b) with male being slightly more literate than female. The literacy rate of both Kavango Regions is low, in comparison to Khomas Region (96.7%), which has the highest literacy rate in Namibia.

Furthermore, over 42% of children of Kavango East Region over the age of 15 have left school while 17% of children over the age of 15 years have never attended school, which is much higher than the national average of 13%. In Kavango Region more than 58% of children over

the age of 15 left school while 21% of children over the age of 15 years have never attended school (NSA, 2014b).

However, the inter-census data (2016) revealed improvement in Kavango East with literacy rates reaching 84.7% of people being literate, then in Kavango West was recorded decline – from 77.3% in 2011 to 75.6% in 2016 (NSA, 2017a).

At the constituency level, Mashare Constituency’s adult literacy rate stood at 72% (KERC, n.d.) and Ncamangoro recorded only 63.3% of people being literate (NSA, 2014b). Literacy rates in both constituencies are not only below their respective Regional average rates, but they are lowest in their respective regions.

Unemployment for the economically active population is presented in *Figure 6*.

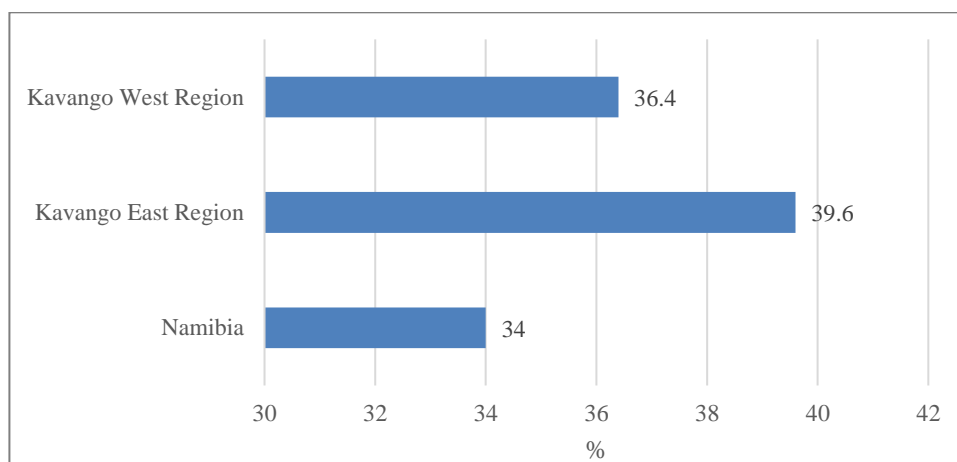


Figure 6: Unemployment for the economically active population (Source of data: NSA, 2017b)

The unemployment rate is widely regarded as one of the key labour market indicators and a good measure for employment creation and participation in economic activities in the country (NSA, 2017b). A lower unemployment rate signifies a growing economy, while a higher rates signifies a declining economy and its inability to absorb people of working age.

Thus the unemployment rate in both regions under investigation are higher than the National average. Unemployment in Kavango East is 39.6% and in Kavango West stands at 36.4 %. At the constituency level, unemployment in Ncamangoro Constituency is high. Constituency has 2084 person in economically active age (in labour force) and out of this number 1089 person are unemployed, making 52.2% of unemployment (NSA, 2014b).

Unemployment rate for female is higher than for male. In Kavango East unemployment among male is 35.2% and for female 42.8. In Kavango West Region the unemployment for male is 31.5% and 40.2% for female (NSA, 2017b).

The unemployment for youth (youth aged 15 to 34 year old) is even higher (*Figure 7*). It stands at 45.8% of youth (15-34 years) is unemployed in Kavango East and 52.6% of youth is unemployed in Kavangwo West. Youth unemployment in both regions is higher above the national average for youth (43.4%).

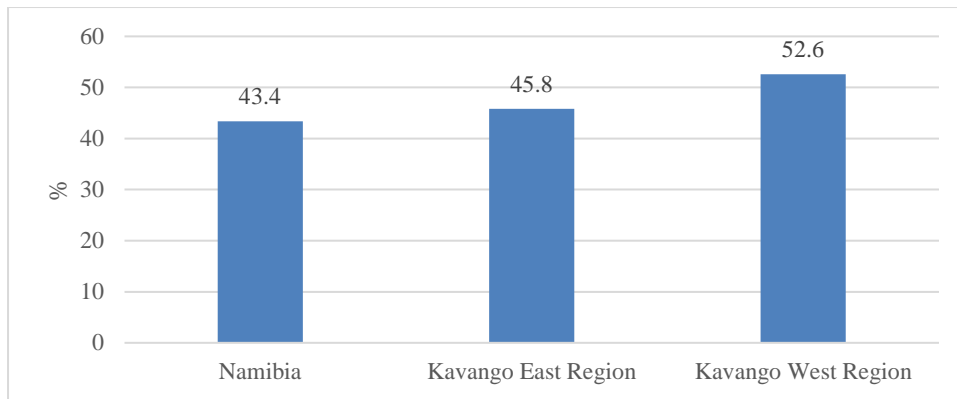


Figure 7: Youth (persons from 15 to 43 years old) unemployment rate (Source of data: NSA, 2017b)

As Figure 8 illustrates, Kavango Regions (East and West) had the largest population of unemployed youth aged 15-35 and the highest unemployment rate.

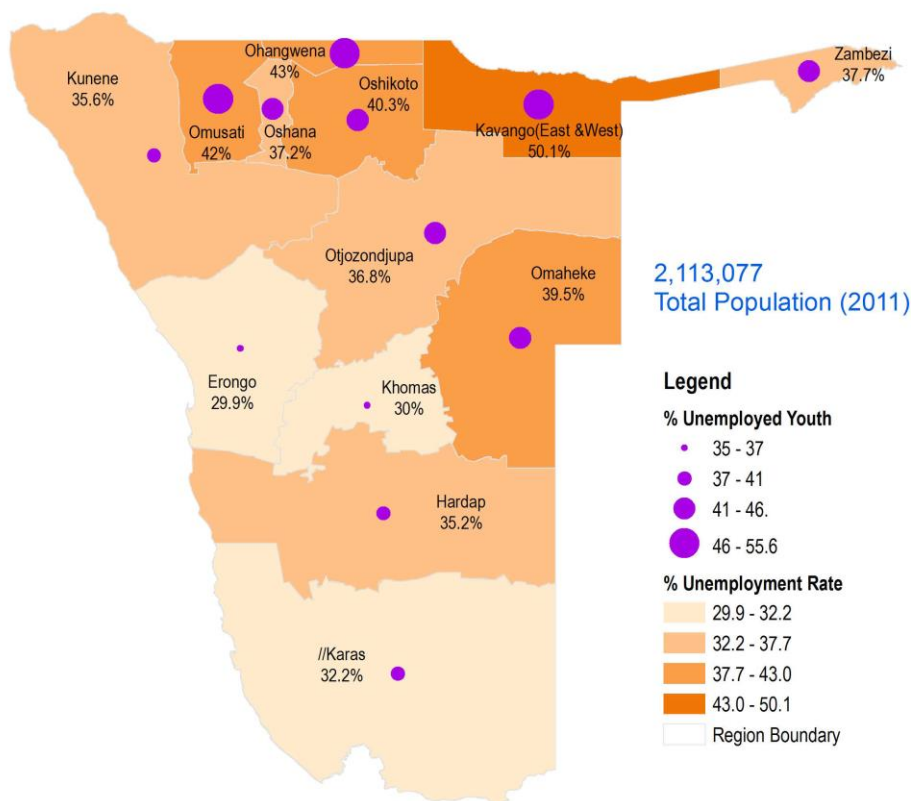


Figure 8: Youth unemployment rate by region in Namibia (UNCT, 2015)

2016 Namibia Labour Force Survey (NSA, 2017b) has introduced the NEET rate which is the rate that is defined as the percentage of youth aged 15-34 years who are not in employment and not in education or training. Neet rate for Kavango East was 37.3% and for Kavango West was 36.4%. The national average NEEN rate stands at 34.5% (NSA, 2017b).

The large unemployment rate can be attributed to the limited formal employment within the region as the majority of households still obtain income from subsistence activities. Lack of employment may lead to the high migration rate, especially the men in the region, to other regions searching for employment.

Kavango West Region has the highest percentage of informal employments (91.8%), followed by Omusati Region (81.3%) and then Kavango East (78.8%). Whereas the region with the lowest percentage of employees in informal employments is Erongo with 55.3 % (NSA, 2017b).

The main employment industries in Kavango East and Kawango West is agriculture, forestry and fisheries. Around 45.95% of employed in Kavango East are in the agriculture, forestry and fisheries sector and in Kavango West the share is even larger - 80.04% (MLR, 2015a&b).

This is higher than the Namibian average for farming (28%). The margin between farming and other sources of income suggest that the Regions are dominated by farming which is mainly communal farming.

In Kavango West Region 63% of the farming population practice crop production, 28% are involved in livestock rearing and the much less practiced farming activities such as poultry (7%), agro-processing (2%) and both horticulture and others are at (0%) as depicted in *Figure 9*.

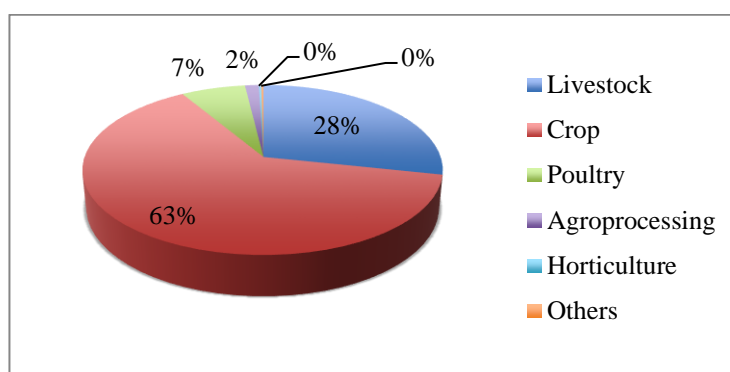


Figure 9: Percentage distribution of farming population by type of agricultural activity in Kavango West Region (Source of data: NSA, 2014b)

The main occupations of the employed population (in Kavango East and Kavango West Regions) is reflected in Table 1.

Table 1: Main occupation of the employed population (in percentage) within Kavango East and Kavango West Regions (Source of data: NSA, 2014a&b)

	Kavango East Region	Kavango West Region
Armed forces	4.66	0.70
Legislators, senior officers and managers	1.83	0.41
Professionals	11.17	4.21
Technicians and associated professionals	4.05	1.66
Clerks	3.81	0.80
Service workers	11.70	3.94
Skilled agricultural and fisheries workers	45.95	80.04
Craft and related trade workers	6.40	3.47
Plant and machine operators and assemblers	2.30	0.89
Elementary occupations	8.10	3.86
Don't know	0.02	0.01

Table 2 shows the percent distribution of households' main source of income at the Ncamangoro constituency and Mashare Constituency. In both constituencies farming constituted the main source of household income, with more than percent of households relying on this income source. Wages and salaries made up a large proportion of household income in Mashare Constituency (12.9%), but not that significant in the Ncamangoro Constituency

(6.4%). Large share of people depend on the old-age pensions, cash remittances, retirement fund, orphan or disability grants (Table 2). Orphan and disability grants were the main source of income for 3% of households in Ncamangoro Constituency and equally 3% of households in Mashara constituency.

Table 2: Percent distribution of households' main source of income by area (Source of data: NSA, 2014a&b)

	Ncamangoro Constituency (Kavango West Region)	Mashare Constituency (Kavango East)
Farming	51.9	52.8
Business Activity (non farming)	15	6.6
Wages and Salaries	6.4	12.9
Old-Age Pension	10	16.9
Cash Remittances	12.8	3.0
Retirement Fund	0.4	0.6
Orphan's Grant	1.2	1.3
Disability Grant	1.8	1.7
Other	0.3	4.4

There were major differences between urban and rural areas in Kavango Regions. In urban areas, 46.3 % of the households reported wages and salaries as the main source of income, followed by business activities (non-farming) in 22.5 percent of all households. In rural areas, however, farming (57.6%) and old-age pensions (14.4%) were the main sources of income for households (NSA, 2014c).

In 2011, Kavango region has recorded highest incidence of poverty of all regions, 53% of all population, representing decline of 5% points from the 2001 figure of 58%. Poverty is defined as the number of households who are unable to afford sufficient resources to satisfy their basic needs. The regional level poverty is defined as the percentage of the population within a region whose annual income consumption is below the poverty line. The poverty line is defined as the minimum income level for determining the proportion of the population living in poverty. An individual is considered to be "poor" when the annual per adult equivalent consumption is below the upper bound ("poor" - N4535.52) poverty line. When the annual per adult equivalent consumption is below the lower bound ("severe poor" - N\$3330.48) poverty line, an individual is considered to be "severely poor" (NPS, 2015).

Figure 10 shows that, with the exception of Rundu Urban and Rundu Rural West constituencies, in all the constituencies in Kavango region more than half of the population is poor. All constituencies in Kavango region have poverty incidence above the national average 27%.

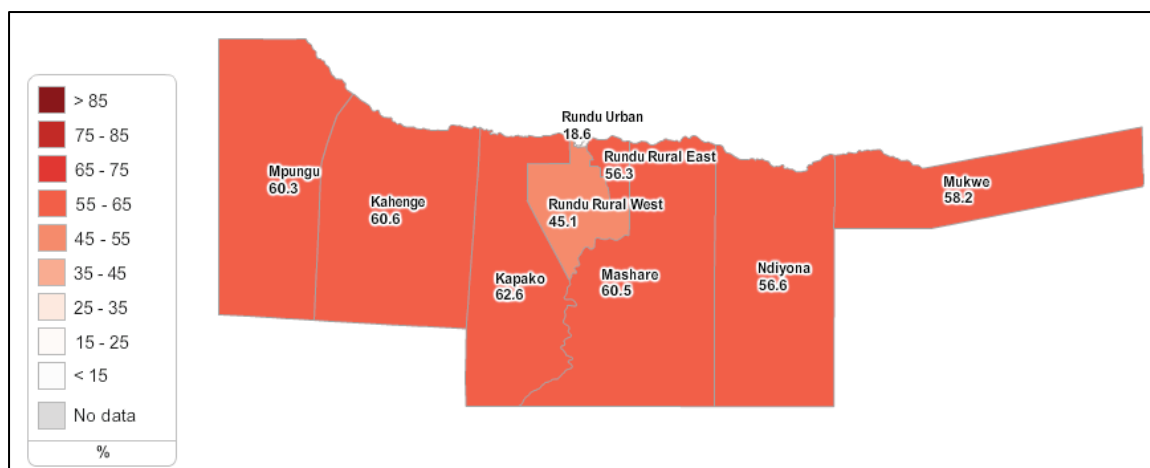


Figure 10: Kavango East and West Regions Poverty Headcount Rate in 2011 (upper bound poverty line) (NSA, 2012)

The highest poverty was recorded in Kapako constituency (63%), followed by Kahenge, Mashare, Mpungu, all above 60% of population classified as poor. The incidence of poverty in Mashare Constituency was 60.5% which is the third poorest constituency in Kavango Region (NPS, 2015). However, it had also the greatest poverty reduction (14.7%) between 2001 and 2011.

The 2011 Census data indicates that traditional dwellings were the most common type of housing unit, making up 72.9 percent of all households in Kavango Regions together. These were followed by detached houses (16.8%) and improvised housing units/shacks (4.3%). Traditional houses were most common in rural areas where they made up over 87 percent of housing units. In urban areas, detached houses and traditional housing units dominated (with a share of 37.3% and 40.1% respectively). In urban areas, improvised housing units/shacks made up 11 percent of housing units. By contrast, only 1 percent of rural households lived in shacks (NSA, 2014c).

4 SOCIAL INFRASTRUCTURE AND SERVICES

The vital element in the quality of life is the quality of and reasonable access to infrastructure and services.

Schools, health facilities and police stations

There are 170 schools in Kavango East with 63318 learners and 2006 teachers (MEAC, 2018). This makes one teacher per 31.6 learners.

Kavango West has 176 schools with 42675 learners and 1523 teachers (MEAC, 2018), making one teacher per 28 learners.

There is a constant growth of population and demand for schools, particularly in Kavango East Region. In two years, from 2016 to 2018, the number of learners has grown by 4931 and 3840 in Kavango West Region (*Figure 11*).

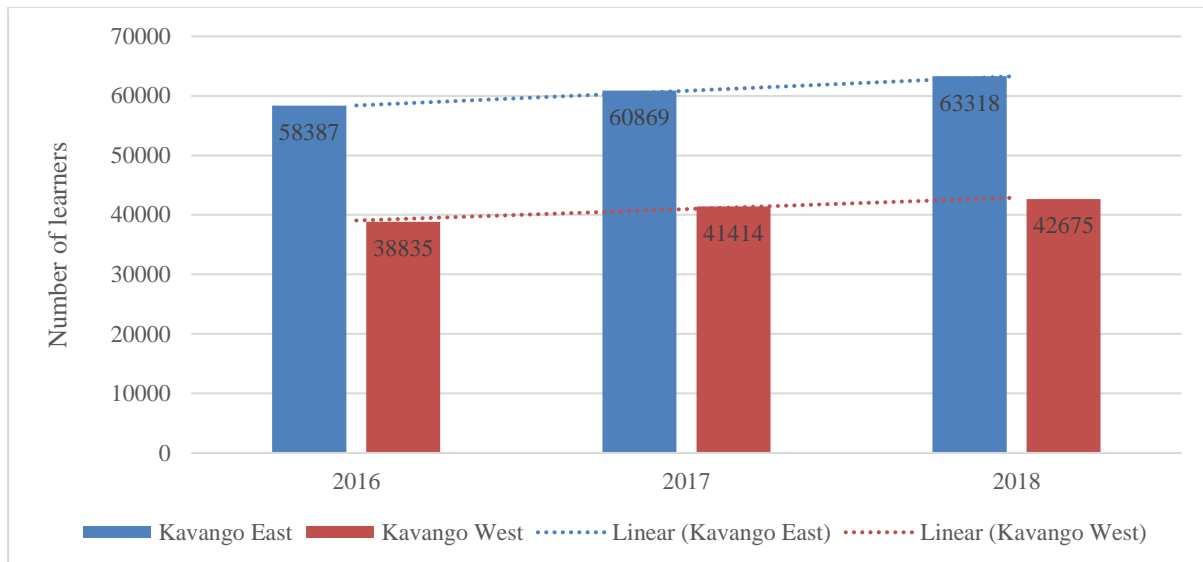


Figure 11: Number of learners by region, from 2016 to 2018 (Source of data: MEAC, 2018)

In average there is a continued trend of increase in the numbers of learners (by 3%), teachers (by 0.8%) and schools (by 2%) from 2017 to 2018 in Namibia. Similar trend observed in Kavango East and Kavango West Regions. In last two years the number of schools in Kavangon East Region has grown from 162 schools in 2016 to 170 schools in 2018, creating 8 new schools. In Kavango West only 4 new schools were opened in the last 2 years, from 2016 to 2018, respectively 172 and 176 schools (MEAC, 2018).

The number of learners per one teacher in high (31.6 in Kavango East and 28 in Kavango West) and is higher than national average 25.1 learners per one teacher in 2018 (MEAC, 2018). This means the schools are somewhat overcrowded and would require more teachers and improved infrastructure.

In terms of health services and infrastructure, Kavango East and West Regions are grappling with a shortage of nurses and doctors, inadequate infrastructure and congestion due to a growing number of patients. Health centres that are supposed to provide relief for the heavily strained Rundu intermediate hospital are not only few but lack the necessary infrastructure and resources to be fully functional (Sanzila, 2017).

There are 1 hospital in the Kavango West Region, 17 Clinics, 6 Health Centres and 3 medical outreach posts. The Kavango East Region has 3 Hospitals (Andara, Nyangana and Rundu), 25 Clinics, 1 health centre and 3 medical outreach posts.

The Rundu hospital, one of Namibia’s four intermediate referral hospitals found in Kavango East Region, is under immense pressure following its transformation, attracting patients from other regions such as Zambezi, Kavango West and even beyond Namibia’s border in neighboring Angola. Community members complained about the long distances they have to travel to access health services, for example, residents of Sauyemwa informal settlement that is about 6 kilometres west of Rundu.

Far distances, poverty and hunger are among the reasons resulting with HIV patients defaulting on their medication. Despite the challenges, the Health Directorate has stepped up efforts aimed at improving sexual reproductive health in the region. In order to mitigate the

distance travelled by patients to access services, HIV and AIDS services have been decentralized (Sanzila, 2017).

There are three (3) police stations within the Kavango West Region, which are located at Kahenge, Mururani and Nkurenkuru and there are five (5) police stations within the Kavango East Region, which are located at Omega, Mukwe and Rundu (3 stations); and two police checkpoints at Muhembo and Rundu.

The Kavango Regions have relatively good infrastructure, but most of the infrastructure is focused in central points or settlements areas, with scattered and limited infrastructure found within the remote rural areas of the region.

The provision and locations of social infrastructure (schools, hospitals and police stations) are captured in *Figures 12 and 13*.

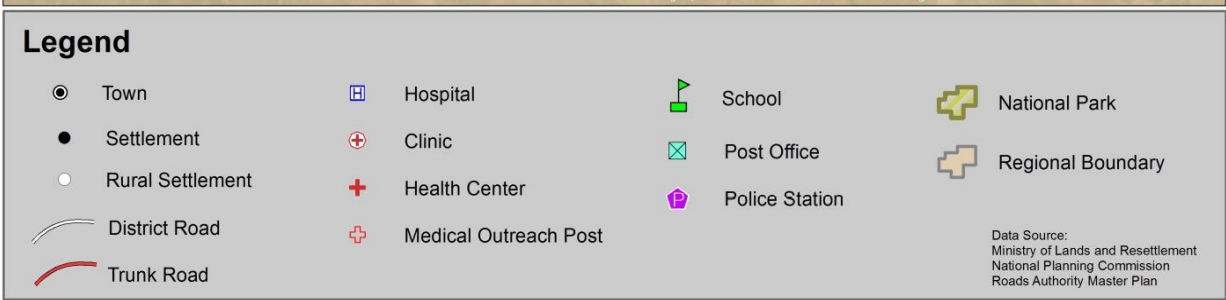
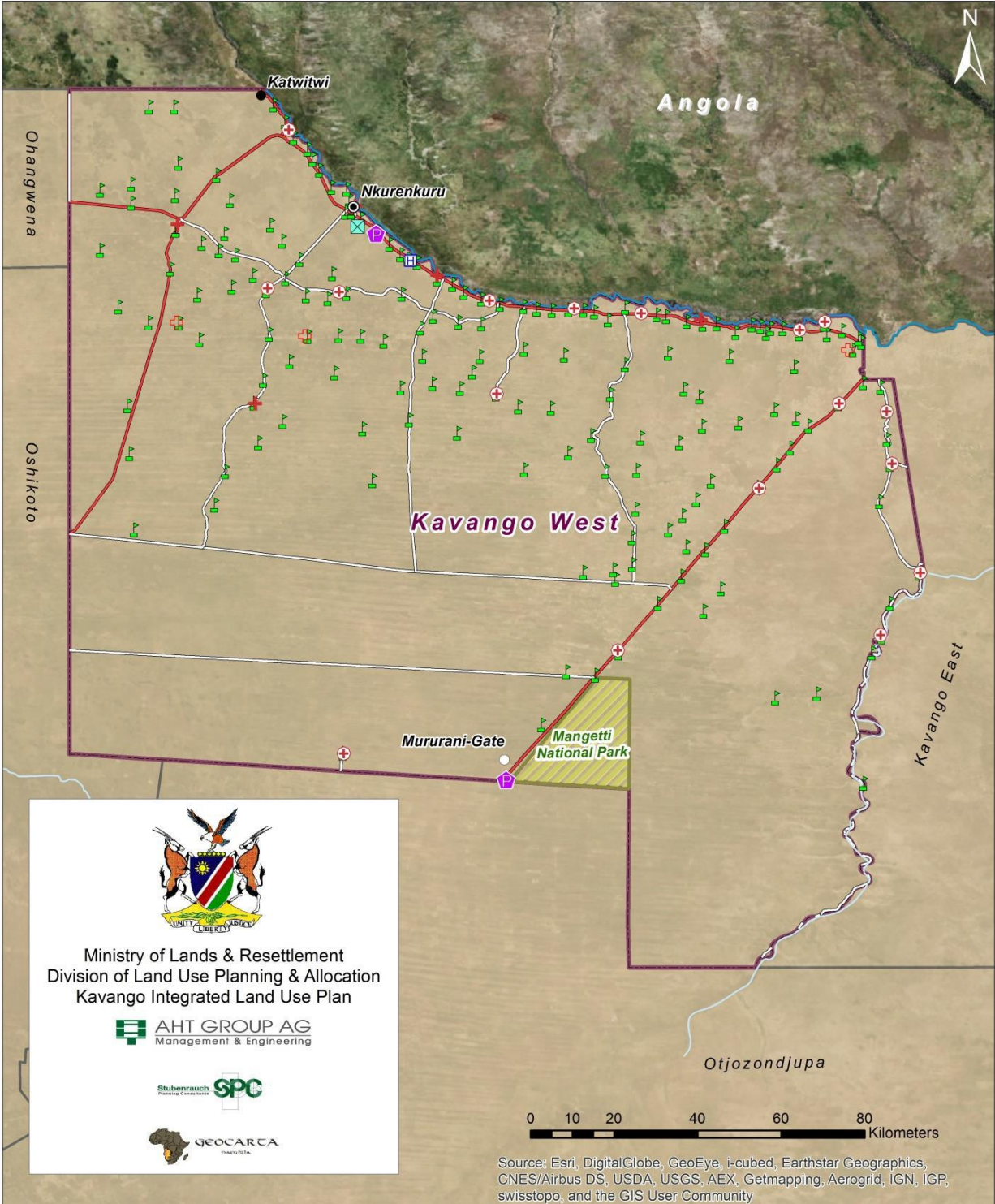


Figure 12: Schools, Hospitals, Police Stations in the Kavango West Region (Map from MLR, 2015b)

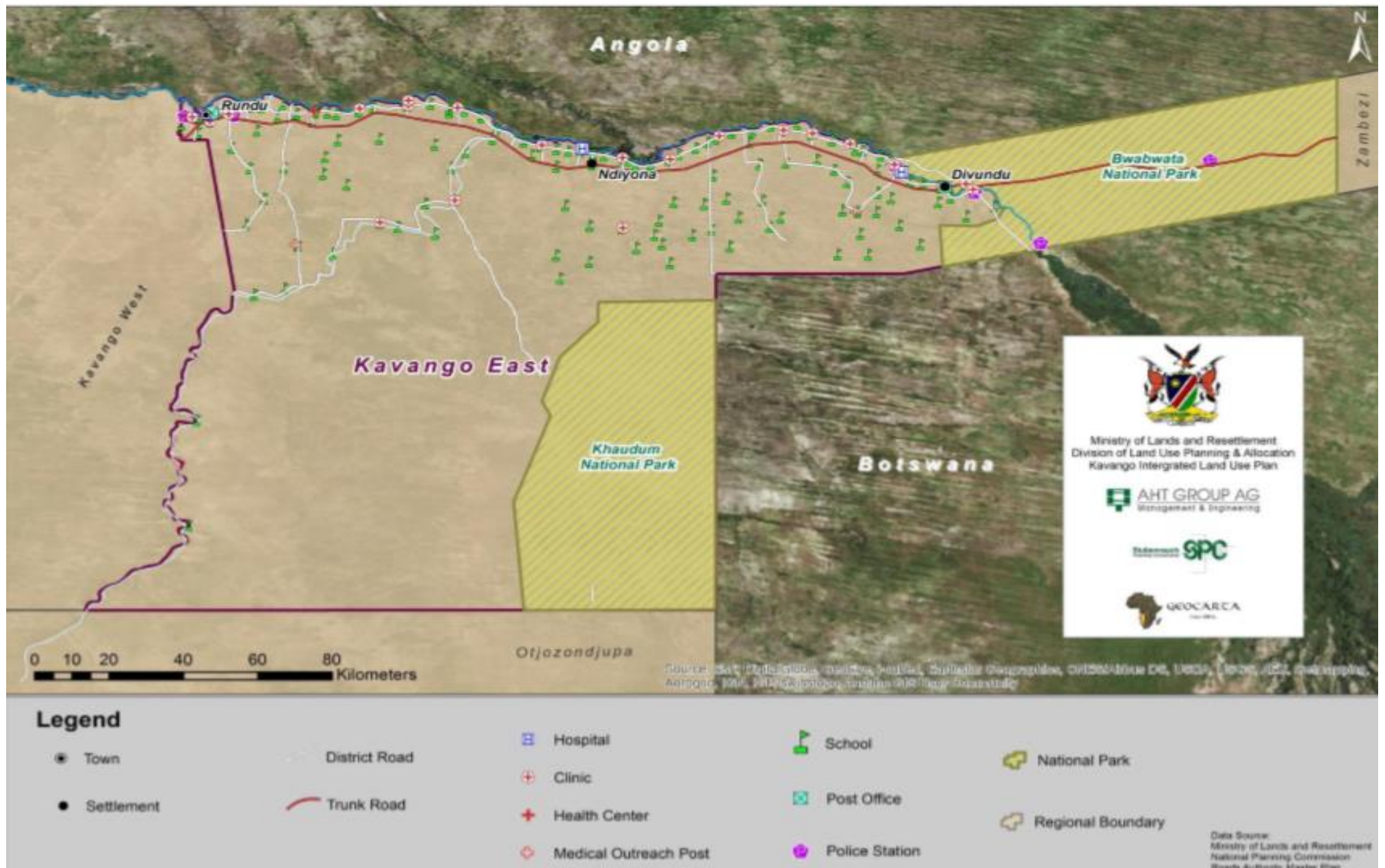


Figure 13: Schools, Hospitals, Police Stations in the Kavango East Region (Map from MLR, 2015a)

Roads, railway and airports

The Kavango West Region is relatively well covered with a network of roads; unfortunately, most of these roads are gravel or sandy roads that make travel difficult. There are two major transportation corridors within the Kavango West Region, the Trans-Capriivi Highway that links the Walvis Bay port to eastern countries such as Zambia, Zimbabwe, northern Botswana, the south-east of Angola and the south east of DRC (also known as the Walvis Bay-Ndola-Lumbabashi corridor) and the second corridor, the Windhoek-Luanda corridor (MLR, 2015b). The Windhoek-Luanda Corridor forms part of the Windhoek-Tripoli Transafrica Route and will essentially link South Africa to Luanda (in Angola) through Windhoek, Tsumeb and Katwitwi. This is also further linked with a railway line from Tsumeb to the Angolan border at Oshikango.

The recent upgrading of the road from Nkurenkuru to Rundu also provides an important link to the neighbouring regions of Ohangwena and Oshikoto and to Katwitwi, the border town with Angola.

Despite these corridors, the gravel and sandy road conditions in the region are quite dismal and difficult to travel on. Most tourists prefer the Trans-Capriivi Corridor and very few tourist actually venture inland into the Kavango West Region (MLR, 2015b).

There are currently no railway lines or airports within the Kavango West Region.

The Kavango East Region is relatively well covered with a network of roads; unfortunately, most of these roads are gravel or sandy roads that make travel difficult. The Trans-Capriivi Highway that links the Walvis Bay port to eastern countries such as Zambia, Zimbabwe, northern Botswana, the south-east of Angola and the south east of DRC (also known as the Walvis Bay-Ndola-Lumbabashi corridor) (MLR, 2015a) plays an important role in the trade potential of the region. There is a possibility of a railway line to be constructed that will extend the current railway line from Grootfontein, through the Kavango regions, through to the Zambezi Region and to SADC countries. This project is still in feasibility stage and if such a link is developed, it will have economic opportunities that the region can benefit from (MLR, 2015a).

Kavango East Region has one airport, at Rundu, that accommodates national flights. Several smaller airstrips cater for the tourism sector especially in the eastern part of the region.

Nevertheless, people living deep in the interior of the region are far from social infrastructure, thus access to education and medical treatment is difficult.

Electricity and Water Infrastructure

NamPower is the national power utility company in Namibia responsible for the generation and transmission of electricity. The regions are fairly well served with an electricity network, although this can be further developed especially within the further rural areas.

The communities living in the northern part of the Kavango West Region along the road from Nkurenkuru to Rundu road are relatively well connected to the national grid. The remainder of the rural communities situated away from the river and the main road are connected mostly

with off-grid facilities that utilise either solar power systems or diesel power systems (MLR, 2015b).

The communities living in the northern part of the Kavango East Region along the road from Rundu to Divundu are relatively well connected to the national grid. The remainder of the rural communities situated away from the river and the main road are connected mostly with off-grid facilities that utilise either solar power systems or diesel power systems. There are plans by NamPower to add another 132kV from Rundu to Mahangu that will be next to the existing powerline as well as an additional powerline from Tsumeb along the road to Nkurenkuru (MLR, 2015a).

The Okavango River is the main source of water for the people living along the river, and for their livestock, whereas villages away from river depend entirely on groundwater from boreholes supplied by MAWF and in some cases from seasonal pans. The urban areas - settlements and towns are provided with water by the NamWater.

The water quality of groundwater within the Kavango East Region is relatively good and suitable for human consumption with TDS (total dissolved solids) levels of between 501 – 1000 can be found within most parts of the Kavango East Region (MLR, 2015a).

In terms of access to water and sanitation, both Kavango Regions lag behind the national average (*Figure 14*).

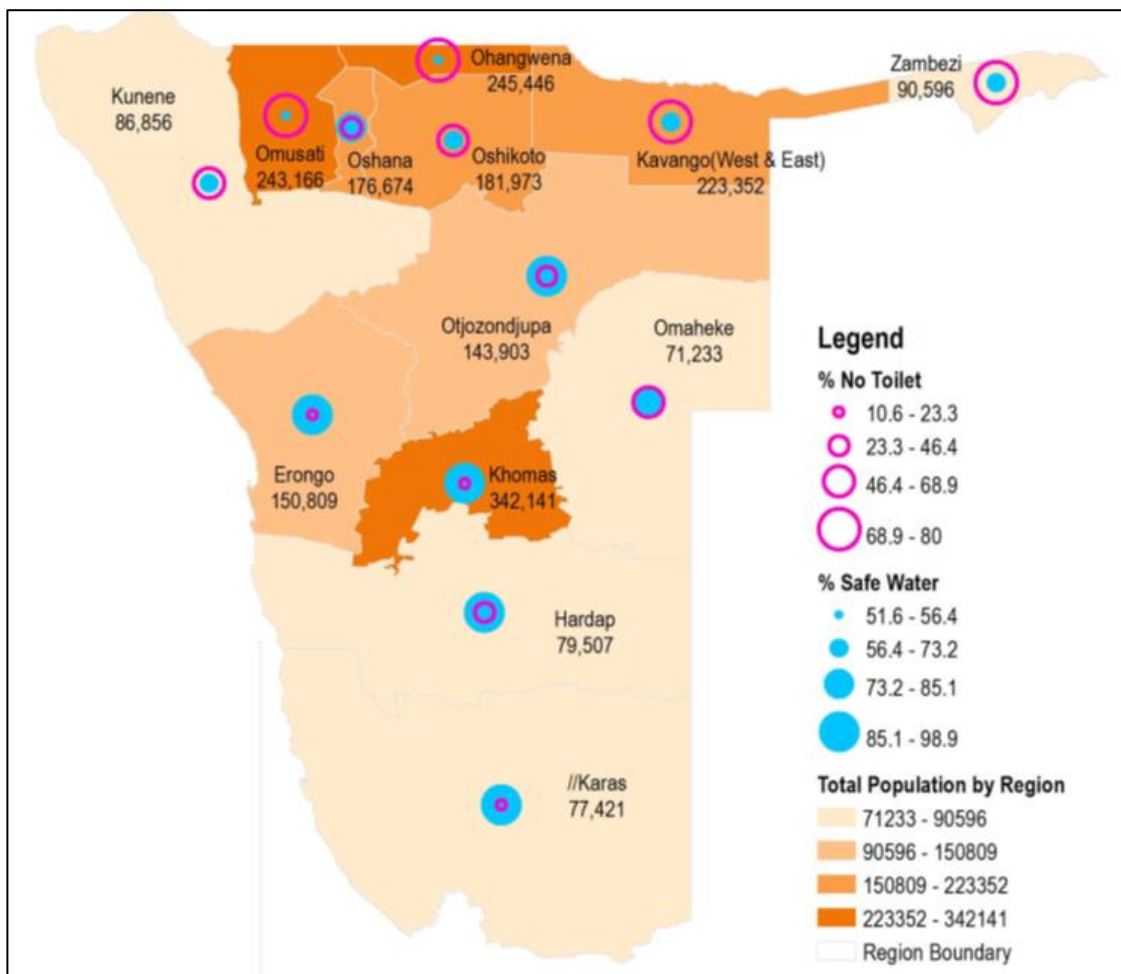


Figure 14: Access to water and sanitation in Namibia (UNCT, 2015)

5 ECONOMIC PROFILE

The main economic activities of the Kavango Regions are agriculture, mainly small-scale mahangu farming, providing some food self-sufficiency but little food security; aquaculture; timber harvesting; tourism, particularly in Kavango East Region; and some minor mining activities. Livelihoods are thus considerably diversified, with residents relying also on wages and salaries, pensions and cash remittances.

5.1 AGRICULTURE

Although rainfall in Kavango is higher than in most other parts of Namibia, there are a number of environmental constraints to agricultural development. For example, rainfall in Kavango is variable and unpredictable: the annual average is less than 475 mm in the southernmost part of the region and more than 550 mm in the northernmost part, and annual totals vary from less than 300 mm in the driest years to more than 1 000 mm in the wettest. About 80% of the rain falls between December and March (Thiem, M. and Jones, B.T., 2013).

A further constraint to agricultural development is the predominance of sandy soils that are low in nutrients. More fertile soils suited to crop production are concentrated in small areas along the Okavango River, along Omiramba and in long valleys between old sand dunes. Generally, however, all soils in Kavango have low fertility (Thiem, M. and Jones, B.T., 2013).

About 70% of Kavango's population live within a 10 km-wide strip along the river and according to the 2011 census 61% of the population in Kavango West reported farming as their main source of income. The total area available for agriculture purposes in Kavango West is approximately 85.9%.

In the Kavango East Region more than half of the region is covered by small commercial farming units which leave only a very small part of the region (5.7%) available for communal farmers on the communal land.

Nevertheless, most of the region's inhabitants are engaged in some form of agricultural production, primarily small-scale farming of mahangu (pearl millet). About 95% of all cultivated land farms mahangu and it grows well on sandy, nutrient-poor soils. Other crops are sorghum, maize and some vegetables. There is only one harvest per year. Cultivation starts with first rains, sometimes in November when field are ploughs and prepared for crop planting and ends in July when mahangu and other crops are harvested.

In the Kavango East Region, irrigation and commercial farms combined is the largest land user (38.6%). The main form of farming activity in the Kavango East Region is "household level" subsistence farming, on a small scale with crops such as mahangu, sorghum and maize, some vegetables and milk and meat from the livestock. According to the 2011 census 86.21% of the population in Kavango East Region relied on agriculture for their income with crop (60.15%) and livestock farming (26.06%).

There are two types of irrigation taking place within the Kavango West and Kavango East Regions: Green Schemes on which mostly staple food such as maize and wheat are grown and smaller private irrigation schemes that focus on horticulture production.

The Green Scheme Policy makes opportunities available for private entrepreneurs to maintain large-scale irrigation projects with small-scale irrigation farmers (SSI) or outgrowers. It is estimated that there are approximately 210 small-scale irrigation farmers in the two Kavango Regions (MLR, 2015a).

Irrigation projects within the both regions (Kavango West and Kavango East Regions) are mostly found within a distance of 5 km from the Kavango River where there is ease of access to water and road infrastructure. There are two Green Scheme Projects in the Kavango West (Musese and Sikondo) and a number of smaller gardening projects (MLR, 2015b). The majority of the Green Schemes produce staple crops such as wheat, maize and to a lesser extent some horticulture products such as potatoes, onions and tomatoes. In Kavango East there are thirteen irrigation projects covering about 81.83km² (MLR, 2015a). There is Mashare Irrigation Training Centre with 60ha land, Mashara Commercial Farming Unit with 80ha land and a number of irrigations projects to be planned (MLR, 2015a). SSI farmers in the Kavango East Region produce a variety of crops such as cabbages, onions, carrots, tomatoes, sweet potatoes, butternut, spinach, pumpkins, green peppers, chillies, gem squash, beetroots and garlic.

Grazing capacity for the Kavango West and Kavango East Regions is not very high although there is potential for livestock farming in the region. The markets and the red-line are however a severe restriction on the commercialisation of livestock in the region. Together with this, the fact that communal land cannot be sold, traded, or used for collateral at financial institutions makes commercial livestock farming in the region challenging.

Communal livestock farming is based on subsistence farming where the majority of the livestock is kept for own usage and very little is sold on the market. Traditionally in these communities cattle is seen as a status symbol rather than a way to financial gain. In this system livestock owners graze their livestock (mostly cattle and goats) in local commonages within a walking distance from the rural village (Mendelsohn J. , 2006). The farm units are often fenced, traditionally poles, sticks or branches were used for fencing, but droppers and fencing wire are now used increasingly. Livestock is largely grazing on open access commonage pastures” and generally “graze and browse on their own, although young men or boys herd them if there is a chance of the animals damaging crops, or if the pastures are far from their homes. The animals return to kraals each evening, usually after being watered at a river or drinking trough at a borehole or a piped waterpoint” (Mendelsohn J., 2006).

The biggest problem for communal subsistence farmers is the fact that communal farmers cannot own land, they cannot sell the land nor can they obtain loans and financial assistance from financial institutions on this land, as they do not legally own the land. In a sense, this causes the poorest of the poor to continue to live in this conundrum of poverty until a mind-set on security of tenure on communal land takes place. A second major problem is the export restrictions placed on livestock export from the Kavango East Region because of annual outbreaks of foot-and-mouth disease (MLR, 2015b).

Livestock provide an important source of draught power for cultivation, meat and milk. Fish are an important source of protein for people living close to the Okavango River. Fish populations in this river have always been low because the river is naturally very low in nutrients, but it is widely agreed that fish populations have dropped to even lower levels because of overfishing (MLR, 2015b).

The Kavango East Region have a number of indigenous plant species that have potential for commercial values, such as oils for cosmetics from “blue sourplum (*Ximenia americana*),

Manketti (*Schinziophyton rautanenii*), bird plum (*Berchemia discolor*) and baobabs (*Adansonia digitata*), and liquors from manketti, jackal berry (*Diospyros mesphiliformis*) and monkey oranges (*Strychnos spinosa*)” (NNF, 2010).

Products such as devil’s claw (*Harpagophytum*), marula (*Schlerocarya birrea*), blue sourplum (*Ximenia americana*) and commiphora are some of the more popular and key species for commercial production purposes, but no specific data on the harvesting of devils claw or marula were available for the Kavango Regions.

There is no registered communal conservancy in the project location areas.

Aquaculture

Although perceived by many as being the breadbasket for Namibia, the Kavango West Region currently only has one communal cooperative fish farm being run by local communities at Mpungu (close to Nkurenkuru). Mpungu fish farm produced 1,333kg of fish in 2012 (MLR, 2015b). Even with the water and land availability, this is one of the economic sectors that are slow to develop in the region mostly likely because of the availability of fish within the Kavango River.

The Kavango East Region had one cooperative fish farm at Karovo, which is run by the local community. There is also a training and research facility at the Kamutjonga Inland Fisheries Institute (KIFI) where research on fish species and fish numbers is done. Karovo fish farm produced approximately 1,100kg of fish in 2012 (MLR, 2015a).

Indications are that fish farm productivity is generally low in Namibia, due to the infrastructure of these farms that are within earth ponds that are leaking and in which siltation takes place. The ponds are also open and it is difficult to control the water temperature, which are quite important for fish breeding.

Community Forests

Forestry in Namibia falls under the Directorate of Forestry within the Ministry of Agriculture, Water and Forestry (MAWF). The Directorate’s mandate was expanded considerably in 2008 to include the entire country and to integrate newly established community forests into the overall programme. These community forests are in ten regions spread across the north of Namibia (Zambezi, Kavango East and West, Ohangwena, Omusati, Oshikoto, Oshana, Otjozondjupa, Kunene and Omaheke) and have become an essential and integral part of the CBNRM programme. There are currently 37 registered and emerging community forests in Namibia, covering around 6% of the country. However, many of these forests overlap communal conservancies, in many cases by 100%, so the forest area outside of conservancies contributes only 0.4% of Namibia’s land area (NACSO, n.d.).

There are a number of community forests within the Kavango East and Kavango West Regions (*Figure 15*). According to the Namibia Association of CBNRM Support Organisation (NACSO) information, there are 2 community forests in Kavango West (Kahengu and Katope community forests) and 10 community forests in Kavango East (Ncumacara, Ncamagoro,

Mbeyo, Gwatjinga, Ncaute, Cuma, Likwaterera, Hans Kanyinga, George Mukoya and Muduva Nyangana community forests).

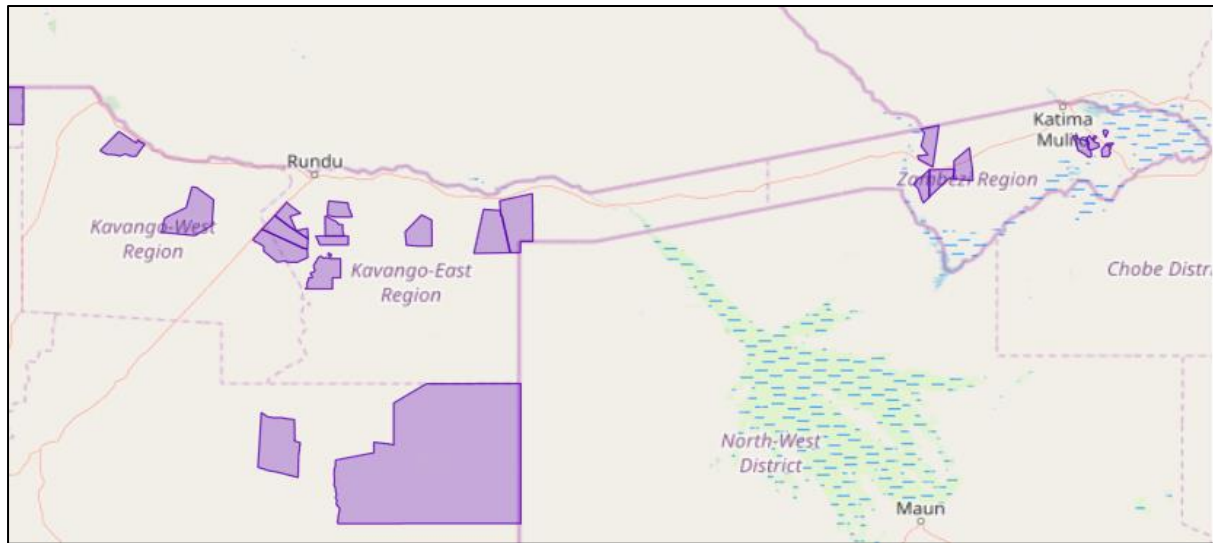


Figure 15: Areas with community forests (in purple on the map) in Kavango East, Kavango West and Zambezi Regions (Source of data: NACSO, n.d.)

The proposed project's drilling sites are not located within the community forest areas, however they are very close to Gwatjinga and Mbeyo community forests.

Community forest management is guided by the principles of sustainable management, not to deplete, but to maintain and improve the resource base, and of sharing benefits among all local residents. Hence, community forests empower local people to take responsibility and to become actively involved in forest management, thereby increasing the value and benefits of forest resources to local people. All residents within a community forest are members of the forest, and have member's rights.

A principal source of income from community forests is the commercial extraction of Namibian hardwoods. The Directorate of Forestry calculates an 'annual allowable offtake', based on an inventory of timber resources, which is binding for a 5-10 year period. Community members themselves conduct the inventory, as they know their areas intimately. Technical guidance is given by the National Forestry Inventory (NFI) Department, which analyses the data and compiles inventory reports. These then form the key components of the management plan (NACSO, n.d.).

Over the last decades, Kavango timber has become a valuable resource for the national and South African woodworking industry. Trading from the Kavango, and increasingly southeast Angola, towards Windhoek, the national capital and further on is executed through chains of value-adding. On the ground, logging of targeted timber species has become an extra source of fast cash for local land users. Most of the harvesters live in rural subsistence without significant cash income and feel strongly incited to earn cash from commodifying natural resources to complement their rural subsistence based livelihoods (Propper and Vollan, 2013).

No official data was available on annual production and harvesting from these community forests.

However illegal harvesting of timber in Kavango Regions is on rise and attributed to the high demand for timber worldwide. Other factors are the limited transport of Directorate of Forestry to conduct regular patrols and resources inspections. More so, the suspension of timber harvesting in neighbouring countries namely Angola and Zambia, may be another contributing factor (New Era, 1 November, 2018). High unemployment rate in the region that most people depend on natural resources such as timber for survival is another major challenge.

A total of 114 trees, mainly the African teak and Zambezi Teak were illegally harvested and 1 693 cubic metres of timber and 35 logs were found without permits during the 2017 period to November 2018.

Illegal harvesting of timber resulted in blocking permits to forest management bodies of Katope as well as Ncumcara and Mbeyo community forests in Kavango West (New Era, 2 November, 2018).

Trees also bear fruits which are of nutritional and economic value. Marula, ximenia, mopane and commiphora all produce oils useful for food or as skin lotions. Protecting these resources by their sustainable utilisation is the key role for communal forests.

5.2 TOURISM

Tourism is an important industry in Namibia. It contributes significantly towards the Gross Domestic Product, making it a valuable sector within the country. The total contribution of the tourism industry to the Namibian GDP was 15.1% (N\$13,405 million) in 2012. In 2012, travel and tourism directly supported 22,500 jobs (4.6%) in Namibia and the total employment contribution of the tourism industry in Namibia was 97,000 jobs (WTTC, 2013).

Unlike other segments that have not been spared by the harsh economic challenges, the tourism industry has witnessed the growth over the past two years and it is estimated there will be a further increase by 9.7% per annum from 2013 - 2023 (WTTC, 2013).

According to the MLR reports (2015 a&b) most visitors come to Namibia for the wildlife and scenic areas. Unfortunately as the Kavango West Region has a limited supply of these, this reduces the potential for visiting tourist to come to the region. Tourism in the Kavango West Region is limited and undeveloped. This undeveloped nature is linked to the fact that most of the biodiversity, wildlife and more scenic areas are within the Kavango East Region.

Much of the wildlife found within the Kavango West Region has diminished over the years to mainly the Mangetti National Park where intensive conservation is taking place. A number of communal conservancies and community forests (registered and emerging) exist within the Kavango West Region, providing for some form of conservation (MLR, 2015b). The obstacle for tourism development are conflicts that arise between traditional authorities and community forest committees when traditional authorities do not follow the management plans set up and then allocate land for different purposes or allow for cutting of timber within the forest, without following the management plan.

On the other hand tourism related to business and trade is an opportunity for the Kavango West Region, especially in areas such as Nkurenkuru and Katwitwi where there is potential for

conference facilities, especially with Nkurenkuru being the administrative capital of the region. This has potential to business related opportunities and spin-off tourism opportunities too.

Tourism in the Kavango East Region is mostly focused on the eastern part of the region around Divundu, to some extent in the centre part of the region next to the Kavango River and in Rundu. This is associated with the fact that most of the biodiversity, wildlife and scenic areas are found in the eastern part of the region (MLR, 2015a).

The majority of tourism establishments are found within the vicinity of the Bwabwata National Park up to Divundu. Between Divundu and Rundu a handful of lodges and campsites can be found, which is mostly situated in scenic areas or areas with a higher occurrence of animal wildlife. Rundu itself has a number of guesthouses and lodges catering mostly for accommodation to the business community. The accommodation establishments are mostly found within a 500 metre radius from the Kavango River as this area has a higher scenic value and potential for tourism.

Kavango East Region falls within the Kavango Zambezi Transfrontier Conservation Area (KAZA TFCA) that was established in 2006 when a Memorandum of Understanding was signed in December 2006 by five countries: Angola, Botswana, Namibia, Zambia and Zimbabwe. By signing the MOU the five countries agreed to collaborate towards the creation of institutional structures to manage the KAZA TFCA. The aim is to establish a world-class Transfrontier Conservation Area and tourism destination in the Kavango and Zambezi river basin regions.

5.3 MINING

According to the Ministry of Mines and Energy Namibia Mining Cadastre (*Figure 16*) there are some Exclusive Prospecting Licences that are active in Kavango East and Kavango West Regions. They are located mainly at the border with Angola.

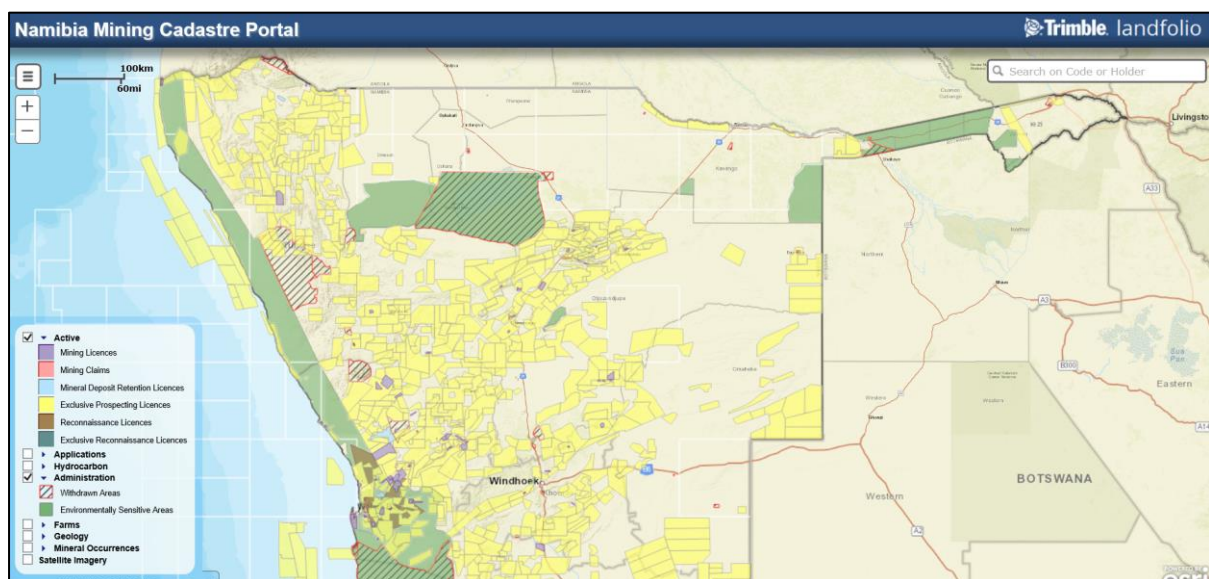


Figure 16: Namibia Mining Cadastre (Source of data: www.mme.gov.na.)

The EPLs granted in the Kavango West and Kavango East Regions are mainly for precious stones, base and rare metals, industrial minerals and non-nuclear fuel minerals.

Although a number of Exclusive Prospecting Licenses (EPLs) have been granted by the Ministry of Mines and Energy (MME) to companies for prospecting in the region, no concreted evidence of viable mineral resources have been discovered yet.

Perhaps the biggest potential for mining in the region is sand mining. Currently sand mining takes place unmonitored and unregulated within the region.

6 SUMMARY AND CONCLUSION

The socio-economic information is summarised as follow:

- The population of Ncamangoro Constituency is 7043 people, which is 8.1% people of Kavango West Region. Mashare Constituency has 8885 people, which is 11.2% of Kavango East population;
- Inter-Census growth rates are 1.6% for Kavango East Region and 0.6% for Kavango West Region;
- Gender distribution is slightly inclined towards higher female shares. Mashare Constituency had 52% of female and 48% of male population and Ncamangoro Constituency had 51.9% female and 48.1% male population;
- The population density in both regions is above national average. 6.2 people for km² in Kavango East was and 3.6 people for 1 km² in Kavango West;
- Inter-census recorded that both Kavango Regions have high proportion of persons with disabilities, particularly high was in Kavango West (7.6%). This is the highest in Namibia. East recorded 6.0% of persons with disabilities;
- Ncamangoro Constituency falls within the Mbunza Traditional Authority and Mashare Constituency falls within Sambyu Traditional Authority;
- Rukavango-speaking people constitute the largest language group in Kavango (79.4% of the population), and San constitute 0.4% of the region's population;
- Mashare Constituency's adult literacy rate stood at 72% and Ncamangoro recorded only 63.3% of people being literate. Literacy rates in both constituencies are not only below their respective regional average rates, but they are among lowest in Namibia;
- Kavango Regions (East and West) has the largest population of unemployed youth aged 15-35 and the highest unemployment rates. Unemployment in Kavango East is 39.6% and in Kavango West stands at 36.4 %. Unemployment in Ncamangoro Constituency stood at 52.2%. Unemployment rate for female is higher than for male;
- Kavango regions have highest incidence of poverty, 53% of all population. Poverty is defined as the number of households who are unable to afford sufficient resources to satisfy their basic needs;
- The main employment industries in Kavango East and Kavango West is agriculture, forestry and fisheries. Around 45.95% of employed in Kavango East are in the agriculture, forestry and fisheries sector and in Kavango West the share is even larger 80.04%;

- The Kavango West and East Regions are relatively well covered with a network of roads; unfortunately, most of these roads are gravel or sandy roads that make travel difficult. Kavango East Region has one airport, at Rundu, that accommodates national flights. Several smaller airstrips cater for the tourism sector especially in the eastern part of the region.
- The Kavango East Region is relatively well covered with a network of roads; unfortunately,
- Nevertheless, people living deep in the interior of the region are far from social infrastructure, thus access to education and medical treatment is difficult
- The communities living in the northern part of the Kavango West and Kavango East Regions along the road from Nkurenkuru to Rundu and Rundu to Divundu road are relatively well connected to the national electricity grid. The remainder of the rural communities situated away from the river and the main road are connected mostly with off-grid facilities that utilise either solar power systems or diesel power systems;
- The Okavango River is the main source of water for the people living along the river, and for their livestock, whereas villages away from river depend entirely on groundwater from boreholes supplied by MAWF and in some cases from seasonal pans. The urban areas - settlements and towns are provided with water by the NamWater;
- The main economic activities of both Kavango Regions are agriculture, mainly small-scale mahangu farming, providing some food self-sufficiency but little food security; aquaculture; timber harvesting; tourism, particularly in Kavango East Region; and some minor mining activities;
- There are a number of community forests within the Kavango East and Kavango West Regions Two (2) community forests in Kavango West and ten (10) community forests in Kavango East. The proposed project's drilling sites are not located within the community forest areas, however they are very close to Gwatjinga and Mbeyo community forests. Illegal harvesting of timber in Kavango Regions is on rise and attributed to the high demand for timber worldwide;
- Tourism is mainly in Kavango East Region. In Kavango West Region it is limited and undeveloped. Tourism in the Kavango East Region is mostly focused on the eastern part of the region around Divundu, to some extent in the central part of the region next to the Kavango River and in Rundu. This is associated with the fact that most of the biodiversity, wildlife and scenic areas are found in the eastern part of the region. Kavango East Region falls within the Kavango Zambezi Transfrontier Conservation Area (KAZA TFCA);

Proposed drilling sites for PEL73 Blocks 1819 and 1820 are very remotely located with limited accessibility. The development is not located adjacent to a major road. The development will have mainly positive impacts on the surrounding areas. Below table presents potential positive and negative impacts and offers enhancement measures for positive impacts. The associated negative impacts could be mitigated with mitigation measures, which are also offered in the table below.

Potential Positive Impacts	Enhancement Measures
Direct economic impact would arise from employment opportunities for unskilled or semi-skilled workers. Through the provision of employment. The quality of life of these people will improve.	The exploration company: <ul style="list-style-type: none"> ▪ Could stipulate a preference for local contractors in its tender policy. The procurement of services and goods from local entrepreneurs and the engagement of local businesses should be favoured

<p>Local economy could be boosted. Induced economic impact would arise from products and services purchased by employees and contractors with the increased availability of money broadening the economic base and boosting the economy at the Constituency level as well as Regional level.</p>	<p>and promoted providing that it is financially and practically feasible.</p> <ul style="list-style-type: none"> ▪ Could develop a database of local businesses that qualify as potential service providers and invite them to the tender process. ▪ Should scrutinise tender proposals to ensure that minimum wages were included in the costing. ▪ Could stipulate that local residents should be employed for temporary unskilled/skilled and where possible in permanent unskilled/skilled positions as they would reinvest in local economy. However, due to low skills levels of the local population, the majority of skilled positions would be filled with people from outside the area. ▪ Ensure that contractors adhere to Namibian Affirmative Action, Labour and Social Security, Health and Safety laws.
<p>Opportunities for skills development.</p>	<ul style="list-style-type: none"> ▪ Project offers experience and on job skills development, particularly for low or semi-skilled workers. This would raise the workers experience and skills to secure jobs in future. ▪ Promising employees could be identified and training and skills development programme could be initiated. ▪ The project could organize business partnerships with local entrepreneurs or small SMEs. ▪ Service providers to provide opportunities for skills transfer.
<p>Potential Negative Impacts</p>	<p>Mitigating Measures</p>
<p>In-flux of workers employed by contractors as well as a potential influx of job seekers, resulting in potential mushrooming of informal settling in the area. The influx of opportunistic job seekers may result in increased numbers of opportunistic criminals.</p>	<ul style="list-style-type: none"> ▪ Addressing unrealistic expectations about the job opportunities
<p>This could also lead to the disruption of family structures and social networks. Being away from the family and social networks potentially may lead to increased anti-social behaviour (e.g. alcohol and drug abuse), concurrent casual sexual contacts contributing to increased HIV-Aids rates.</p>	<ul style="list-style-type: none"> ▪ Where workers to be housed in safe, well-equipped exploration camps, strict control of access should be implemented and no non-construction workers allowed on the premises. ▪ Employees should be encouraged and assisted to visit family on regular basis and subsidised transport could be provided when employees go on leave. For those workers staying on camp during the weekends, the provision of free transport to religious activities on Sundays could be considered. ▪ Employees should have respectful attitude towards local people practising local culture, traditions and practices, without interferences. ▪ Develop strategies in coordination with ATC, MoHSS, MOE and local NGO's to protect the local communities, especially young girls.

Potential harmful interaction between workers employed from outside the area and the local residents.	<ul style="list-style-type: none"> ▪ Organizing events or provision of equipment for recreational activities could be considered. ▪ When employees contracts are terminated or not renewed, contractors should transport the employees to their hometowns within two days of their contracts coming to an end. Proof needs to be provided to the exploration company.
Increased crime rates often associated with alcohol and drug abuse. This could be the result of unsuccessful jobseeker needing to find alternative source of income or could be the result of contract workers living in or near the town.	<ul style="list-style-type: none"> ▪ Contract companies could submit a code of conduct, stipulating disciplinary actions where employees are guilty of criminal activities in and around the vicinity of the town. Disciplinary actions should be in accordance with Namibian legislation. Contract companies could implement a no-tolerance policy regarding the use of alcohol and workers should submit to a breathalyser test upon reporting for duty daily.
Increased demands on formal housing, school placements, municipal infrastructure and health services.	<ul style="list-style-type: none"> ▪ Due to the limited scope of the exploration activities and the number of workers employed by contractor companies, the impact would be very limited and at this stage no mitigating measures are required. The contract companies accommodating their workers in exploration camp should liaise with ATC and other role players to assess the potential impact on existing services and co-operate in finding solutions.
Increased demand on the supply of power	<ul style="list-style-type: none"> ▪ Invest in alternative sources of power, such as solar. Install solar geysers in all new housing units.
Increased demand on water resources	<ul style="list-style-type: none"> ▪ Promote wise use of water.
The presence of a large number of workers living in the exploration camp on the site may pose a threat to the local farmers and also result in stock theft, poaching and damage to farm infrastructure, for example, fences.	<ul style="list-style-type: none"> ▪ The exploration company cooperate with the adjacent communities and develop a code of conduct for exploration workers and contractors to address conflicts that may arise. The exploration company should compensate communities in full for any stock losses and/or damage to infrastructure that can be linked to exploration workers. The exploration company should ensure that all exploration workers are informed of the consequences of stock theft and trespassing on adjacent communities and should ensure that exploration workers who are found guilty of stealing livestock and/or damaging infrastructure are dismissed and charged. All dismissals must be in accordance with Namibia's labour legislation.
Increased risk of veld fires on site and adjacent areas which may pose a threat to the livestock and crop farmers as well as damage or even destruction to farming infrastructure.	<p>The detailed mitigation measures should include following:</p> <ul style="list-style-type: none"> ▪ Ensure that open fires on the site for cooking or heating are not allowed; ▪ Provide firefighting equipment onsite; and ▪ Provide firefighting training to designated exploration workers.
Increased traffic, especially heavy vehicles, using public roads and safety concerns	<ul style="list-style-type: none"> ▪ Request that the Roads Authority erect warning signs of heavy construction vehicles on affected public roads.

	<ul style="list-style-type: none"> ▪ Ensure that drivers adhere to speed limits and that speed limits are strictly enforced. ▪ Ensure that vehicles are road worthy and drivers are qualified. ▪ Train drivers in potential safety issues. ▪ Improvement of the transport network and infrastructure.
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Due to the limited scope of the exploration project, the remoteness of project area, the sparsely populated area and the limited skills base the social and economic impact on the local community will most probably be limited.

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