MINISTRY OF LANDS AND RESETTLEMENT

KARAS
INTEGRATED
REGIONAL LAND USE PLAN
2011 - 2016
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Foreword of the Karas Integrated Regional Land Use Plan (KIRLUP)

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Land is a valuable asset that needs to be protected and at the same time utilised sustainably for the best possible purpose. Land use planning is the instrument to manage the resources on land as it covers broadly existing and new developments on land as well as potentials for future development. At the same time, land use planning is an extremely complex and sector-over-arching process, combining physical, economic and social aspects of land use.

As the custodian of the National Land Policy and the responsible agency for land use planning in Namibia, the Ministry of Lands and Resettlement has facilitated the process which lead to the formulation of the Integrated Regional Land Use Plan for Karas. The process which leads to the formulation of this plan was at the same time the first step, to model a new land use planning procedure in Namibia through the pilot region, Karas. The main pillars on which the Integrated Regional Land Use Plan for Karas is build are the guiding principles of the newly developed procedure for the formulation of integrated land use plans in Namibia:

1. Sector-integration and sector-overarching collaboration in the planning and implementation of land use related strategies and projects through various developed planning tools.
2. Participatory planning and civic society involvement through bottom-up planning instruments.
3. Establishment of unified Regional Planning GIS as backbone for regional land use planning, for monitoring of Integrated Regional Land Use Plans, and finally as country-wide and consistent basis for the formulation of an Integrated National Land Use Plan.
4. Strategic Environmental Assessment (SEA) of the land use plan in line with the Environmental Management ACT (EMA 2007) through a joint process between land use planning and the SEA.
5. Monitoring of the Integrated Regional Land Use Plan through the Regional Councils.

The process for the formulation of the Integrated Regional Land Use Plan for Karas was initiated in 2009 through a “kick-off” workshop in Keetmanshoop. Throughout the project period extensive national, regional and local participatory planning exercises were undertaken within the Karas Region. Through workshops, focus group discussions, sector meetings and field trips, a wide range of stakeholders were involved, including the Regional
Council of Karas. The Integrated Regional Land Use Plan therefore forms the basis upon which the Karas Region can focus its development efforts and from which the next Karas Regional Development Plan can be based upon.

Our appreciation goes out to the Division of Land Use Planning and Allocation (LUPA) of the Ministry of Lands and Resettlement for their efforts and support during the project and to the consulting agencies that worked on the project in cooperation with the Ministry of Lands and Resettlement: Stubenrauch Planning Consultants (SPC), Geocarta Namibia, GOPA, Planung & Umwelt and the Southern African Institute for Environmental Affairs (SAIEA).

The project on the formulation of the Integrated Land Use Plan was jointly financed by the Government of the Republic of Namibia, GIZ and the Spanish Cooperation for Development. The Government appreciates this financial and technical support by the development partners.

The Karas Integrated Regional Land Use Plan was submitted to the Cabinet of the Government of the Republic of Namibia and subsequently approved through Cabinet Resolution No.12th/19.07.11/010. This Cabinet Resolution directed that the Karas Integrated Regional Land Use Plan (2011 – 2016) will be the reference for all further developments in the region, that the Karas Regional Council will implement and monitor the Plan and that the Plan is to be revised after 5 years in 2016.
EXECUTIVE SUMMARY

The Ministry of Lands and Resettlement (MLR), within its mandate to facilitate utilization of land as custodian of Namibian Land (MLR, 2007) is the main actor and coordinator in the planning and administration of land falling within the rural areas of Namibia. The Division of Land Use Planning and Allocation (LUPA) under the Directorate of Land Reform of the MLR is responsible for developing plans for commercial and communal land use. It is mandated to provide guidelines for drafting regulations on land use planning. This Integrated Land Use Plan is a direct outcome of the MLR mandate. The Ministry of Lands and Resettlement (as custodian of Land and Land related issues) commissioned the Karas Integrated Regional Land Use Plan, in cooperation with the German Development Cooperation (GIZ) and the Spanish Cooperation for Development (AECID) in Namibia.

The Karas Regional Council is instrumental in successfully implementing and monitoring the recommendations made by the KIRLUP as it holds in trust the Karas Regions natural and cultural resources for present and future generations, and has a responsibility to the public to ensure that resource management represents a balance of community, economic and environmental needs. The Karas Integrated Land Use Plan (KIRLUP) provides the mechanism for making comprehensive decisions about the use of land and resources within the Karas Region.

An extensive public participation process was followed during the period of the Karas Integrated Regional Land Use Plan, with this document being the end result of the discussions held. The Karas Integrated Regional Land Use Plan aims at addressing the current land uses, the conflicts and synergies between land uses, the trends of each land uses, the findings of investigations and finally a Land Use Plan for the Karas Region.

It is anticipated that this document will be utilised by line ministries as well as the Karas Regional Council as a guiding document for all future developments to take place in the region.

The Land Use Plan is to form the basis of future planning to take place in the region as shown in the diagram below.

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Work flow of the IRLUP:

- **IRLUP**
  - General/Strategic
  - Sectoral/Sub - Regional Development Plan
  - Local Economic development plans
  - Specific/Detailed
  - LA
  - RC
Together with the KIRLUP a Strategic Environmental Assessment (SEA) was done for the Karas Region in close coordination with the land use planning process. The recommendations and suggestions found by the SEA have been incorporated into this document to some extent, but for any further and detailed information the reader is advised to refer to the SEA report.

In general it was found that the Karas Region has immense potential for further development in tourism, wildlife and conservation, agriculture (mostly small stock farming and irrigation next to the Orange River) and possible industrial related activities. Prospective projects such as the proposed Trans-Kalahari Railway and the proposed Shearwater Bay harbour will hopefully take place in the region as this will increase the potential for development in the region in terms of revenue and job creation. Projects such as the Desert Star Studio are awaited with anticipation, but with some red flags being highlighted in terms of regional integration. The proposed Neckartal Dam and irrigation were met with mixed opinions. Caution is warranted as the dam will have a large, possibly irreversible negative impact on the ecology of the Fish River and the Fish River Basin area. It is questionable whether the increased utilisation of a scarce resource such as water is advisable in this region.

The report deals with the following aspects:

Chapter 1 provides the purpose of Integrated Land Use Planning, the steering committee and the overall process that was followed during the KIRLUP process.

Chapter 2 focuses on the strategic role of the Karas Region and addresses the various government policies and plans in the region, as well as background information on the physical parameters of the region.

Chapter 3 discusses the seven land uses that were identified:

Each land use is discussed in terms of the status quo of each land use, the conflicting and compatible land uses, the trends in each sector (current and future), projects that have been identified during the process and finally the findings on each of the sectors.

Chapter 4 provides a summary of the Karas Regional Development Plan.

Chapter 5 describes the 18 regional development initiatives that have been identified by stakeholders, with a discussion on each of these projects and deals with the proposed visions for the region as well as the proposed land use scenario’s and zones.

Chapter 6 provides a short overview of the SEA executive summary and findings.

Chapters 7 discuss the problem with the implementation and possible suggestions on implementation.
LAND USE SCENARIO’S

Six Land Use Visions were formulated for the Karas Region. These six were:

a) Protect and integrate key biodiversity and protected areas
b) Strengthen the transportation corridor
c) Strengthen the agricultural industry in the region and promote livelihood diversification
d) Promote the region as a tourism destination
e) Promote renewable energy and industries
f) Reinforce the role and functionality of urban centres

The following land uses or scenarios are proposed for the Karas Region based on the proposals of the region. These land uses will contain the development initiatives that were identified in Section 5.1.

(a) Protected Area Zone
(b) Tourism Zone
(c) Agricultural Zone
(d) Mining and Industrial Activities
(e) Fishing, Aqua-culture and Mari-culture Zone
(f) Development/Infrastructure Activities
(g) Urban Area Zone
Vision 1: Protect and integrate key biodiversity areas and protected areas

OBJECTIVES:

- To create a regional conservation area including all the sensitive, key biodiversity, scenic and protected areas
- Create wildlife corridors to ensure the movement of migratory wildlife species
- Protect the scarce resources of the regions such as water, scenic landscapes and wildlife

PROTECTED AREA ZONE

The Protected Area Zone stretches from the Namib-Naukluft Park south towards the Orange River, including the Sperrgebiet National Park, the /Ai-/Ais Hot Springs Park, the Gondwana Canyon Park, the Greater Fish River Canyon Complex (GFRCC), Naute Dam and all four existing communal conservancy areas in the Region. These are the areas with high levels of environmental sensitivity and biodiversity hot spots which should be protected.

Accordingly, land uses such as mining and infrastructure development should be minimized so as to prevent damage to the environment. All activities to take place in the protected areas should be accompanied by detailed Environmental Impact Assessments and Environmental Management Plans. No activity which will harm or degrade the environment should be allowed in these areas, but it should be kept in line with the management and development plans compiled for the various parks and conservation areas. All proposed activities must obtain permission from MET in accordance with the Nature Conservation Ordinance (1975). All parks and protected areas should have a complete and updated Development and Management Plan that deals with all types of development issues.

The Protected Area Zone can further be divided into 4 zoning areas:

(i) PROCLAIMED NATIONAL PARKS AND GAME PARKS

This zone is the most restrictive in this Protected Areas zone. These areas have been identified as priority areas for conservation in terms of high levels of biodiversity, scenic value and conservation value. Varying degrees of tourism activities can be allowed in these areas in accordance with the Nature Conservation Ordinance and Environmental Management Act and the associated regulations for each. The KIRLUP SEA recommendations should help to guide scientifically based decision making (in addition to the MET coastal SEA) whereas the Management and Development plans should serve as guidance for management but they are not a substitute to law.

This area includes the Sperrgebiet National Park, the Namib-Naukluft Park, the /Ai-/Ais Hot Springs Game Park and the Namibian Islands Marine Protected Area.
(ii) **Sensitive Areas**

The identification of the sensitive areas in the SEA was based on the importance of these areas to the ecological functioning and environmental flows in the Karas Region (Map 38). Proclaimed National Parks and Game Parks are identified as sensitive areas in the SEA. In addition to the parks listed above, other sensitive areas identified by the SEA are demarcated on the map.

The SEA identified the following areas with environmental sensitivity in the Karas Region (Map 1):

- The /Ai-/Ais Hot Springs Game Park and surrounds such as the Fish River Canyon Complex;
- Area between /Ai-/Ais Hot Springs Game Park and Rosh Pinah, including farms Namuskluft, Zebrafontein, Witputs, Trekpoort and Spitzkop;
- All natural springs in the Karas Region;
- Warmbad plains;
- All main ephemeral river courses, notably Fish, Konkiep, Gamchab, Löwen, Holoog/Gaap;
- Entire length of Orange River and the main tributary valleys flowing into it;
- Tiras Mountains and escarpment; Brukkaros Mountain; Groot Karas Mountains;
- All ephemeral pans;
- Huib-Hock Plateau;
- Sperrgebiet corridor and entire Sperrgebiet area;
- Namib-Naukluft Area;
- Lüderitz peninsula;
- All offshore islands;
- Aus area (particularly the granite outcrops);
- Kalahari dunes south of Aroab;
- Kalahari sparse woodlands on eastern dunes.
All activities that will take place in the Karas Region (no matter where they are located) must be in accordance with the Environmental Management Act of 2007. Additional protection should be granted to the mapped sensitive areas through the Nature Conservation Ordinance of 1975 and no activity which will degrade or harm the environment should be allowed in sensitive areas designated in the plan. Wildlife, protected game, and indigenous and protected plants are granted special protection throughout Namibia under the Nature Conservation Ordinance. In addition, the Forest Act affords special protection to plants such as the Quiver Tree. MAWF also has several other laws that deal with environmental protection and these must be adhered to throughout Namibia. Under MET’s Environmental Management Act, environmental clearance certificates should not be granted to conduct activities which will harm the earmarked sensitive areas or protected plants or animals. It is recommended that a management plan for the ecologically sensitive areas of the region be drawn up in order to enable better control and protection of the areas and the species that inhabit them.

(iii) Private

The Greater Fish River Canyon Complex falls in the protected area zone. Even though tourism activities are taking place in some areas of the complex, the greater area is utilised for conservation purposes with pockets of tourism activities in smaller areas. This zone includes the GFRCC and all other current and future private parks in the region. The Greater Fish River Canyon Complex aims at bringing together a group of farms surrounding the Fish River Canyon to ensure better management and sustainability for the area. This will also ensure the east-west movement of wildlife, creating wildlife corridors that can connect various protected areas.
This complex together with the /Ai-/Ais Hot Springs Park and the proposed land consolidation strategy of MET will eventually create one conservation area stretching from the Namib-Naukluft down the Sperrgebiet, east towards the boundary of the Canyon Complex, along the Orange River up to the eastern boundary of the Karas Region and connecting to the Kgalagadi Transfrontier Park. In itself this will be a major advantage for the region, making this one of the biggest conservation areas in Namibia. Farms surrounding this conservation area should be encouraged to become part of this conservation area and diversify into game farming and tourism.

In this zone the land use is conservation mixed with tourism. Within this zone, all efforts must be made to apply conservation methods. All current and future private parks should be officially declared through MET and must be in accordance with the Nature Conservation Ordinance (1975). All protected animals and plants must be conserved in accordance with the Nature Conservation Ordinance, Forest Act, and the Environmental Management Act. Strict implementation of MAWF laws will also afford protection to these areas.

(iv) Conservancies

There are currently four registered communal conservancies in the Karas Region and one emerging conservancy (#Kharis). The conservancies in the Karas Region are generally not well organized and mostly dependant on subsistence farming. It is recommended that management plans should be developed for these conservancies to strengthen their role and economic basis. Linkages between existing protected areas and the conservancies should be strengthened and communities should be educated about the purpose and requirements of the conservancies. Conservation corridors should be created in order to link conservancies with other protected areas. Conservation must receive a high priority in conservancies. Priority areas for higher conservation status within conservancies include Brukkaros Mountain and all natural springs.

The Protected Area zone will overlap in most cases with the tourism and wildlife zone. These two zones should be seen as complementing each other.

There are currently no private commercial conservancies in the Karas Region. It is strongly recommended that farmers should be encouraged to develop these private conservancies so as to enable conservation. The aim of creating such conservancies is based on “a sustainable utilization strategy; promoting conservation of natural resources and wildlife and striving to re-instate the original bio-diversity with the basic goal of sharing resources amongst members” (CANAM). Creating such conservancies will not take away the existing land use rights of farmers, but will encourage sustainability as described above.
Vision 2: Promote the Region as a tourist destination

Objectives:

• Ensure livelihood diversification through diversifying into tourism and wildlife related activities
• Promote the cultural and heritage of the Karas Region, by creation of culture/heritage trails
• Protect the scenic value of the landscapes in the region
• Create communal and commercial conservancies

Tourism and Wildlife Zone

This zone is subdivided into the tourism and wildlife zone and the cultural and heritage zone.

The tourism zone will be concentrated around existing natural attractions such as the Sperrgebiet, the Namib-Naukluft, the Fish River Canyon, the Quiver Tree Forest (Keetmanshoop), Brukkaros, the Orange River and the eastern part of the region. Land uses in this zone will focus primarily on tourism, accommodation establishments, conservation and game farming which complement the protected area zone. Urban nodes such as Lüderitz, Aus, Oranjemund and Rosh Pinah will become key nodes in terms of tourism development. Tourism development or structure plans should be compiled for these areas so as to ensure marketing strategies, optimal land use, and to identify potentials for sustainable growth in the towns.

Another area identified for tourism potential is around Aroab, as the border post links the area with the Kgalagadi Transfrontier Park which heightens the potential for tourism development in this area. It is also strongly recommended that the Kgalagadi Transfrontier Park be extended into Namibia.

The tourism and wildlife potential is high and should be encouraged around the Groot and Klein Karasberge, with proposals for a game farm and tourism accommodation establishments. The Groot Karasberge has been identified as an environmentally sensitive area where all efforts should be made to keep conservation as the prioritised vision for this area.

The proposed Desert Start Studio development has the capability of contributing to the tourism potential for the eastern part of the region. However, the proposed development will be located adjacent to the Orange River, an area which has been identified as an environmentally sensitive area and must avoid damage to this precious resource. Care should also be taken not to isolate the proposed development from the rest of the region by allowing new border connections at the development and construction of an international airport at the development. Such development should rather be concentrated in already developed areas, ensuring regional integration. Although this development may bring in some revenue and opportunities, all buildings and activities must be in strict accordance with the Environmental Management Act, the Nature Conservation Ordinance, and the Water Act.

Game reserves and upmarket tourist accommodation establishment could be encouraged in this area, provided there is no large risk to the environment. Possible connection to the Kgalagadi Transfrontier Park should be
The communal conservancies in the region have great potential for tourism and cultural related development. Wildlife related activities may also be further developed. Sustainable cultural tourism should be encouraged in the communal areas and older more historical urban nodes. Declaring historical areas as cultural conservation areas under the Heritage Act and/or the Nature Conservation Ordinance can also further strengthen the protection and promotion of these communal conservancy areas. It is recommended that a Regional Conservancy Tourism Plan be formulated with the specific aim of developing cultural heritage areas in conservancies and the marketing of them in order to generate greater tourism income. One possibility is to create cultural trails throughout the region which could be used to link various tourism sites.

The potential for tourism development next to the Orange River should not be underestimated. Ideally, the Orange River should only be used for conservation related activities and low-impact sustainable tourism and these land uses should be given priority. However, due to the lack of water in the region, the area surrounding the Orange River will more likely be a mixed use area where mining, tourism, wildlife, irrigation, and possibly energy generation activities take place.

Since many of these activities may be unsustainable on their own but especially if they are combined, it is essential for all activities adjacent to and in the river to adhere to the various laws including Water Acts, Forest Act, Nature Conservation Ordinance and the Environmental Management Act. Close consultation with MET and MAWF must take place. The Orange River has areas of high biodiversity including the Ramsar site which is internationally recognised. Water quantity or quality will likely be affected by any development and impacts must be minimised, as permanent damage to river resources is of great concern. In addition to environmental impacts, any use of the Orange River could potentially cause land use conflicts and the aim should be to minimise these impacts with strong management measures in place.

The potential for tourism and wildlife around the proposed Neckartal Dam should also be investigated. The MAWF indicated that no tourism will be allowed at the Neckartal Dam, but potential for community tourism exists and should be encouraged where it would not conflict with MAWF laws and policies.

The Naute Recreation Resort is closed for the general public, but an area of 600 ha was de-proclaimed from the park in 1996 and donated to the Municipality of Keetmanshoop for the development of a tourist resort. No development has taken place since and it is recommended that a study be conducted in order to identify the potentials and business opportunities for the selected site.

The Transfrontier Conservation Area makes up almost half of the Karas Region. Several Tourism Development Areas were identified for the TFCA with specific focus on /Ai-/Ais, Sperrgebiet, the cultural development of the Bethanie and Warmbad Cultural Area and the Orange River. Although not formerly approved yet, these TDAs can be valuable contributions to the upliftment and empowerment of communities. It is recommended that the TDAs in the TFCA be utilised for tourism and cultural development in the south.

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1 The Convention on Wetlands of International Importance, called the Ramsar Convention, is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources.
Wildlife corridors are recommended as a way to ensure sustainable biodiversity, environmental connectivity and conservation while also increasing the tourism potential of the Karas Region. The wildlife corridors should link the Namib-Naukluft Park, the Sperrgebiet National Park, the /Ai-/Ais Hot Springs Game Park, the Greater Fish River Canyon Complex, the eastern part of the region (with a corridor through the Karasberge towards to the east), the Kgalagadi Transfrontier Park, and the northern part of the region (linking the ephemeral river systems and the Tiras mountains). These corridors should be granted additional protection by making it a regional conservation area that could be managed through a management plan or policy by Ministry of Environment and Tourism.

For greater detail of the proposed tourism development areas for the TFCA, please see the Integrated Conservation and Development Plan for the Namibian Component of the Transfrontier Conservation Areas along the Orange River. For greater detail of the zoning for the parks, see the Sperrgebiet Management and Development Plan, the Namib-Naukluft Park Management and Development Plan, and the /Ai-/Ais Hot Springs Park Management and Development Plan.

All laws must be adhered to in this zone. Laws regulating tourism and wildlife include, inter alia, the Namibia Tourism Board Act (2000), Nature Conservation Ordinance (1975), the Nature Conservation Amendment Act (1996), the Environmental Management Act (2007), and the Forest Act (2001), among others.
Vision 3: Strengthen the agriculture industry in the region and promotion of livelihood diversification

**Objectives:**

- Create policy on sustainable and economic size of agricultural land
- Enable the continued growth of the small stock sector
- Create an enabling environment for investors to invest in irrigation in the region along the Orange River
- Livelihood Diversification

**Agriculture Zone**

The agricultural zones include small stock, game and irrigation farming zones. This area will include both commercial, communal and government farms. Agriculture is regulated under the Agriculture (Commercial) Land Reform Act, the Communal Land Reform Act, the Soil Conservation Act, the Forest Act, and the Water Acts. All protected animals and plants must be conserved in accordance with the Nature Conservation Ordinance, Forest Act, and the Environmental Management Act.

Analysis of the available data on the carrying capacity for the different areas in the region indicates that the Karas Region is only suitable for small stock farming, although a small north-eastern corner of the region is shown to be somewhat more suitable for large livestock than the rest of the region. The Agro-Ecological Zone (AEZ) and Agricultural Potential map produced by the Ministry of Lands indicates that the whole of the Karas Region is only suitable for small stock farming (Map 15, pg. 49). The Carrying Capacity for the region as compiled by the Ministry of Agriculture, Water and Forestry (Map 14, pg. 47) however indicates that a small area in the north eastern corner of the region may well be able to support some large livestock farming.

In reality and after discussions with stakeholders it came to light that an ever increasing number of farmers, scattered over the region, are farming with large livestock. This can be contributed to exceptionally good rains for the past few years and to the GRN Small Stock Scheme. The SEA does not support any large livestock farming to take place in the Karas Region. However as livestock farming is a practice that is subject to markets and annual rainfall it is highly likely that large livestock farming will take place in the region irrespective of this land use plan recommendations. It is however suggested that the north-eastern corner, as indicated, is somewhat more suitable to a certain degree for large livestock farming as indicated by the carrying capacity determined by MAWF.

The following are the proposed land uses within this agricultural zone:
**Small Stock Zone**

Land use in the small stock zone will predominantly focus on farming with goats and sheep. Small stock farming can take place in all areas of the region except in the protected areas. The areas demarcated for small stock farming are also subject to carrying capacities as set out by the Ministry of Agriculture, Water and Forestry. It is recommended that new research be conducted on carrying capacity, which should take into account the changes that have taken place over the years and possible climate change predictions. This zone is not restricted to small stock farming as diversification into tourism and game farming should be encouraged, especially in areas that overlap with the tourism and wildlife zone.

It is further recommended that proper rangeland management techniques should be used among the farmers in the region so as to minimize the impact of stock farming on the environment. In areas such as Aus where conservation, tourism and agriculture areas have been identified, it is essential that rangeland management techniques be used in order to ensure that these areas are protected and managed accordingly. Areas that overlap with either protected areas or the tourism and wildlife zone area should be carefully managed and eco-tourism or wildlife/conservation areas should be encouraged as the recommended uses in the area.

Programs to encourage karakul farming should be reinstated and supported. In order to support such farming it is highly recommended that training facilities should be established for karakul farming. One of the concerns raised by stakeholders was the fact that there is generally a lack of skills in terms of karakul farming as the skill was lost over the years. In order to successfully bring back karakul farming to the south it is also necessary for training facilities to be established, especially in communal areas.

The current small stock scheme policy should be reviewed and amended as this policy is currently indirectly forcing farmers to diversify into unsustainable farming practices such as large livestock farming in the region.

**Large Stock Zone**

The carrying capacity of the region is mostly suited for small livestock, while the north eastern corner of the region has a slightly higher carrying capacity for large livestock farming than the rest of the region. However, this might not be economically sustainable, particularly if this area is compared to other more likely areas in Namibia. The Agro-Ecological Zones indicates that the whole Karas Region is not suitable for large livestock and only suitable for small stock farming.

The predominant land use in this zone will be large stock farming, mixed with small stock farming and game farming. This will be concentrated in areas where carrying capacity permits large stock. Once again diversification into small stock, game farming and tourism are highly recommended land use options that are more likely to be sustainable over the long term. It is further recommended that new research be conducted on carrying capacity in the region so as to ensure sustainable rangeland management that takes into account the impact of climate change, among other things.

It is difficult to enforce rangeland management techniques on privately owned land, but in conservancies and on resettled farms rangeland management can be strictly managed by authorities in order to ensure sustainability. Even though the only large stock zone is indicated in the most north eastern part of the region, the reality is that there will be large stock farming taking place in areas outside of this zone.

The justification of including a large livestock zone in the north-eastern part of the region is based on the current carrying capacity determined for the region. Currently the north-eastern part of the region has a carrying capacity of 30 hectares per large livestock unit (llu/ha), while the remainder of the region has a carrying capacity of 999ha per livestock unit. Under the resettlement policy, the minimum size of allotment units allowed in the south is 3000 ha. In turn, this means that with a carrying capacity of 999ha per livestock unit, this will result in only 3 large livestock
that can be kept, making it economically unviable for the farmer. With a 30 llu/ha carry capacity in the north-east, it means that the farmer can keep 100 cattle. In reality, farmers do not always abide by the recommended carrying capacity as it just a guideline which is not enforceable by law.

**IRRIGATION FARMING ZONE**

The designated areas for irrigation farming are located next to the Orange River, the Naute Dam and Neckartal Dam. It is not recommended that irrigation take place in other areas in the region as water is a scarce resource. Sustainable use of water is essential and strict environmental management must be used to prevent further pollution of already scarce resources, such as the Orange River. Irrigation schemes are subject to the control and monitoring of water usage and pollution in order to minimize the impact of this land use on the water resources in the region. A regional policy on water utilisation for mines and irrigation should be established so as to ensure efficient water usage and prevent water pollution.

**GAME FARMING ZONE**

Game farming is not restricted solely to the zone as indicated on the map. Game farming should not be restricted to specific areas and is generally recommended throughout the region except in areas where it would directly conflict with other land uses. Game farming is given a higher recommendation when it is situated in proximity to existing parks and it should be the land use of choice. Introduction of wildlife species that have become extinct in the region over the years should be encouraged, but care should be taken when introducing such species. Any introduction of wildlife species should be discussed with MET and must be in accordance with the Nature Conservation Ordinance and the Environmental Management Act. Research should be conducted regarding the species that are indigenous to the area and the carrying capacity of species that are recommended for introduction.

The possibility of farming with high value game for income diversification has great potential in the region and should be encouraged. Additional research should be conducted on the economic potential of farming with wildlife compared to traditional livestock farming and ideas should be shared with the communities in the region. Further research should be done on emerging markets and the potential for usage of game meat vs. livestock meat. Communal conservancies should be encouraged to invest in farming with high value game species for sale or for trophy hunting so as to ensure a sustainable income and diversification of their income base.

The Agriculture Zones are in line with the proposals set out in Vision 2030 and NDP3. The identification of certain areas for large stock, irrigation and game farming aim to ensure that land is optimally utilized and land degradation is minimized. Encouraging the diversification into game farming and tourism also ensures a wider economic base for the region.
Vision 4: Promote renewable energy, industries and research

**Objectives:**

- To create an enabling environment for investment in the renewable energy sector
- To create cross-sectoral opportunities between renewable energy, research and training
- Ensure that mines comply to regulations for protection of the environment, people and resources
- Encourage a more sustainable approach to further exploration and mining in non-sensitive areas in the region

**Mining and Industries**

It is extremely difficult to predict the mining sector’s growth or future potential areas due to its dependency on the discovery of deposits of natural resources and international markets. The most likely scenarios will be highlighted as potentials for development as discussed with stakeholders. The mining is mostly situated on existing mining license areas at the Orange River, the Sperrgebiet, Rosh Pinah and Skorpion mine, with a possible area at Warmbad and at Aus. This zone will overlap with other land use zones as almost 60% of the Karas Region is currently under EPLs, thus making the possibility of future conflict between land uses high.

Possible future mines that are identified at this stage are based on mining activities in the Warmbad area for uranium and tantellite. Some deposits of uranium have also been discovered close to Aus. This might lead to conflicting land uses, as Aus have been identified as a key node for tourism development in the future. Mining in the sensitive areas and conservation areas should be avoided and discouraged. MET should not grant authority to mine in protected areas and environmental clearance certificates should not be awarded to mine or conduct exploration in sensitive areas or areas where protected plants and animals are located (mining and prospecting in these areas is considered a fatal flaw). All impacts from prospecting and mining companies must consult with the public and must conduct an environmental impact assessment and have an environmental management plan in place prior to the start of any activity in accordance with the Environmental Management Act and the Minerals Act. Where communities are negatively affected, just compensation must be awarded in accordance with the Minerals Act.

The possible closure of the Skorpion Zinc Mine in six years time will have a major impact on the socio-economics of Rosh Pinah. It is recommended that research be done to seek alternative sources for economic development for Rosh Pinah as well as for Oranjemund. With proper planning, Rosh Pinah can become a key urban node with the opening up of the Sperrgebiet with regards to tourism, but this in itself will not sustain the economy of the town. A suggestion by the SEA was that Rosh Pinah has potential to diversify into a solar hub by utilising mining infrastructure. This suggestion should be investigated more substantially.

The Karas Region has the potential to develop industrial nodes with existing infrastructure such as the Lüderitz harbour, Keetmanshoop and it existing service industries and accessibility. Other areas that could be developed into industrial hubs are Noordoewer (it could be used for the packing of agronomic products) and Rosh Pinah (for large scale industries or even research and the development of a solar hub). The RDP for the Karas Region also highlighted the potential of such small stock slaughter industries at Karasburg, Keetmanshoop and Berseba; small-scale factories.
livestock processing seaweed and fertilisers at Lüderitz; and grape packaging at Naute Dam. All would need to be investigated in terms of feasibility.

Industry has a high potential for creating land use conflicts revolving around water quality and quantity. Since water is a precious resource, especially in the dry Karas Region, the areas adjacent to the Orange River and other water courses should be seen as areas which will likely have conflicts, especially where industry is proposed. Water quantity or quality will likely be affected by any development and impacts must be minimised, as permanent damage to river resources is highly likely and is of great concern for communities and wildlife.

All industry proposed in this zone (including but not limited to mining and exploration activities) are subject to the Environmental Management Act (2007) and the Minerals Act (1992), among other laws. All protected animals and plants must be conserved in accordance with the Nature Conservation Ordinance, Forest Act, and the Environmental Management Act. Strict implementation of MAWF and MHSS laws is also required.

**Fishing, Aquaculture and Maniculture Zone**

This zone will mostly be confined to the coastal section of the Karas Region, with the exception of mari-culture and aqua-culture projects occurring inland of the coast. Potential of synergies between old mining areas and aqua-culture has been identified and should be encouraged where they are viable. The Orange River has potential for aqua-culture farming which should be further investigated in terms of feasibility and environmental impacts. Cumulative impacts in the Orange River must be taken into account.

Land uses in this zone will be restricted to marine fishing, aqua-culture and mari-culture, with possible synergies between tourism and conservation. The Marine Resources Act deals with the protection of the Marine Protected Areas, fish and other marine resources and all activities must be in compliance with this Act. The Aquaculture Act, the Inland Fisheries Act, the Environmental Management Act and all MAWF laws must also be strictly adhered to. The Nature Conservation Ordinance (Chapter V) also regulates fish in inland waters and all activities must also be in accordance with this law.

It is recommended that training and research facilities linked to the mari-culture and aqua-culture industry should be established at places such as Lüderitz. These facilities and related activities can further strengthen the role of Lüderitz.
Vision 5: Strengthen the transportation corridor

**Objectives:**

- Increase the benefits transfer from transport corridors
- Increase regional and international transportation

**Infrastructure activities**

The infrastructure activities will mostly consist of existing infrastructure, as well as newly proposed infrastructure such as the Neckartal Dam, Kudu Gas Power Station, the LOPEHS, the Trans-Kalahari Railway Line, the wind farm at Lüderitz, various dams on the Orange River, the Bethanie-Maltahöhe-Walvis Bay road link and the proposed expansion of the Lüderitz harbour at Shearwater Bay.

Overlapping with other land uses will occur, but the impact of these activities on land uses should be minimized. Infrastructure has a high potential for creating land use conflicts revolving around water quality and quantity. Since water is a precious resource, especially in the dry Karas Region, the areas adjacent to or in water courses should be seen as areas which will likely have conflicts, especially where industry and infrastructure is proposed. Water quantity or quality will likely be affected by any development and impacts must be minimised, as permanent damage to river resources is highly likely and is of great concern for communities and wildlife. As such, the SEA has highlighted the proposed Neckartal Dam as a red flag area as it would likely cause disastrous and irreversible environmental impacts. The Orange River is highlighted as a sensitive area since it is high in biodiversity and unsustainable development could lead to a collapse in the sensitive and internationally recognised ecosystem.

It is recommended that the Karas Regional Council should market the Karas Region as an export and import region. Development such as the proposed Kalahari Railway line should become the focus of such a campaign. Due to long travel distances in the Karas Region, rail and air transport should be promoted in the region. If the feasibility study for the Trans-Kalahari Railway line is found not suitable for the Karas Region, it is recommended that the Karas Regional Council find alternative investors for a similar product. The possible construction of the Shearwater Bay harbour will result in immense positive economic impacts for the region. Rail connection with the harbour will further strengthen the potential.

The Karas Region receives high levels of radiation and long hours of sunshine, making it ideal for solar energy generation. Such renewable energy should be promoted and strengthened in areas where it would be sustainable. One such opportunity that should be investigated and marketed is the proposal to create solar energy generation facilities and products at Rosh Pinah. Training facilities are also suggested in order to train people in solar energy generation.

All infrastructure development must comply with the Environmental Management Act, the Water Resource Management Act, the Water Act, the Soil Conservation Act, the Forest Act and the Nature Conservation Ordinance (which affords special protection to listed animals and plants).
Vision 6: Reinforce the role and functionality of urban centres

Objectives:

- Focus key functions in existing urban centres
- Strengthen the role and functions of the existing urban centres
- Promote smaller settlements as tourism locations

Urban Zone

The urban zone contains all the town, villages and settlement areas in the region as well as the proposed upgrading of settlements and the proposed Desert Star Film Studio. Land uses in this zone will be urban functions such as business, educational facilities, offices, regional offices, banks, etc. New proclamations of areas such as Oranjemund and the Desert Star will have to find alternative economic resources to ensure economic viability for these areas if either the mining activities at Oranjemund are scaled down or if the film studio at Desert Star is not feasible.

Alternatives such as the proposed Kudu Gas Project, tourism potential at the Ramsar site and possible irrigation and aqua-culture can be some of the opportunities for Oranjemund. Desert Star will be more difficult as currently the only attraction is the Orange River and scenic landscapes. Possible tourism and irrigation should be seen as alternatives to expand the economic base. Training facilities should be encouraged in the region for specialities in irrigation, tourism, farming, aqua-culture/mari-culture and conservation. These facilities can be located in areas such as Oranjemund, Lüderitz, Keetmanshoop and Desert Star.

Institutional infrastructure needs to be developed at Keetmanshoop, as Keetmanshoop will become increasingly important if projects such as the Neckartal Dam are implemented. The extension of the Naute Irrigation Scheme and possible future tourism at the 600ha south of Naute will also contribute significantly to the growth of Keetmanshoop. The upgrading of the airport at Keetmanshoop is one of the features that might also contribute to the growth of Keetmanshoop with possible exports from the airport and tourist arrivals directly to Keetmanshoop.

In terms of growth points, it is suspected that the following areas will further strengthen the role as growth points of the region: Keetmanshoop, Lüderitz, Oranjemund (once proclamation and the opening of the road to Oranjemund is finalised and approved), Aus (as a tourism hub) and possibly Ariamsvlei (Desert Star). The town of Lüderitz holds the potential to develop a strong educational support sector and to diversify its local economy. Areas such as Bethanie have potential to become a tourism hub once the Bethanie-Maltahohe-Walvis Bay road has been upgraded. In Bethanie, the focus should be on heritage and cultural tourism. Berseba has potential to become a secondary tourism hub if Brukkaros is properly marketed for tourism. Both Aroab and Noordoewer hold potential to become important tourism hubs because of the proximity to borders posts) and at Noordoewer may even become an agro-industrial hub. The SEA report suggests that Rosh Pinah has potential to become a solar power hub, utilising the infrastructure of the existing mines for such development. It is possible that Rosh Pinah will also develop into a tourism hub, if properly managed.

It is essential that all urban developments are also in keeping with the requirements of the relevant laws of the various ministries as listed in the chart below. The Environmental Management Act (2007) is especially important for the sustainable growth of urban nodes and wherever possible Environmental Management Plans for the larger urban nodes should be completed.
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<td>ACCT</td>
<td>Aus Community Conservation Trust</td>
</tr>
<tr>
<td>ARTP</td>
<td>/Ai-/Ais Richtersveld Transfrontier Park</td>
</tr>
<tr>
<td>CBL</td>
<td>Communal Land Board</td>
</tr>
<tr>
<td>CBS</td>
<td>Central Bureau of Statistics</td>
</tr>
<tr>
<td>CBNRM</td>
<td>Community Based Natural Resource Management Programme</td>
</tr>
<tr>
<td>CCGT</td>
<td>Combined Cycle Gas Turbine</td>
</tr>
<tr>
<td>CPP</td>
<td>Country Pilot Partnership</td>
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<tr>
<td>DRFN</td>
<td>Desert Research Foundation of Namibia</td>
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<tr>
<td>DEES</td>
<td>Directorate of Engineering and Extension Services (MAWF)</td>
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<td>DPWM</td>
<td>Department of Parks and Wildlife Management</td>
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<tr>
<td>ECB</td>
<td>Electricity Control Board of Namibia</td>
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<td>ECC</td>
<td>Environmental Clearance Certificate</td>
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<td>EC</td>
<td>Environmental Commissioner</td>
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<td>EIA</td>
<td>Environmental Impact Assessment</td>
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<tr>
<td>EU</td>
<td>European Union</td>
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<tr>
<td>EMA</td>
<td>Environmental Management Act</td>
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<td>EMP</td>
<td>Environmental Management Plan</td>
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<td>EPL</td>
<td>Exclusive Prospective License</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<tr>
<td>GEF</td>
<td>Global Environmental Facility</td>
</tr>
<tr>
<td>GFRCC</td>
<td>Greater Fish River Canyon Complex</td>
</tr>
<tr>
<td>GIS</td>
<td>Geographical Information Systems</td>
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<tr>
<td>GRN</td>
<td>Government of the Republic of Namibia</td>
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<tr>
<td>HCPRP</td>
<td>Hoodia Commercialisation and Poverty Reduction Programme</td>
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<tr>
<td>HKIA</td>
<td>Hosea Kutako International Airport</td>
</tr>
<tr>
<td>HOGRAN</td>
<td>Hoodia Growers’ Association of Namibia</td>
</tr>
<tr>
<td>ICDP</td>
<td>Integrated Conservation and Development Plan</td>
</tr>
<tr>
<td>IUCN</td>
<td>International Union for Conservation of Nature</td>
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<tr>
<td>ILUP</td>
<td>Integrated Land Use Plan</td>
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<tr>
<td>ISLM</td>
<td>Integrated Sustainable Land Management</td>
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<tr>
<td>KIRLUP</td>
<td>Karas Integrated Regional Land Use Plan</td>
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<tr>
<td>Acronym</td>
<td>Description</td>
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<tr>
<td>KRC</td>
<td>Karas Regional Council</td>
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<td>LUPA</td>
<td>Division of Land Use Planning and Allocation (within MLR)</td>
</tr>
<tr>
<td>MAC</td>
<td>Millennium Challenge Account</td>
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<tr>
<td>MET</td>
<td>Ministry of Environment and Tourism</td>
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<tr>
<td>MAWF</td>
<td>Ministry of Agriculture, Water and Forestry</td>
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<td>MFMR</td>
<td>Ministry of Fisheries and Marine Resources</td>
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<td>MHSS</td>
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<td>MoU</td>
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<td>MICT</td>
<td>Ministry of Information and Communication Technology</td>
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<td>ML</td>
<td>Mining License</td>
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<td>MLR</td>
<td>Ministry of Lands and Resettlement</td>
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<td>MME</td>
<td>Ministry of Mines and Energy</td>
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<td>MPCC</td>
<td>Multi Purpose Cultural Centre</td>
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<td>MRLGHRD</td>
<td>Ministry of Regional and Local Government, Housing and Rural Development</td>
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<tr>
<td>MT</td>
<td>Metric Ton</td>
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<td>MTI</td>
<td>Ministry of Trade and Industry</td>
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<td>MWT</td>
<td>Ministry of Works and Transport</td>
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<tr>
<td>MYNSSC</td>
<td>Ministry of Youth, National Services, Sports and Culture</td>
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<tr>
<td>NACOMA</td>
<td>Namibian Coast Conservation and Management Project</td>
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<td>NAMPAB</td>
<td>Namibia Planning Advisory Board</td>
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<td>NAU</td>
<td>Namibian Agricultural Union</td>
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<td>NCCI</td>
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<td>NDT</td>
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<td>NDTC</td>
<td>Namibia Diamond Trading Company</td>
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<td>NDP</td>
<td>National Development Plan</td>
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<td>Description</td>
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<tr>
<td>NGO</td>
<td>Non-Governmental Organisation</td>
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<td>NIMPA</td>
<td>Namibia Island’s Marine Protected Area</td>
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<td>NNF</td>
<td>Namibia Nature Foundation</td>
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<td>NTB</td>
<td>Namibia Tourism Board</td>
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<td>NPC</td>
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<td>OFRB</td>
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1. INTRODUCTION

The Karas Integrated Regional Land Use Plan has been commissioned by the Ministry of Lands and Resettlement. One of the main objectives of the Karas Integrated Regional Land Use Plan (KIRLUP), as set out by the Ministry of Lands and Resettlement (MLR), is to correct previous deficiencies in Integrated Land Use Planning in Namibia. Previous Land Use Plans were “stand alone” exercises and varied in contents, scale, and layout. They were mainly an inventory and presentation of available data and there were few proposals for future scenarios. There was also ineffective stakeholder participation (bottom up), local stakeholder involvement and lack of coordination between the various Ministries. As a result, previous land use plans have not been implemented or considered in decision making.

Against this background, MLR (as custodian of Land and Land related issues) commissioned the Karas Integrated Regional Land Use Plan. The KIRLUP will address current land uses, conflicts and possible synergies between land uses as well as new and proposed land uses.

1.1 Objectives of the Integrated Land Use Plan

Integrated Land Use Planning is a sector-overlapping and integrative decision-making process that facilitates the allocation of land to the uses that provide the greatest sustainable benefits. Land Use Planning should include a constructive dialogue between all stakeholders to reach decisions based on consensus. Overall, planning and management of land use requires interdisciplinary cooperation, sectoral integration, and civic engagement. Therefore stakeholder participation should promote active involvement of government at all levels, local institutions, non-governmental organizations (NGOs) and civil society.

Land Use Planning must aim for sustainability by balancing social, economic and environmental needs both currently and in the future. In order for an Integrated Land Use Plan to be sustainable, it must incorporate the framework of: infrastructure projects, natural resource availability, social impacts, human resources, and government and private institutions.

The following questions are typically addressed during the process of formulating a Land Use Plan:

(a) How should the land look in the future?
(b) What types of land uses are needed?
(c) What types of land should be protected?
(d) Where should the different types of land use be located?

Integrated land use planning is an integral part of the management process lands and resources as it helps to facilitate the delivery of public program responsibilities by individual resource management agencies. The Karas Integrated Regional Land Use Plan (KIRLUP) should be used to guide how natural resources will be used today and in the future. The KIRLUP generate outcomes such as:

- Balancing protection, conservation and development objectives;
- Promoting investment and community stability within the Karas Region;
- Providing direction for government spending and activities, inclusive of conflict avoidance and coordination of cross sector service delivery;
• Identifying and providing development opportunities for individuals and local groups through participation in planning which enables them the ability to influence government decisions that affect them;
• Facilitating enhanced knowledge sharing and understanding about land and resource use and implications thereof;
• Setting out support for resource management initiatives, inclusive of environmental and cultural protection measures and incentives; and
• Providing direction to implementation timelines, responsibility and location of resource use.

1.2 Methodology

The study was undertaken during the period of March 2009 to August 2010. The goal of the project was to compile an Integrated Regional Land Use Plan for the Karas Region. This project not only focused on the existing land uses in the region, but also investigated possible future projects and initiatives in the Karas Region.

The overall guiding principle during the project was a close co-operation with all stakeholders involved directly or indirectly in Karas Region. Targeted stakeholder consultation was seen as the key to a successful land use plan, as having widespread community interest ultimately would lead to ownership by the community and successful implementation.

This continuous co-operation covered:
• Permanent formal and informal meetings and discussions with the Clients;
• Kickoff meeting of the project in Keetmanshoop
• Field Investigations and trips by consultants and MLR
• Local level participatory planning workshops
• Various and continuous stakeholder meetings
• Personal consultation with stakeholders
• Stakeholder workshop held Windhoek
• Stakeholder workshop held in Keetmanshoop
• Various focus group discussion meetings held in collaboration with the SEA consultant
• Closure workshop in the region with stakeholders.

Based on the Terms of Reference the approach to the Karas Integrated Regional Land Use Plan has been divided into four phases, namely:

(a) Phase 1: Inception Stage
(b) Phase 2: Establishment of Regional Planning GIS
(c) Phase 3: Data Analysis and Planning
(d) Phase 4: Integration of Participatory Activities and SEA, finalization of IRLUP, Maps and Reports.
SEA

The Strategic Environmental Assessment was carried out by the Southern African Institute for Environmental Assessment (SAIEA) and Planung + Umwelt appointed by MLR. The aim of the SEA was to assess the Land Use Plan, to provide recommendations for the Land Use team, and to identify red flag areas that will need closer inspection and further investigation. Close consultation took place between the land use planning consultants and the SEA consultants so as to integrate the findings of the SEA into the final land use plan. The SEA report was finalised in February 2011 and the recommendations/findings have been incorporated to a certain degree into the Land Use Plan. For more detail, however, the separate SEA report should be read.

Participatory Land Use Planning Process (PLUP)

A team of consultants (GOPA) were appointed by Ministry of Lands and Resettlement and the German Development Cooperation (GIZ) to conduct the participatory land use planning process within the Karas Integrated Regional Land Use Plan. The aim of the PLUP was to ensure participatory land use planning on the local level (bottom up) in the region.

Various local level planning workshops were conducted in the Karas Region. Together with these workshops, two areas were identified for training on the local level- that of Aus (having tourism potential) and the Soromaas communal area (optimal use of grazing land if water access could be provided). Various workshops were held in this regard where the community was given the opportunity to analyze the potentials, conflicts and possible action plans. The consultant prepared a series of reports on the planning that was done as well as a training manual for participatory land use planning. For more detail, it is advised to read through the manual and the reports prepared for Aus and Pfalz.

Study approach

During the project timeframe, research was conducted into policies and legislation that influence land use planning in the region. This was done by means of a desktop study and interviews with relevant stakeholders. Relevant projects and programmes were also researched by means of stakeholder discussions. In order to obtain legislation and policies as well as input from stakeholders and communities, a number of meetings and focus group discussions were held. Relevant stakeholders were also identified for the region.

The study approach closely followed the 4 phases as set out in the Terms of Reference: Inception Stage; Establishment of Regional Planning GIS Data Analysis and Planning and Integration of Participatory Activities and the SEA; and finalization of the IRLUP, Maps and Reports. The study approach was based on information gathered via three processes: a desktop study, stakeholder meetings and data analysis of the GIS data gathered.
GIS establishment and Data Analysis

Desktop Study

During the process of the KIRLUP, data was gathered from a number of different sources and from existing reports and projects in the Karas Region. The main information was obtained from the Ephemeral River Basins in Southern Africa Project; the Namibian Atlas; The Integrated Conservation and Development Plan for the Namibian component of the TFCA; Community Tourism Market Research for the South of Namibia; information from NTB (statistics); NDP3, Karas Regional Development Plan; Vision 2030; and the NACOMA Project (SEA for the Coastal Areas of the Karas and Hardap Regions). Obtaining data and information from the various Ministries was a more difficult task as many of the Ministries do not have data on projects and little record keeping takes place.

GIS

GIS data for all activities in the region was collected by GeoCarta Namibia and compiled into a Geo-database. Analysis of certain aspects, such as carrying capacity, agro-ecological zones, etc, was done from the information gathered for the GIS database. A separate process document has been compiled which includes the IRLUP process, the Geo-database process, the PLUP process and the SEA process.

Stakeholder consultation

A number of stakeholder meetings were arranged during the project timeframe. These meetings were held on both the community and government levels. The involvement of the local stakeholders and decision makers was considered to be the key stepping stone leading to community ownership of the LUP and involvement in decision making. It was essential to have this involvement as the recommendations of the KIRLUP will directly affect the livelihoods of the people in the Karas Region. As such, the role of the Karas Regional Council (KRC) in the process of developing, monitoring and implementing the KIRLUP cannot be overlooked. The financial and human capacity of the KRC needs to be adapted accordingly.

A wide variety of stakeholders involved with land use management and planning in the Karas Region were identified in the inception stage of the KIRLUP. The most important stakeholders are:

- The Karas Regional Council
- The Ministry of Lands and Resettlement (MLR) and LUPA
- Traditional Authorities
- Communal Land Boards
- Local Authorities
- Line Ministries such as MET, MAWF, MRLGHRD, MME and MFMR.
- Conservancies
- NAU and SNAFU
- NGOs and Private individuals
1.3 Legal Framework

The Government of the Republic of Namibia has recognized the need for integrated efforts to coordinate the development of the country. Despite the efforts of the Namibian Government to achieve and implement the goals set out by the decentralization law and policy, sectoral and top-down planning on regional and local levels is still common practice. This commonly leads to situations where regional development initiatives are not harmonized amongst the national, regional and local administrative levels. This also results in the failure of the National Development Projects (NDP) to recognize the needs of communities and initiatives at the grass roots level in planning and budget allocation.

The National Land Policy provides for the mandate of coordinated land use planning to be done by MLR, but no decisive measures or guidance are given by the policy on these plans. The NDP1, NDP2 and NDP3 encourage the Integrated Regional Land Use Plans to be produced, monitored and updated for the remaining regions in Namibia. The need to develop integrated regional land use plans for Namibia’s thirteen political regions is recognized by the Ministry of Lands and Resettlement (MLR), Vision 2030, and NDP3. The process which leads to the formulation of the Karas Integrated Regional Land Use Plan (KIRLUP) is intended to be used as a model for future IRLUP’s.

The Ministry of Lands and Resettlement (MLR), within its mandate to facilitate utilization of land as custodian of Namibian Land (MLR, 2007) is the main actor and coordinator in the planning and administration of land falling within the rural areas of Namibia. The Division of Land Use Planning and Allocation (LUPA) under the Directorate of Land Reform of the MLR is responsible for developing plans for commercial and communal land use. It is mandated to provide guidelines for drafting regulations on land use planning. This Integrated Land Use Plan is a direct outcome of the MLR mandate. Although LUPA is tasked with developing land use plans for commercial and communal land there is no legislation that automatically makes these documents legally binding. However, this is not to say that these plans cannot become legally binding.

The Karas Regional Council is instrumental in successfully implementing and monitoring the recommendations made by the KIRLUP as it holds in trust the Karas Regions natural and cultural resources for present and future generations, and has a responsibility to the public to ensure that resource management represents a balance of community, economic and environmental needs. As such the Karas Regional Council is instrumental in the drafting, coordination, consideration and implementation of the KIRLUP. The Decentralisation Enabling Act of 2000 makes provisions for the decentralization of functions from the central government through the line ministries to regional councils and local authorities. The decentralization has been a slow process and in many instances it has been hampered by a lack of capacity at the regional level.

Article 108 of the Constitution grants regional councils executive powers for their region and allows for regional councils to make by-laws or regulations under the Regional Councils Act. A regional council has the power to undertake the planning of the development of the region with a view to:

- general land utilisation patterns
- physical, social and economic characteristics
- distribution, increase, movement and urbanisation of the population
- natural and other resources
- economic development potential
- existing and the planned infrastructure
- sensitivity of the natural environment

Regional councils may generally do anything that is necessary or conducive to the exercise of its granted powers and have the specific right to make submissions to Central government on any matter peculiar to its region. The regional council may make its own motion to the Cabinet or the Minister of Local Government and Housing.
In addition to the regional council, the Governor and National Council members may also submit regional laws and policies for approval by the Central government. Under the Regional Councils Act, the Governor of a region may initiate and formulate planning and development policies and may initiate the making of regulations by the regional council. Under the Constitution, two people from each region are elected by the regional council to represent them in the National Council. These representatives may recommend legislation on matters of regional concern for submission to and consideration by the National Assembly. In this case, a land use plan should be submitted to the Central Government.

Integrated Land Use Planning is taking place more consistently on the Local Authority level with the Town Planning Schemes in urban areas. These Town Planning Schemes are regulated by the Town Planning Ordinance 11 of 1954. Each Local Authority has the responsibility to enforce the town planning schemes operational in their jurisdiction. MRLGHRD is responsible for land falling within proclaimed urban areas through the various Local Authorities and the Regional Councils. Urban land is managed as municipalities, town councils, village councils or settlement areas under two Acts: the Local Authorities Act of 1992 and the Regional Councils Act of 1992. The Local Authorities are responsible for the management of proclaimed Municipalities, Towns or Villages while Regional Councils are responsible for proclaimed and unproclaimed settlement areas.

The newly proposed Urban and Regional Planning Bill (MRLGHRD) makes provision for Regional Structure Plans and Zoning Plans to be prepared in the future for every region. Regional Councils are considered as an “authorized planning authority” under the Bill, only once a regional structure plan has been prepared. Regional Councils are tasked with forming Regional Structure Plans [section 11(2)] as well as Zoning Schemes under sections 27 and 40 of the Bill. Zoning Schemes are given strong regulatory teeth under section 41: “any person who contravenes or fails to comply with any provision of a zoning scheme is guilty of an offence and on conviction liable for the penalties as prescribed under this Act.”

Under the proposed Bill, the Minister of Local Government and Housing may determine and prescribe compulsory norms and standards for land use planning and management under section 12(3). According to section 12(4) of the Bill, compulsory norms and standards must determine and reflect national policy, national policy priorities and programmes and should include:

- a report on, and an analysis of, existing land use patterns;
- a framework for desired land use patterns;
- a reflection of existing and future land use plans, programmes and projects;
- mechanisms for identifying underutilized land; and
- standardised maps and diagrams at an appropriate scale.

Likewise, the Minister of Local Government, Housing and Rural Development must provide for the effective implementation, monitoring and evaluation of compliance with the provisions of this proposed Act [Section 12(4)]. It is very clear that MLR and MRLGHRD have some overlapping responsibilities and it is essential to coordinate and integrate the laws and policies of each Ministry.

In addition to MLR and MRLGHRD, the Ministry of Environment and Tourism (MET) also shares responsibility with planning. MET is responsible for overall sustainable environmental management within Namibia. Under section 7 of the Environmental Management Act, a Sustainable Development Advisory Council will be established. One of the functions of this council will be to provide advice to the Minister of MET on sustainable land uses. As such, the Advisory Council and MET as a whole has the duty to ensure that biological diversity is conserved and that the use of components of the environment “does not lead to the long-term decline of the environment, thereby maintaining its potential to meet the needs and aspirations of present and future generations” [Constitution Section 95(l) and EMA Section 3 and 7(b)]. MET is responsible for looking at the cumulative impacts of many different forms of development on the environment.
Specifically, MET also has certain requirements for land use planning. Under the Environmental Management Act (EMA), a person may not transform the use of land for any other use without an Environmental Clearance Certificate (ECC). Once an application for an ECC is submitted, the Environmental Commissioner (EC) can: (1) require an environmental assessment (2) grant an ECC (3) refuse and ECC.

Under the EMA Regulations, an environmental assessment is required for a policy, plan or programme which is prepared for town and regional planning or land use and associated activities. The Regulations require a full Environmental Impact Assessment and an Environmental Management Plan (EMP) for land use planning and development activities. Although the Regulations have not been gazetted yet, within 3 years from the commencement date of the Regulations, all land use plans will need to comply with the Regulations and submit an Environmental Management Plan (EMP). Essentially, this means that an SEA and EMP must be completed before a land use plan is approved and implemented.

Integration and coordination between MLR, MLRGHRD and MET should be encouraged so as to ensure coordinated land use planning in Namibia.

MAWF regulates issues related to agriculture, vegetation, forests, soil, and water quality and quantity. MLR together with MAWF sets out maximum sizes of land that may be allocated with a customary land right or a leasehold right on communal land. MAWF is responsible for the overall promotion, strengthening and management of agriculture, water and forestry resources in Namibia.

Air quality and hazardous substances are regulated by MHSS. MYNCC aims to protect culture and heritage throughout Namibia and it implements legislation that protects designated heritage sites. Mineral exploration and mining is administered by MME and MFMR regulates marine protected areas, the exploitation of marine resources, and aqua-culture. MWT is responsible for infrastructure development. Many of these Ministries have overlapping or shared responsibilities and this makes it even more essential for all Ministries to communicate regarding land use planning initiatives.

A number of parastatal enterprises are responsible for land in the Karas Region. The following parastatal enterprises provide services to the Karas Region: NamPower (bulk electricity supply), NamWater (bulk water supply), TransNamib (railways), Telecom (telecommunications) and the Roads Authority (roads).

**Table 1: Administration and Legislation affecting land use planning**

<table>
<thead>
<tr>
<th>ISSUE</th>
<th>LEGISLATION</th>
<th>MANDATORY AGENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land Tenure</td>
<td>National Land Policy of 1998; Communal Land Reform Act, 2002; Communal Land Reform Amendment Act, 2005; Agricultural (Commercial) Land Reform Act, 1995; Land Survey Act, 1993.</td>
<td>MLR</td>
</tr>
<tr>
<td>Urban Land</td>
<td>Deeds Registries Act, 1937; Local Authorities Act, 1992; Regional Councils Act, 1992; Land Survey Act, 1993; Decentralization Enabling Act, 2000; Town Planning Ordinance, 1954.</td>
<td>MLR MLRGHRD</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>Roads Authority Act, 1999; Roads Ordinance, 1972; Posts and Telecommunications Act, 1992; Namibian Post Authority Act, 1994; National Transport Services Holding Company Act, 1997; Electricity Act, 2000; Civil Aviation Regulations, 2001.</td>
<td>MWTC</td>
</tr>
<tr>
<td>Mineral Mining and Exploration</td>
<td>Minerals (Prospecting and Mining) Act, 1992; Diamond Act, 1999.</td>
<td>MLR</td>
</tr>
<tr>
<td>ISSUE</td>
<td>LEGISLATION</td>
<td>MANDATORY AGENCY</td>
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<td>--------------------------------------</td>
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<tr>
<td>Hazardous Substances</td>
<td>Hazardous Substances Ordinance, 1974.</td>
<td>MHSS</td>
</tr>
<tr>
<td>Air</td>
<td>Deeds Registries Act, 1937; Local Authorities Act, 1992; Regional Councils Act, 1992; Land Survey Act, 1993; Decentralization Enabling Act, 2000, Town Planning Ordinance, 1954.</td>
<td>MLR</td>
</tr>
<tr>
<td>Soil</td>
<td>Soil Conservation Act, 1969; Forest Act, 2001.</td>
<td>MAWF</td>
</tr>
<tr>
<td>Environmental Management</td>
<td>Environmental Management Act, 2007.</td>
<td>MET</td>
</tr>
<tr>
<td>Heritage</td>
<td>National Heritage Act, 2004.</td>
<td>MYNSSC</td>
</tr>
<tr>
<td>Tourism</td>
<td>Namibia Tourism Board Act, 2000; Namibia Wildlife Resorts Company Act, 1998.</td>
<td>MET NTB</td>
</tr>
</tbody>
</table>
1.4 Institutional Framework

The Ministry of Lands and Resettlement is mandated to facilitate the utilization of land and coordinate the planning and administration of land in Namibia. The Division Land Use Planning and Allocation (LUPA) falls under the MLR and is tasked with development of land use plans for land (commercial and communal) and for drafting guidelines to regulate land use planning. Vision 2030, NDP3 and the National Land Policy support integrated land use planning as a tool to encourage more efficient land use and optimal land use.

It was proposed that in order to ensure full participation in the Karas IRLUP, a steering committee must be established to serve as a guiding body to the project. It was recommended that the steering committee should include both central and local government delegates. Recommended Karas Regional representatives included:

* Regional Council Representative
* Local Ministerial Representatives
* Traditional Authority
* Community Leader
* Additional member(s) to be identified

Several attempts were made to establish a steering committee for the Karas IRLUP process. The first attempt by the LUPA team was to engage the Permanent Secretary’s of all line ministries in this process. After several attempts of trying to involve the Permanent Secretary’s and meetings being cancelled, the decision was made to take this initiative to the Technical Committee on Lands and Social Issues (TCLSI). The TCLSI decided to bring the question of a steering structure for IRLUP to the superior structure, the Cabinet Committee on Lands and Social Issues (CCLSI) since the TCLSI seemed not to have the decision making capacity. It was proposed to establish a Sub-Committee under the TCLSI which would be responsible for steering IRLUP. This proposal was made to the CCLSI. The Cabinet resolved as per Cabinet Decision from 28 September 2010, to establish the steering structure for IRLUP under the TCLSI. The establishment of a steering structure is still ongoing and has to be discussed in detail again with the TCLSI.

Utilisation of IRLUP

As there are no legislation for Integrated Regional Land Use Planning in the Region the following diagram can describe the workflow for planning in the region:

Figure 1: Utilisation of IRLUP
The Integrated Regional Land Use Plan will form the platform or basis on which future planning will take place in the Region. The aim is to build upon the IRLUP with the next step being the Regional Development Plans for the region and on local level, Local Economic Plans such as Structure Plans.

The Regional Council must utilise the IRLUP as a platform to continue the planning process. The IRLUP must also be monitored, updated and reviewed every 5 years and new projects identified must be added through to the integrated regional land use plan. As such the IRLUP is to be a rolling plan which is continuously updated and monitored, this distinguishing the “Strategic Plan” from previous plans which frequently do not have any implantation or action plans.

### Table 2: Purpose of IRLUP

<table>
<thead>
<tr>
<th>Plan</th>
<th>Purpose of Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>IRLUP</td>
<td>Information and platform to identify development initiatives, trends and possibilities per sector</td>
</tr>
<tr>
<td>RDP</td>
<td>Sectoral Plans</td>
</tr>
<tr>
<td>Local Economic development plans (Structure Plans)</td>
<td>Specific development initiatives on local level supported by time and cost analysis</td>
</tr>
</tbody>
</table>
2. INTRODUCTION TO THE KARAS REGION

This chapter deals with the physical parameter of the Karas Region, the Socio-economic profile and the land ownership and administration in the Karas Region.

2.1 Strategic Role of the Karas Region

The Karas Region is the southernmost region of Namibia’s 13 political regions as demarcated by the Second Delimitation Commission of 1998 (Map 4). With a total land area of 161,086 km², the region occupies 19.6% (almost one-fifth) of the country’s total land surface and it is the largest region, in terms of land, in the country (Karas Poverty Profile, 2007).

The Karas Region is diverse in terms of economic activity with mining, agriculture, fisheries and tourism making up the largest economic sectors in the Region. The economy is largely primary sector oriented. The Mining and Quarrying sector provides 27.50% of the employment opportunities for the economically active population of the Karas Region while the Agriculture, Hunting and Forestry sector provides 19.42% (Karas Regional Development Plan 2003).

Although well known for its diverse and arid landscapes and wildlife, cultural diversity and economic development potential exists within the mining, fishing and tourism sectors. The region is sparsely populated and relatively underdeveloped when compared with Namibia’s remaining 12 regions (Map 2). This is mainly as result of the arid nature of the region within the western and southern parts of the region which makes human habitation and animal husbandry (inclusive of commercial farming) difficult to achieve.

Bordered by the Hardap Region to the North, Botswana to the East, South Africa to the South and the Atlantic Ocean to the West, the Karas Region plays an important role in terms of Namibia’s economic linkage to SADC and international trading partners.

The region’s major economic activities are centred in: Keetmanshoop (being the administrative centre of the region and a service industry hub); the town of Lüderitz (which has a well established fishing and tourist industry); and the mining towns of Rosh Pinah (zinc) and Oranjemund (diamonds) (Map 3).

The relative recent development of grape and date irrigation schemes along the northern banks of the Orange River as well as at the Naute Dam contribute to a diversification of the region’s economy and generated income for Namibia’s GDP. The eastern part of the Karas Region is dominated by commercial farming practices where extensive farming practices are found on large privately owned farms. A large communal land area is found within the North-Central part as well as the South-Eastern part of the Karas Region and two other communal areas where indigenous Nama people practice subsistence farming (Map 11, pg.44). The western Namib and the shifting sand dune belt have largely been proclaimed as National Parks.
Map 2: Population density in the Karas Region

Map 3: Urban Centers in the Karas Region
**International context**

The strategic importance of the Karas Region within the sub-Saharan context cannot be underestimated. The South-North road and rail infrastructure corridors run through the Karas Region and link the Western Cape and the Gauteng areas with the Central and Northern parts of Namibia. The port of Lüderitz is Namibia’s only alternate port to Walvis Bay. Even though the region is strategically located within these corridors, the region has unfortunately experienced little benefit. Service industries and the tourism sector in Keetmanshoop seem to derive the most benefit from this connection.

The region is relatively well connected to the rest of SADC with newly opened border posts along the border of Namibia and South Africa (Map 19, pg. 85). The Kgalagadi Transfrontier Park and the /Ai-/Ais-Richtersveld Transfrontier Parks (together with the Ramsar site at the Orange River mouth) also create ideal opportunities for cultural development, conservation and tourism opportunities.

**National context**

According to the central Bureau of Statistics (2004) the Karas Region had an estimated population of 69,300, with an average population density of 0.4 people per square kilometre, the lowest in Namibia (table 1). Though being sparsely populated (Map 2), the region contributes significantly to Namibia’s economy as some of the country’s largest mining and fishing activities are found in the Karas Region.

The Namibian Government has endorsed a policy to support development within the Karas Region in order to close the gap between the rich and poor and to encourage social upliftment. There has been an increase in investor confidence in the region and self development initiatives are increasing. There are a number of development initiatives currently taking place including central government programs aimed to achieve social upliftment (of mainly the Nama communities living in the region), infrastructure developments (aimed to develop Namibia’s South), and various donor, NGO, and private investment initiatives.

With eight (8) border posts, one of the two Namibian harbours and the Orange River, the Karas Region is well connected to the neighbouring countries and should not be underestimated in terms of national importance. A significant number of tourists arrive through the southern borders and most exports to South Africa proceed through the Karas Region before reaching South Africa.

The Karas Region also contributes significantly to the agricultural industry in terms of livestock farming (Dorper and Karakul sheep) and irrigation farming. The Mining and Fishing industries are also prominent in the region and contribute to the economy of the country.

### 2.2 Existing studies, plans and governing policies in the Karas Region

Regional development initiatives within Namibia are done on three administrative levels: these being on the local, regional and national level. Sectoral or compartmental planning often leads to conflicting development initiatives. A top down planning approach is still evident in the integration of planning initiatives on the national level (between line ministries) and the integration and harmonization of planning initiatives between the three administrative levels. In order to achieve an integrated land use planning approach it is necessary to integrate the initiatives of the following overriding policies, strategies and plans with this plan as this will contribute to achieving an integrated planning approach:

(a) Vision 2030 was prepared by the Office of the President to set out how deliberate efforts are to be made to improve the quality of life by unifying a national vision which would serve to guide Namibia’s five-year development plans, from NDP2 through to NDP7.
(b) Each Line Ministry is responsible for developing its own sector plan and programs to be used when requesting project funding within the National Development Program (NDP) budgets (see Figure 1). For the purpose of this plan the MLR, MRLGHRD, MET, MWTC, MAWRD and MME are seen as the leading Line Ministries when considering integrated development within the Karas Region.

(c) In an attempt to provide a regional profile, the Namibian Government developed the Regional Development Plans (RDP) for all of its 13 political regions for the period of 2001/2002 to 2005/2006. The aim of the Karas Regional Development Plan was to act as a guide to the Karas Regional Council as well as decision and policy makers when embarking into development initiatives falling within the Karas Region as the plan serves as a source of information to the civil society, donor community, potential investors, and the Karas Regional Council (see Chapter 4).

(d) The Regional Poverty Profile for the Karas Region was published by the National Planning Commission (NPC) in 2007. This document provides comprehensive socio-economic information which is used to support the analyses made for the KIRLUP.

(e) The Integrated Conservation and Development Plan (ICDP) for the Namibian Component of a Potential Transfrontier Conservation Area along the Lower Orange River (2009) was a study which made recommendations to the Ministry of Environment and Tourism as to the desirability to expand the /Ai-/Ais Richtersveld Transfrontier Park (ARTP) into a Transfrontier Conservation Area (TFCA) which is to include the South African Richtersveld area as well as the southern areas of the Karas Region.

(f) The Namibian Islands’ Marine Protected Area report (2008) as prepared for the Ministry of Fisheries and Marine Resources (MFMR) and approved by Cabinet on 2 September 2008 was compiled in recognition of the unique and fragile marine ecosystem bordering the Namibian coast. The Marine Protected Areas have been officially declared and are strictly regulated by the Marine Resources Act (2000) and the associated regulations (2001).

(g) The Namibian Coastal Conservation and Management project (NACOMA) was commissioned in 2009 by the DHI Water & Environment to develop a user friendly Strategic Environmental Assessment (SEA) of the coastal zones of the Hardap and Karas Regions of southern Namibia. This Strategic Environmental Assessment deals with the fragile coastline and makes recommendations as to what activities should be allowed to take place in different areas.

(h) The Greater Fish River Canyon Complex Management Plan sets out the management plan for the Greater Fish River Canyon Complex with the vision of focusing on co-management of the Greater Fish River Canyon Complex for enhanced landscape and biodiversity conservation and socio-economic development.

   (i) Draft Namib-Naukluft Park Management Plan discusses management suggestions and tools for the Namib-Naukluft Park.

   (j) Draft Sperrgebiet Management and Development Plan sets out the vision, objectives and guidelines for the management and development of the Sperrgebiet National Park and will be a management document for the Park.

(k) Draft Management and Development Plan for the /Ai-/Ais Hot Springs Game Park sets out the vision, objectives and guidelines for the management and development of the park.
The Ephemeral River Basins in Southern Africa Project is a project that promotes the sustainable, equitable and improved utilization of water and other natural resources in the basin. The Orange-Fish River Basin falls under this project and includes most of the Karas and Hardap Region.

Local projects and plans as prepared by the various local authorities falling within the Karas Region.

Local plans as developed by communities and stakeholders either living or being involved in the Karas Region, inclusive of Donor or NGO aided projects such as the Country Pilot Project and the Special German Initiative Project.

Millennium Challenge Account:
During 2008 the Millennium Challenge Corporation has signed a five-year agreement with the Namibian Government, aimed at reducing poverty and accelerating economic growth.

2.3 Physical Parameters of the Karas Region
The Karas Region is the southernmost region of Namibia’s 13 political regions, covering 161,086 km² (19.6%) of the country’s total land surface which makes it the largest region in the country. The Karas Region is bordered by the Hardap Region to the north, the Atlantic Ocean to the west and it is bounded by the international border between South Africa and Namibia to the east and south. The southern border of Karas is delimited by the Orange River (Map 4).
Karas is divided into six constituencies (Map 5): Berseba, Karasburg, Keetmanshoop Rural, Keetmanshoop Urban, Lüderitz and Oranjemund, with Keetmanshoop as the capital where the Karas Regional Council is located (National Planning Commission, 2008). The region takes its name from the word “//Karas” which is the Nama word for “Quiver Tree” – Southern Namibia’s famous plant symbol.\(^3\)

The Karas Region had a population of 69 329 in 2000 (CBS, 2000), the average population density being 0.40 persons per km\(^2\) (Map 2). The predominant languages in the region are Nama and Damara, although Afrikaans, Otjiherero and Ovambo are commonly spoken.

The region includes the Spergebiet National Park, which is a currently still a restricted area, the Fish River Canyon Park, the communal land formerly known as Namaland, large commercial farming areas and the southern section of the Namib-Naukluft Park.

Map 5: Karas Constituencies

![Map of Karas Constituencies](image)

Karas Region: Climate

The greater part of the Karas Region is situated in the climatic regions defined as either desert or arid shrub land. The average annual rainfall in the region is very low and varies from west to east. The most western part of the region – the coastal line - receives almost no rainfall with an average annual rainfall of less than 50mm. The rainfall averages increases towards the east up to 100-150mm.\(^4\) The south-western part of the region is the only part of Namibia that receives an annual winter rainfall, making this area quite suitable for grape production.

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\(^3\) The quiver tree is a specially protected indigenous plant under the Forest Act and the Nature Conservation Ordinance.

\(^4\) Mendelsohn, J. Atlas of Namibia.
The cold Benguela Current is one of the contributors to fog along the coastal line with Lüderitz having approximately 127 fog days and Oranjemund about 81 fog days per year. (Atlas of Namibia). This occurrence of fog creates an important life sustaining source of water for a variety of species living in the desert.
Average maximum annual temperature for summer months in the Karas Region can vary from area to area with sections of the coastline having a maximum annual temperature of less than 20°C. The temperature range then steadily climbs to the east to reach maximum temperatures of 35-40°C. The most southern tip at Noordoewer can reach temperatures of more than 36°C during summer months.

During winter months, the annual temperatures fall sharply with areas along the coast having a much milder winter than areas toward the east.

The coastal areas can have temperatures of between 10-12°C during winter while central and eastern parts of the region can have minimum temperatures of 2-8°C. The dry climate of the region goes along with a very high rate of evaporation which is more than 3,000 mm per year over mostly the central and eastern part of the region.

**Climate change predictions**

The Climate Change Vulnerability and Adaptation Assessment for Namibia’s Biodiversity and Protected Area System paints a bleak picture for the future of Namibia in terms of climate change. It is predicted that by 2080 the rainfall in the Karas Region will be less than 154 mm per year with a possible 10% decrease in rainfall.

It is also predicted that the interior of Namibia will see an increase in temperature of between 2-6°C. Namibia will become drier, rainfall variability is likely to increase and floods and droughts will become frequent events.

The decrease in rainfall will result in the loss of grass cover in the Karas Region and will make most of the region unsuitable for small stock farming (Brown, LH). The effects of climate change on the agriculture sector will most likely result in a change of quality and quantity of vegetation and availability of fodder. It is estimated that the available agricultural land will shrink towards the east and the north.

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Map 7: Average Maximum Temperature
It is predicted that the number of small stock will decline by 16% by 2050 and large stock will decline by 24% by 2050. With climate change, there will be decline in surface water availability which will have an impact on the irrigation industry in Namibia and on projects such as the Neckartal Dam.

The map above (Map 8) indicates the estimated impact that climate change will have in the year 2100 on the primary productivity levels in Namibia. The purple colour indicates the low level of predicted primary production levels. This map demonstrates that large parts of the Karas Region will fall within this low primary production area within the next 100 years.

**Topography**

The region is characterized by a variety of landscapes from the desert on the coast to mountains, plains and canyons. In the central part and to the south, the Huns Mountain area forms the Fish River Canyon, the second largest canyon in the world. In the west, an unspoiled and remote desert coastline and the Namib dunes can be found (RDP for Karas Region).

The world’s oldest desert, the Namib, lies between the escarpment and the coastline. This area is mainly covered by dunes with some ephemeral rivers that cut through the sedimentary deposits and end up as small lakes surrounded by sand during good rainy seasons. These rivers play an important role in the fragile ecosystem of the Namib Desert.

The Namib Desert rises more than 1,000 m from the coast to the escarpment. The escarpment is formed in the south by the Huib Hoch Plateau that consists of the Huns and Namus Mountains. Over the central part, it is formed by the Rooirand with the Tiras Mountains and to the north by the Awasib and Chowagas mountains.
A flat plain, the Kalk Plateau, dominates the interior area of the region. It is characterized by the isolated drainage systems and pans, which occur in that area. The world’s second largest canyon, the Fish River Canyon which is 549 meters deep and 2.7 kilometres across at its widest point and ends up in the Orange River.\(^1\)

In the south, the flat plains of the interior are diverted by the Groot and Klein Karas Mountains. The Groot Karas Mountain forms the origin of several south flowing rivers, all ending up in the Orange River. Together with the Klein Karas Mountains they form the origin of the west flowing river, the Löwen River that feeds the Naute Dam.

**Water Resources**

The Orange-Fish River Basin covers a large part of the Karas Region and originates from the Hardap Region (Map 21). The Naute Dam close to Keetmanshoop provides water for the town as well as to the Naute Dam irrigation scheme. The Orange River in the south provides water for irrigation, for the urban centres of Noordoewer, Aussenkehr, Oranjemund and to the mining areas such as Skorpion and Rosh Pinah. With the exception of water provided by surface sources and a few seasonal farm dams, all water used for domestic and agricultural purposes comes from groundwater (Karas Rural Poverty Profile). Water resources in the region can be scarce and sometimes of poor quality.

**Biomes in the Karas Region**

Three biomes are relevant to the Karas Region – the Nama Karoo, Succulent Karoo and Namib Desert (Map 9, pg. 23).

Although the Namib Desert could be described as the 100 km-wide zone covering the land between the Namibian coast and the escarpment, the division between the Namib Desert and the Succulent Karoo Biomes is less obvious. The Namib Desert Stretches from Lüderitz in the Karas Region up to Angola in the north. Sand dunes support only a few grasses, while a variety of herbs, small shrubs and grasses grow on the gravel plains. Shrubs and trees are found along ephemeral river courses that make a passage through the desert to the end at the ocean. This biome is characterized by extreme aridity but fog is a crucial source of water for plants and animals (Atlas of Namibia).

The Fish River roughly divides the Nama Karoo (east) from the Succulent Karoo (west) The Nama Karoo covers most of the south-eastern part of the Karas Region and stretches further into the Hardap Region. The dominant vegetation and plant communities in the Nama Karoo is grassland and shrubland which is divided into the Dwarf Shrub Savannah, the Dwarf Shrub (Southern Kalahari Transition) and the Karas Dwarf Shrubland.

The Succulent Karoo Biome stretches from southern Namibia across the border into South Africa. It generally receives a small, but significant, amount of winter rain. One of the most interesting mega-ecosystems in the world, this biome is recognized as one of the world’s 25 biological hotspots and it is regarded as the most diverse desert on Earth with an exceptionally high occurrence of endemic species (SAN Parks, 2006).

In the Sperrgebiet alone, some 1,050 plants are known to occur – nearly 25% of the entire flora of Namibia exists on less than 3% of the land area of the country (Mendelsohn et al, 2003). A variety of wetland plant species grow along the Orange River. The mouth of the Orange River is a registered Ramsar site and is considered the 6th most important coastal wetland in southern Africa in terms of the overall number of wetland birds which it supports (ICDP).
2.4 Socio-Economic Profile

The demography of Namibia is strongly influenced by the vast size of the country, its arid climate and its political history. About 40% of the land surface of Namibia (823,680 km²) is classified as arid, 40% as semi-arid, 15% as hyper-arid (desert), and 5% as dry sub-humid. Rainfall patterns largely dictated the early patterns of human settlement, with the more arid areas being the least densely populated still today. Population along the 1,570 km-long arid and hyper-arid coastline is confined to Oranjemund, Lüderitz, Walvis Bay, Swakopmund and Henties Bay. Whereas about 40% of the world’s population lives within the first 10 km from the sea, less than 10% of Namibians live in these coastal towns (ICDP). Since 1991 until 2001 the population of Namibia has grown from about 1.4 million to 1.8 million, indicating an increase of 27.5%. The unemployment rate in Namibia is estimated at more than 30%, while the Karas Region has an unemployment rate of 29%.
Table 3: Population Statistics for Namibia 1991 and 2001*

<table>
<thead>
<tr>
<th>Region</th>
<th>1991 Population (census)</th>
<th>2001 Population (census)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caprivi</td>
<td>90,422</td>
<td>79,826</td>
<td>1.8</td>
</tr>
<tr>
<td>Erongo</td>
<td>55,470</td>
<td>107,663</td>
<td>1.3</td>
</tr>
<tr>
<td>Hardap</td>
<td>66,495</td>
<td>68,249</td>
<td>0.3</td>
</tr>
<tr>
<td>Karas</td>
<td>61,162</td>
<td>69,329</td>
<td>1.3</td>
</tr>
<tr>
<td>Kavango</td>
<td>116,830</td>
<td>202,694</td>
<td>3.7</td>
</tr>
<tr>
<td>Kunene</td>
<td>64,017</td>
<td>68,735</td>
<td>1.9</td>
</tr>
<tr>
<td>Khomas</td>
<td>167,071</td>
<td>250,262</td>
<td>4.0</td>
</tr>
<tr>
<td>Ohangwena</td>
<td>179,634</td>
<td>228,384</td>
<td>2.4</td>
</tr>
<tr>
<td>Omaheke</td>
<td>52,735</td>
<td>68,039</td>
<td>2.5</td>
</tr>
<tr>
<td>Omusati</td>
<td>189,919</td>
<td>228,842</td>
<td>1.5</td>
</tr>
<tr>
<td>Oshana</td>
<td>134,884</td>
<td>161,916</td>
<td>1.8</td>
</tr>
<tr>
<td>Oshikoto</td>
<td>128,745</td>
<td>160,007</td>
<td>2.2</td>
</tr>
<tr>
<td>Otjozondjupa</td>
<td>102,536</td>
<td>135,384</td>
<td>2.8</td>
</tr>
<tr>
<td>TOTALS</td>
<td>1,409,920</td>
<td>1,830,330</td>
<td>27.5</td>
</tr>
</tbody>
</table>

The 2001 census indicates that the Karas Region had a population of 69,329 (NPC). The population in the Karas Region makes up about 3.7% of Namibia’s total population and has had a population growth rate of 1.3% since 1991.

Vast parts of the region consist of extremely large but sparsely populated commercial farms. The population in urban areas has shown a growth trend, due to rural-urban migration and in-migration from other regions. In 1991,
Sex ratios of the Karas Region reflect the dominance of males with regard to the in-migration from the north. In 2001 there were 114 males for every 100 females, the second highest such ratio in Namibia. Pull factors behind the in-migration relate specifically to mining, irrigation and industrial type developments taking place in the Karas Region (CBS 2003). Only 60% of the people living in the Karas Region were born there, with a life-time in-migration of 35.3% (Karas Poverty Profile). This in-migration has been identified by stakeholders as one of the issues which results in higher unemployment for the local people in the Karas Region.

Like the rest of sub-Saharan Africa, Namibia is affected by HIV/AIDS. The national infection rate is estimated at 22% for people aged between 15 - 49 (2002 data), with rates highest in the north and lowest in the south and northwest. Even so, rates in the Karas Region exceeded 15% in 2005. Unfortunately, the impacts of HIV/AIDS on the growth rates of the Karas Region are not well documented.

Since the population in the Karas Region is small, the relative influence of economic developments of magnitude on the size of the population is considerable.

According to the Karas Regional Poverty Profile, for example, the town of Rosh Pinah has almost tripled in size because of the development of the Skorpion Zinc Mine. At Aussenkehr the influx of people has steadily grown since 1989, based on the significant job market provided by grape farming. Currently the agricultural operations at Aussenkehr Farms employ about 1,500 permanent and about 5,000 seasonal workers (Karas Regional Poverty Profile). The population peaks at about 18,000 during the harvest season when workers are joined by family members.
Economy and Livelihood:

The Karas Region has an employment rate of 36% of which 43% of the employed population work in the private and public sectors, 34% in the agriculture, hunting forestry and fishing sectors, and 17% in the manufacturing and mining sectors (Karas Regional Poverty Profile). Household income is mainly from Wages and Salaries with 68.6% earning an income from wages and salaries, 10.2% from pensions and 7.2% from farming (Karas Regional Poverty Profile). The average annual household income of the region is N$ 13,756, which is lower than the average national household income of N$ 17,198. This figure is, however, based on aggregate levels and conceals intra-regional income differences where 10% of all households receive 80% of the total household income (Regional Development Plan, 2001).

The economy of the Karas Region is essentially driven by the mining industry (diamonds at Oranjemund and along the coast up to Lüderitz as well as zinc at Rosh Pinah), commercial agriculture (livestock farming predominantly to the east, as well as irrigation farming at Naute Dam and along the Orange River), a large non-tradable sector (government services) and increasingly by tourism.

Manufacturing is concentrated in the urban centres, but it is mostly aimed at local needs. In this way, manufacturing activities in places like Oranjemund and Rosh Pinah are aimed at the mining sector and, in Karasburg, at the farming sector. The economy is further characterised by a dualistic nature, having a strong formal business and commercial sector on the one hand, and an underdeveloped communal subsistence agriculture and informal business sector on the other. Despite the existence of relatively good infrastructure and service networks serving the urban areas, there is need to improve basic services and infrastructure to communal areas and the remote parts of the region. Although the majority of the population in the rural areas is employed in the mixed subsistence farming sector, this sector does not contribute significantly to the region’s economy in terms of cash income as it is mostly for subsistence. (Map 10, pg. 27)
2.5 Land Ownership and Administration

Land Tenure is still a very sensitive subject in Namibia. Land Tenure in Namibia is based on three major categories of land ownership: Private individuals and companies (freehold land), Central Government (Communal/protected parks) and local authorities (urban land). The State manages its state land directly through its line ministries.

About 43% of Namibia’s land is used for commercial farming and 56% of land is owned by the Government\(^\text{10}\) (state land-communal land, protected areas, and parks). The remaining land is used by local authorities and parastatals\(^\text{11}\). Some 17% of Government owned land consists of state protected areas, while about 36% is communal land. In the Karas Region, 60% of the land belongs to commercial/freehold farms, 10% to communal farms/land and the remaining 30% is Government owned land, which includes the protected parks and resettled farms (Map 11).

As the functions and duties of the various implementing bodies need to be understood when following an integrated planning approach the roles and mandate of the implementing agencies are summarized below.

Within the rural areas, state-owned land generally comprises of state-protected areas, communal land and areas declared for government use such as resettlement, quarantine and agricultural research stations. Although largely responsible for the coordination of planning and implementation of development initiatives within the Karas Region the Karas Regional Council is not the legal owner of state land; the KRC is part of the MRLGHRD.

The state manages state land directly through its line ministries. For the purpose of the KIRLUP the Government Ministries are divided into two categories, the first category being those ministries tasked with the control and development of Namibia’s natural resources, the second category being those Line Ministries that fulfill supportive roles in the development of the country, and in particular of the Karas Region.

The following functions, duties and roles are allocated to the Line Ministries which are directly tasked with the control and development of Namibia’s natural resources:

(a) The Ministry of Lands and Resettlement (MLR) is the custodian of surveyed and unsurveyed land. This Ministry is responsible for regulating the registration and ownership of land within Namibia in so far as that the Office of the Surveyor-General and the Deeds Office are falling within this Ministry. The control of communal land and resettlement schemes also falls under this ministry. The Division of Land Use Planning and Allocation (LUPA) under the Directorate of Land Reform of the MLR is responsible for land use plans as well as to provide guidelines for drafting regulations on land use planning.

(b) The Ministry of Regional and Local Government, Housing and Rural Development (MRLGHRD) is responsible for land falling within proclaimed urban areas. This ministry is mandated to implement the Regional Councils Act (1992), the Local Authorities Act (1992) and to regulate land use development within Namibia through the Namibian Planning Advisory Board (NAMPAB) and the Townships Board. The Town Planning Ordinance (1954) and the Townships and Division of Land Ordinance (1963) largely regulates the use of land within the urban areas of Namibia.

(c) The Ministry of Environment and Tourism (MET) is tasked with the duty to conserve Namibia’s natural resources in accordance with the Constitution [section 95(k)] and to regulate and enhance tourism. MET controls wildlife and national parks through the Nature Conservation Ordinance (1975). New developments and general environmental affairs are regulated by MET through the Environmental Management Act (2007) which all requires proponents of new developments to conduct Environmental Impact Assessments (EIAs). MET also regulates the Namibian Tourism Board (NTB) as well as Namibia Wildlife Resorts (NWR).

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\(^{10}\) Mendelsohn, J. Atlas of Namibia: A portrait of the Land and Its People.

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(d) The Ministry of Fisheries and Marine Resources (MFMR) is responsible for conserving marine resources, preserving Marine Protected areas and regulating marine fishing through the Marine Resources Act (2000) and the associated regulations. Namibia’s fishing industry is also regulated by MFMR through the Aquaculture Act as well as the Inland Fisheries Act.

(e) The Ministry of Works, Transport and Communication (MWTC) administers infrastructure on governmental land.

(f) Water management is mandated through the Ministry of Agriculture, Water and Forestry (MAWF).

(g) The Ministry of Mines and Energy (MME) is mandated to regulate the reconnaissance, prospecting and mining for, and disposal of, and the exercise of control over, minerals in Namibia through Namibia’s Minerals (Prospecting and Mining) Act (1992). The Petroleum (Exploration and Production) Act (1991) is also regulated by MME and MET also regulates environmental issues related to all activities through the Environmental Management Act (2007).

The following Line Ministries, in alphabetical order, are tasked with the development of supportive economic, social or institutional development initiatives within the rural and urban areas of the Karas Region:

- Ministry of Defence
- Ministry of Education
- Ministry of Foreign Affairs
- Ministry of Gender Equality and Child Welfare
- Ministry of Health and Social Services
- Ministry of Home Affairs and Immigration
- Ministry of Information and Broadcasting
- Ministry of Justice
- Ministry of Labour and Social Welfare
- Ministry of Safety and Security
- Ministry of Trade and Industry
- Ministry of Veterans Affairs
- Ministry of Youth National Service, Sport and Culture

The National Planning Commission (NPC) was established with the aim to oversee and coordinate all facets of national development, inclusive of the development programs and capital projects to be implemented within the respective National Development Plans (NDP’s). The NPC is also responsible to enter into, and to oversee, government to government / donor / NGO development agreements. The Ministry of Finance (MoF) has the important role to control the state budget and to oversee the timely implementation of state funded projects.
Local and Regional Authorities

There are 14 urban areas in the Karas Region of which eight (8) falls under separate Local Authority jurisdictions and the remaining six (6) are declared settlement areas which fall under the jurisdiction of the Karas Regional Council (Map 3). Urban Areas fall under the direct jurisdiction of the applicable Local Authority or in the case of settlement areas under the jurisdiction of the Regional Councils. Urban land is managed as municipalities, town councils, village councils or settlement areas under the auspices of the MRLGHRD. The Local Authorities Act and the Regional Council’s Act make provision for the management of Local Authorities and Settlement Areas.

Keetmanshoop is the highest order urban area in the region as it is the administrative centre of the region. Lüderitz is the harbour town, while Rosh Pinah and Oranjemund are the mining towns. The rest of the urban centers in the region are mostly oriented to service delivery for the surrounding areas. Oranjemund and Rosh Pinah are the two mining towns in the Region. Mining towns are not governed by Local Authorities, but are in a way formalised and administered by the mining companies as if they are proclaimed towns. Oranjemund and Rosh Pinah are in the process of being proclaimed as local authorities.

Private individuals and companies (Freehold land)

All privately owned land, being it commercial farmland or land falling within urban areas is held under Title Deeds and ownership is recorded within a central deeds registry which falls within the Ministry of Lands and Resettlement. This system is well regulated with property being surveyed and survey records are kept within the office of the Surveyor-General at MLR. These title deeds can be used as security for financial assistance and commercial/freehold land can be bought and sold. There are a total of 1,827 farms in the Karas Region (this includes government and resettled farms).

Up to date a total of 204 commercial farms were acquired for resettlement purposes in Namibia and from 1990 up to 2006, a total of 756 farms were bought through the Affirmative Action Loan Schemes. In the Karas Region a total of 66 farms (Table 7, pg. 41) have been bought for resettlement purposes since 1990.

Parastatal Organizations

A number of Parastatal enterprises provide services of national importance: TransNamib (railways); Nampower (bulk electricity supply); Namwater (bulk water supply); Telecom (telecommunication); and the Roads Authority (roads).

Communal Land

There are three communal areas in the Karas Region, namely Namaland (Berseba, Tses area), the Bondelswarts area (west of Karasburg) and the Warmbad area. The Warmbad communal area is the smallest of the three areas. Between 60 and 70% of the population in Namibia practice subsistence farming on communal land, while in the Karas Region 4.8% of the region’s population are dependent on subsistence farming as a source of income (Karas Regional Poverty Profile). In the Karas Region, communal land makes up about 10% of the land cover.

The National Land Policy paved the way for the establishment of Regional Land Boards to assist with the administration of state land, particularly in communal areas. In addition, Namibia adopted the Communal Land Reform Act in 2003 to deal with access to rural land in communal areas. This Act together with the Nature Conservation Amendment Act (1996) governs the regulation and the formation of conservancies.

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12 Rural Electricity Distribution Master Plan for Namibia. Regional Planning Report for the Karas Region. MME and NamPower October 2005
14 Ministry of Lands and Resettlement, 2010
Communal land belongs to the State and the State have the duty to administer communal lands in trust for benefit of the traditional communities residing on these lands and for the purpose of promoting the social development of these communities. One of the problems with communal land is that communal land allocation does not give ownership of the land to the right holder, which means that the property cannot be used to secure financial assistance.

Traditional Authorities in communal areas have the primary power to allocate and cancel customary land rights. Communal Land Boards (12 in Namibia) are established under the Communal Land Reform Act. The purpose of the Communal Land Boards is to verify and ratify the land rights given by the Traditional Authorities. The CLB’s are also responsible for a variety of other aspects such as leasehold applications, controlling of fences etc. The Communal Land Reform Act provides for the functions and duties of the Traditional Authorities and the Communal Land Boards. The Role of the Traditional Authorities in Communal areas is still prominent. The Traditional Authorities play an important role in allocating land use rights to communal farmers within the communal land areas before it is submitted to the Communal Land Board for verification and ratification.

Communal Land Boards have the following functions:

- Controlling the allocation and cancellation of customary land rights by Chiefs and/or TAs;
- Deciding on applications for the right of leasehold;
- Controlling the erection and maintenance of fences in communal areas;
- Creating and maintaining a register for the allocation, transfer and cancellation of customary land rights and rights of leasehold; and
- Making sure that no unresolved disputes exist before a registration certificate is issued, by resolving conflicts between neighbouring land uses over boundary locations.

Protected areas

All protected areas are managed by the Directorate of Parks and Wildlife Management (DPWM) within the Ministry of Environment and Tourism (MET). Since 1999, the resorts within the protected area system have been managed by Namibia Wildlife Resorts Limited (NWR), a parastatal company. In addition, NWR was entrusted to collect entry fees for the parks until the end of March 2004 (SPAN Report 2004). There are four protected areas in the Karas Region namely, the Namib Naukluft Park, the Naute Recreational Resort, the Sperrgebiet and the /Ai-/Ais Hot Springs Game Park. These protected areas are governed by the Nature Conservation Ordinance (1975), the Nature Conservation Amendment Act (1996) and the associated regulations.

Islands and Marine reserve

The Namibian Islands’ Marine Protected Area (NIMPA) was proclaimed in February 2009, following approval by Cabinet on 2 September 2008, and finally launched in July 2009 as the first Namibian MPA following the new global framework for marine habitat protection (NACOMA).

The Marine Protected Areas (MPA’s) have been officially declared and all activities that take place in them are strictly regulated by the Marine Resources Act (2000) and the Marine Resources Act Regulations (2001).
In general, the MPAs are a means to promote sustainable marine resource use and marine biodiversity conservation. Sustainable marine resource use through MPAs is facilitated by managing the components of marine ecosystems that are not protected by traditional fisheries management. MPAs are regarded as one of the essential tools in the implementation of the ecosystem approach to fisheries (EAF) management, a legal commitment in the SADC Fisheries Protocol, and a management approach embraced by MFMR.

In 2005 the Directorate of Resource Management (DRM) within MFMR mandated the identification of MPAs in Namibia, with the purpose of protecting important spawning and nursery grounds for fish and other marine resources (such as rock lobster), as well as sensitive ecosystems and breeding areas for seabirds and marine mammals (NACOMA). A total of eleven (11) natural islands and islets are included in the MPA with a total of 9,555km². The average width of the MPA is approx 30 km and total length is about 400 km (MPA report).

Neighbouring areas

The Karas Region is the most southern region in Namibia and has neighbouring ties with South Africa to the South and Botswana to the East. South Africa plays an important role on the economy of Namibia and the Karas Region. Most of the exports and imports from South Africa are transported through the Karas Region before reaching South Africa. There is also a Transfrontier Park between Namibia and South Africa called the /Ai-/Ais-Richtersveld Transfrontier Park that aims to open a network of protected areas throughout Southern Africa. The Kgalagadi Transfrontier (Peace) Park is also one of these initiatives, but it is only situated on the South African and Botswana side. The Karas Region is ideally situated in terms of cross-border relations and connectivity. Up to date however, the Karas Region has not received much benefit from this connectivity.
2.6 Findings

The diversification of central place functions can lead to the weakening of a local economy. For example, if too much tourism activity is allowed at the proposed Neckartal Dam, it may weaken the local economy of Keetmanshoop; instead the local economy should be strengthened such as proposing to upgrade the Keetmanshoop airport for export purposes as well as receiving international tourist arrivals. Many of the existing towns/villages/settlements are already facing yearly financial problems. The creation of new villages or towns in unlikely and unfeasible urban areas will contribute to this problem, which will become a financial burden on central government.

It was also found that decentralization is not being implemented in the Karas Region and where it is, it is being implemented at a slow pace. The Karas Region also receives low priority in terms of National Development initiatives due to its low population. It was found and identified by stakeholders that distances and the remoteness of certain areas in the region increase development challenges. The possible negative impact of climate change on the fauna, flora and large biomes in the region must be taken into account as the environment will be even more sensitive and vulnerable to unsustainable development initiatives in the future.

Limited coordination between various organizations and groups working in the Karas Region and limited effort being made to coordinate/harmonize plans as line Ministries often still engage compartmental and top-down planning approaches.

There also exists limited capacity to effectively monitor and implement regional planning initiatives. It was further found that some, but not all of the programmes identified in the Karas Regional Development Plan have been implemented. Some line ministries were not even aware of the programmes they had to implement.
Map 11: Land Ownership and Administration Map

Legend
- Municipality
- Town
- Mining town
- Village
- Settlement
- Islands
- Regional Boundary
- International Boundary
- Marine Protected Area
- Private park
- Non profit organisation
- Government Ownership
- Communal Land
- Local & Regional Authority
- Resettlement farms
- Protected Parks
- Communal Land
- Private farms
- Private

Data Source:
- Government of Namibia
- Ministry of Lands and Resettlement.
- Benguela Current Commission,
Core Strategic Transport Network,
Ministry of Lands and Resettlement.

Map 11: Land Ownership and Administration Map

Ministry of Lands and Resettlement
31 March 2011

Land Ownership
3. ECONOMIC DRIVERS, PRESENT LAND USES AND SECTOR TRENDS

This Chapter deals with the various economic drivers and land uses identified in the Karas Region. Each sector will be described in terms of the existing situation, potential conflicting and compatible land uses, trends in the sector and finally the proposed projects that were identified by stakeholders and possible initiatives that can be implemented to strengthen the economy of Karas Region.

The economic drivers and land uses to be discussed are as follows:

- Agriculture (including livestock farming, game farming, irrigation and smaller agricultural projects)
- Tourism and Conservation
- Mining
- Fishing, Aqua-culture and Mari-culture
- Infrastructure (including roads, airports, railway, border posts, dams)
- Energy
- Urban Centres (including institutional services)
Map 12: Current Land Use Activities
3.1 Agriculture

The agricultural sector in Namibia is the second largest primary industry after mining with a 5% contribution to the Namibian GDP in 2009\(^\text{17}\). Agriculture is not only a contributor towards the GDP of the country but also a contributor towards income generation and job creation as almost 70% of Namibia’s population is either directly or indirectly dependent on the agriculture sector. Nominal growth within the agricultural industry averaged approximately 12% per annum since 2000 (PriceWaterhouseCoopers). Some 90% of agricultural production is derived from the livestock sector in Namibia. The irrigation products make up 24% of the agriculture sector. The MCA Namibian Compact reported that a total of 85,000 tons of beef, lamb and goat meat is exported annually\(^\text{18}\). Approximately 80% of this export is to South Africa and the European Union. It is estimated that there are about 2.5 million cattle, 2.4 million sheep and 1.8 million goats in Namibia\(^\text{19}\).

The commercial agriculture sector contributed 89.3% towards the agriculture sector with the communal sector contributing 6.9% to the agriculture sector in 2007\(^\text{20}\). Financing for agriculture is mostly by the Agribank of Namibia with interest rates varying from 8.5% for commercial customers, 4% for communal customers and 4% for resettled farmers depending on the type of loan.

Only 7% of all households in the Karas Region are dependent on farming as their main source of income\(^\text{21}\) as a majority of the households rely on subsistence farming and 46% of the population resides in the rural areas\(^\text{22}\). The main income generator for households in the region comes from salaries and wages. Agriculture plays an important role in terms of land use in the Karas Region as 60% of the land is utilised for commercial/freehold farming, 10% communal farming and the remaining 30% is government owned land, which includes the protected parks and resettled farms.

Agriculture in this aspect is not only referring to livestock farming, but also to irrigation agriculture and smaller agriculture projects.

Land Reform in the Karas Region

In 1990, the Government of Namibia started the land reform programme. The aim of the land reform programme was to ensure the equal distribution of agricultural land in Namibia. Land reform was aimed at promoting economic growth, lowering income inequalities and reducing poverty. Two models were adopted for the National Resettlement Programme\(^\text{23}\) that of: group farming and small-scale commercial farming.

Group farming refers to the option for formal or non-formal groups or registered cooperatives to engage in agricultural production. These projects receive financial and technical support from MLR and are seen as social welfare projects, “providing free accommodation, food and other transfers to beneficiaries.”\(^\text{24}\)

Small-scale commercial farming entails acquiring large commercial farms, subdividing the farms and allocating the portions/units to beneficiaries. The minimum size of these units/ portions in the southern region is 3,000 ha according to MLR policy. Applicants are not allowed more than 150 Large Stock Units or the equivalent Small Stock Units on the allocated farm units.

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\(^{17}\) Preliminary National Accounts 2009: NPC
\(^{18}\) Hon. John Mutorwa. Ministry of Agriculture Water and Forestry. 15 September 2010
\(^{19}\) MAWF
\(^{21}\) Claus Hager. An Agricultural Profile of the Orange-Fish River Basin, Namibia. October 2008
According to the Resettlement Audit (2010)25 a total of 46 commercial farms have been bought for the resettlement programme in the Karas Region with three farms “inherited from the previous administration.” However, data received from MLR (2010) indicates that a total number of 66 farms have been bought for resettlement purposes (Table 7). These 66 farms occupy an area of 750,645 ha in the region.

Overall 98 beneficiaries with 462 dependants were identified with an average allocation of 4,332 ha per person according to the Resettlement Audit. According to Werner (2010) this average allocation is the highest average allotment in Namibia. The Karas Region has a total of 100 allotments of which 66 allotment units are occupied, 24 unoccupied and 7 abandoned. The main reason given for abandoned units by participants in the Audit was the lack of water on these units stated for.

The livelihoods of the farmers were identified as mainly being livestock farming with a small percentage (26.2%) claiming to have home gardens. Generally it was found that availability of water was a major constraint to gardens. It was however further identified by the DEES office26 in Keetmanshoop that water is not the only constraint as a general lack of interest and lack of regular maintenance can also be a constraint to the success of home gardens.

### Table 4: Percentage of beneficiaries planting crops in Karas Region

<table>
<thead>
<tr>
<th>Planting crops</th>
<th>Ton</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>26 %</td>
</tr>
<tr>
<td>No</td>
<td>74 %</td>
</tr>
<tr>
<td>Total</td>
<td>100 %</td>
</tr>
</tbody>
</table>

Source: Resettlement Audit 2010

In terms of livestock numbers the Audit found that in the Karas Region over 70% of the farmers owned less than 200 goats, while 100% owned less than 50 cattle (Werner 2010). Farmers in the Karas Region mostly farmed with Small Stock Units with a ratio of 1:6 (cattle : goat/sheep). The sample participants owned a total number of 21 793 small stock units in 2008 according to the Audit, giving an average of 341 Small Stock Units per beneficiary. The findings of the survey were that the land appropriated for resettlement was not being used optimally and was basically underutilised by the farmers. The maximum number of small stock that can be kept on a 3000 ha piece of land is between 500 and 600.

It was found by the Audit that 47% of the sample beneficiaries had about half the Small Stock units that could be kept to optimally utilise the farm. One reason for this could be that the Karas Region is prone to drought and farmers are possibly being cautious. Although there has been adequate rainfall to support such numbers of stock in recent years, this trend could change at any time.

Werner also indicated that the gross annual income for 67 cattle (Large Stock Units) is N$36,000 while the gross annual income for 600 Small Stock Units is N$60,480 (Table 5 and 6).

---

26 Personal communication with Mr. M Becker from DEES/GIZ Keetmanshoop
In terms of livestock numbers the Audit found that in the Karas Region over 70% of the farmers owned less than 200 goats, while 100% owned less than 50 cattle (Werner 2010). Farmers in the Karas Region mostly farmed with Small Stock Units with a ratio of 1:6 (cattle : goat/sheep). The sample participants owned a total number of 21,793 small stock units in 2008 according to the Audit, giving an average of 341 Small Stock Units per beneficiary. The findings of the survey were that the land appropriated for resettlement was not being used optimally and was basically underutilised by the farmers. The maximum number of small stock that can be kept on a 3000 ha piece of land is between 500 and 600.

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Werner also indicated that the gross annual income for 67 cattle (Large Stock Units) is N$36,000 while the gross annual income for 600 Small Stock Units is N$60,480 (Table 5 and 6).

Table 5: Gross annual income for cattle

<table>
<thead>
<tr>
<th>LSU</th>
<th>Females (60%)</th>
<th>Calves (75% calving rate)</th>
<th>Replacement calves (15%)</th>
<th>Calves for Sale</th>
<th>Price per calf</th>
<th>Turnover</th>
<th>Expenditure</th>
<th>Gross income per annum</th>
</tr>
</thead>
<tbody>
<tr>
<td>67</td>
<td>40</td>
<td>30</td>
<td>6</td>
<td>24</td>
<td>2,500</td>
<td>60,000</td>
<td>40%</td>
<td>36,000</td>
</tr>
</tbody>
</table>

Table 6: Gross annual income for small stock farming

<table>
<thead>
<tr>
<th>SSU</th>
<th>Females (80%)</th>
<th>Lambs (90% weaning rate)</th>
<th>Replacement lambs (15%)</th>
<th>Lambs for sale</th>
<th>Price per lamb</th>
<th>Turnover</th>
<th>Expenditure</th>
<th>Gross income per annum</th>
</tr>
</thead>
<tbody>
<tr>
<td>67</td>
<td>40</td>
<td>30</td>
<td>6</td>
<td>24</td>
<td>2,500</td>
<td>60,000</td>
<td>40%</td>
<td>36,000</td>
</tr>
</tbody>
</table>

Source: Werner 2010

These costs however do not include depreciation costs and maintenance costs. These costs according to Schuh et al (2006 – cited in Werner 2010), can be approximately N$55,900 per annum on small stock farms and about N$35,000 per annum on cattle farms. The conclusion drawn from the Audit report was that the “current minimum farm size are too small to generate sufficient incomes to support a family and provide enough capital for farm maintenance and capital investments. It is therefore recommended the minimum sizes of allotments in the southern and northern regions be reviewed” (Werner, 2010).

The Audit also indicated that in the Karas Region 86% of the farmers earned a low income from the sale of cattle. Low was described as being between N$900 – N$ 30 000. Therefore many farmers rely on non-farming incomes to complement the farming income. The Audit found that 44% relied on livestock sales as an income, with 2% relying on cash remittances, 43% on wage works and 11% on informal business enterprises.
In general, according to the Resettlement Audit, the farms acquired for resettlement purposes were generally in good and usable condition at the time of handover. However, due to the acquisition taking such a long time, some of the farms started to fall in disrepair due to no maintenance taking place. The Audit also stated that 77% of all respondents in the Karas Region found their main borehole to be good and suitable for human consumption. The Karas Region also has the highest proportion of part-time farmers (being 65%) and full time farmers (being 35%).

The Audit found that there are some discrepancies between farms captured by the Audit compared to the inventory done by Brown and Mendelsohn (2008), in that the Master list contains many omissions and there are general discrepancies between the number of beneficiaries who claim to have letters of allotment and those considered “legal”. It was also found that many beneficiaries are not able to utilise the land allotted to them optimally due to the insufficient livestock numbers, but it is unclear if this is still the case.

The Audit also found that many resettlement farms are accommodating more people than is sustainable. The Audit recommends that MLR must initiate a process with important role players like MLRGHRD on how to deal with overpopulated farms, rather than just giving the responsibility over to MRLGHRD to establish urban settlements. The Audit also recommends that MLR must review the minimum size of allotments in the southern and northern regions in order to make them more financially and environmentally sustainable. This review should incorporate the probability of drought into the analysis.
### Table 7: Resettlement farms in the Karas Region

<table>
<thead>
<tr>
<th>Farm Name</th>
<th>Farm No.</th>
<th>Unit Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aandblom</td>
<td>25</td>
<td>3199.424</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2978.608</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2653.346</td>
</tr>
<tr>
<td>Abos</td>
<td>80</td>
<td>20812.254</td>
</tr>
<tr>
<td>Aurus</td>
<td>149</td>
<td>8659.67</td>
</tr>
<tr>
<td>Aluriesfontein</td>
<td>308</td>
<td>15495.493</td>
</tr>
<tr>
<td>Aussenkjer</td>
<td>147</td>
<td>2978.608</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2653.346</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15495.493</td>
</tr>
<tr>
<td>Austerlitz</td>
<td>81</td>
<td>14221.033</td>
</tr>
<tr>
<td>Bankwasser</td>
<td>139</td>
<td>5832.341</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4573.111</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2659.761</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1985.765</td>
</tr>
<tr>
<td>Belda</td>
<td>361</td>
<td>1976.39</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3117.185</td>
</tr>
<tr>
<td>Brokwater</td>
<td>341</td>
<td>5332.341</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3084.724</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3151.344</td>
</tr>
<tr>
<td>Bruinheuwel</td>
<td>477</td>
<td>2963.531</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Farm Name</th>
<th>Farm No.</th>
<th>Unit Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buchholzbrunn West</td>
<td>199</td>
<td>5777.443</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6060.313</td>
</tr>
<tr>
<td>Dagbreek</td>
<td>420</td>
<td>11139.333</td>
</tr>
<tr>
<td>Deurstamp</td>
<td>42</td>
<td>2959.412</td>
</tr>
<tr>
<td>Diams</td>
<td>63</td>
<td>7487.172</td>
</tr>
<tr>
<td>Doroguis</td>
<td>82</td>
<td>4247.076</td>
</tr>
<tr>
<td></td>
<td></td>
<td>169.907</td>
</tr>
<tr>
<td>Feldschuhorn</td>
<td>81</td>
<td>14221.033</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3467.014</td>
</tr>
<tr>
<td>Fettkluft Nord</td>
<td>33</td>
<td>3042.74</td>
</tr>
<tr>
<td>Gabasis West</td>
<td>112</td>
<td>12543.556</td>
</tr>
<tr>
<td>Goobis</td>
<td>138</td>
<td>6920.996</td>
</tr>
<tr>
<td>Gorinais</td>
<td>30</td>
<td>2939.762</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2911.332</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3468.809</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6897.367</td>
</tr>
<tr>
<td>Gemsbokberg</td>
<td>328</td>
<td>24901.688</td>
</tr>
<tr>
<td>Greylingen</td>
<td>48</td>
<td>5009.89</td>
</tr>
<tr>
<td>Hainabis</td>
<td>132</td>
<td>4152.099</td>
</tr>
<tr>
<td></td>
<td></td>
<td>423.579</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2158.18</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3776.706</td>
</tr>
<tr>
<td>Harib</td>
<td>142</td>
<td>2637.842</td>
</tr>
<tr>
<td>Harib</td>
<td>142</td>
<td>3333.965</td>
</tr>
<tr>
<td>Holoog</td>
<td>106</td>
<td>2440.498</td>
</tr>
<tr>
<td>Itzawisis</td>
<td>9</td>
<td>604.247</td>
</tr>
<tr>
<td>Kameeldorn</td>
<td>460</td>
<td>5077.232</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5020.915</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4736.124</td>
</tr>
<tr>
<td>Kangus</td>
<td>160</td>
<td>2684.046</td>
</tr>
</tbody>
</table>
### Farm Name | Farm No. | Unit Size
--- | --- | ---
Khabus | 146 | 12376.62
Klein Aub | 34 | 4947.917
Klein Kuibis Sud | 198 | 4469.118
Klipdrift | 134 | 3181.234
Kolke | 84 | 19345.184
Korabib | 327 | 19475.739
Leeukop | 340 | 10839.12
Lübeck | 2 | 8859.898
Melkbos | 251 | 8863.359
Meteor | 231 | 1753.175
Middelpos | 252 | 24907.5
Naus | 27 | 9380.164
Nieuwfontein Ost | 54 | 5679.035
Noetvlei | 190 | 8007.456
Obub | 47 | 3097.712
Ortmansbaum | 120 | 5802.658
Riverside | 256 | 11465.216
Roekoppe | 267 | 4449.825
Saraus | 16 | 4345.174

### Farm Name | Farm No. | Unit Size
--- | --- | ---
Schwarzeck | 130 | 12580.872
Shanghai | 102 | 9468.663
Shirley | 189 | 6765.342
Snyrivier Nord | 35 | 5734.157
Soekwater | 160 | 2882.586
Soetdoringvlei | 55 | 216.539
Sperlingsfontein | 478 | 4812.266
Swarthuk | 121 | 4771.366
Tsachanabis | 20 | 4747.671
Tswisis | 48 | 950.377
Tunis | 253 | 7823.45
Tutora | 177 | 4062.125
Uitschot | 149 | 3457.199
Unser Weide | 424 | 8377.754
Vergenoeg | 338 | 1164.183
Agriculture in the Karas Region

Agriculture in the Karas Region predominantly focuses on small stock farming of which sheep farming is the main industry and goat farming the second largest farming practice.

There are two types of agricultural land tenure in the Karas Region:

- Communal farming
- Freehold/Commercial farming (this also includes resettlement farms and affirmative action farms).

Communal farming consists mostly of subsistence farming with small flocks of goat, sheep and cattle. About 10-15% of these communal farmers are more effluent and they keep much higher stock numbers in the communal areas, with mostly a much higher number of goats and sheep than cattle (Mendelsohn 2006). In communal areas, goats make up 43% of the total livestock numbers, sheep 27% and cattle 21%, which is different than the distribution on freehold farms.

Freehold/commercial farming in the Karas Region is focused predominantly on sheep farming- firstly by farming with karakul, but due to the decline in the karakul industry many farmers ventured into sheep farming such as the Dorper sheep for meat production and export to South Africa. Freehold/Commercial farming employs on average 3.8 workers per farm (Mendelsohn, 2006) and the farms range from 10,000 ha to 15,000 ha in size. There is some tourism, trophy hunting and game sales, but it is less than in the North.

Stock (Sheep, Cattle and Goat) Farming

Small stock, and to a lesser extent cattle production, are the most important agricultural activities in the Karas Region. The Karas Region is dominated by small stock farming with sheep making up 79% of the livestock numbers in the Karas Region, goats 19% and cattle 3% (on commercial and communal farms). The numbers differ slightly on the communal farms in the Karas Region with livestock being divided up into goats (making up 43%), sheep (making up 27%) and cattle (making up 21%).

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28 Claus Hager. An Agricultural Profile of the Orange-Fish River Basin, Namibia. October 2008

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The sheep population in Karas mainly consists of Dorper and Karakul sheep. Small stock marketing of live sheep to South Africa showed a significant decrease in 2008 with the areas surrounding Keetmanshoop, Karasburg and Bethanie only marketing 31,925 sheep (live export) to South Africa in 2008, in relation to the 81,299 marketed to South Africa in 2007. Dorper Sheep require about 50% more feed than Karakul and Blackhead Persian Sheep, as they need more and higher quality food (Mendelsohn 2006).

Significant changes can be observed in the number of live sheep exported to South Africa (Table 9). The lessening of exports is mainly due to both the closing of the border with South Africa and the government small stock scheme (implemented in 2004) in which the farmer has to slaughter 6 sheep locally for every 1 sheep exported live. This has made it less economically viable for farmers to export live sheep to South Africa and according to the Meat Board of Namibia the trend in 2009 was that 93.2% of all available sheep were slaughtered locally, while the live exports only represented 6.8% of total marketing. The problem that farmers experience with local slaughtering is that the price gained for local slaughtering is significantly lower than the price gained for export. As of August 2010, the price for sheep, when exported to South Africa was N$46/kg, whiles the price for sheep, if slaughtered locally in Namibia, was N$32/kg.

Table 8: Estimated number of Livestock in the Karas Region (2002 – 2006)*

<table>
<thead>
<tr>
<th>Karas</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle</td>
<td>30,396</td>
<td>32,897</td>
<td>35,470</td>
<td>38,128</td>
<td>36,473</td>
</tr>
<tr>
<td>Sheep</td>
<td>930,369</td>
<td>991,316</td>
<td>928,274</td>
<td>1,009,379</td>
<td>994,779</td>
</tr>
<tr>
<td>Goat</td>
<td>268,176</td>
<td>222,902</td>
<td>218,045</td>
<td>242,992</td>
<td>234,315</td>
</tr>
<tr>
<td>Horses</td>
<td>4,511</td>
<td>5,308</td>
<td>5,784</td>
<td>6,070</td>
<td>5,947</td>
</tr>
<tr>
<td>Donkeys</td>
<td>4,293</td>
<td>5,314</td>
<td>5,774</td>
<td>5,666</td>
<td>5,598</td>
</tr>
<tr>
<td>Pigs</td>
<td>564</td>
<td>935</td>
<td>749</td>
<td>1,188</td>
<td>900</td>
</tr>
<tr>
<td>Poultry</td>
<td>16,946</td>
<td>15,405</td>
<td>16,834</td>
<td>18,415</td>
<td>16,458</td>
</tr>
<tr>
<td>Dogs</td>
<td>4,472</td>
<td>4,758</td>
<td>5,109</td>
<td>5,376</td>
<td>5,374</td>
</tr>
<tr>
<td>Camels</td>
<td>8</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Ostriches</td>
<td>5,187</td>
<td>565</td>
<td>6,398</td>
<td>1,503</td>
<td>395</td>
</tr>
</tbody>
</table>

*Sheep include: Karakul, Dorper and other types
**Goat include: Angora, Boerbok and other types

Table 9: Marketing of live small stock to RSA for 2003-2008

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sheep Numbers</td>
<td>268,656</td>
<td>262,902</td>
<td>113,734</td>
<td>117,636</td>
<td>81,299</td>
<td>31,923</td>
</tr>
</tbody>
</table>

*MAWF stock census 2006
**Claus Hager
*MAWF Stock census 2006
**Meat Board of Namibia 2010
Cabinet recently approved a new small stock scheme on 22 June 2010, in which the 6:1 sheep scheme will be replaced with a valorem levy on the export of sheep. This will mean that sheep farmers will be able to export their small stock, but with restricted measures such as a payment of a 15 – 30% levy on the export of the sheep. This will result in farmers paying approximately N$68 (August 2010) for every Dorper sheep exported. The levies will be paid into a collective fund “under the custody of the Meat Board and these fund resources will solely be used for the development and promotion of the sheep industry.”

**Caution:** According to experts, this new levy will have a bigger impact on the export of sheep and some even said that the current 6:1 scheme should be kept as the new scheme will effectively result in the total closure of sheep exports (as it will not be financially viable for farmers).

The karakul industry experienced a huge growth from 1924 to 1969 when more than “3.5 million pelts” were on offer. This growth declined over the years due to anti-fur activists and also because of fluctuations in the global economy and karakul pelt trade. Recently the industry has shown signs of recuperating as the numbers for karakul in the Karas Region increased from 67,580 in 1995 up to 114,124 in 2006. One reason for this increase might be related to farmers seeking alternative income generation measures rather than sheep export due to GRN small stock scheme. The recent increase in prices paid for Karakul pelts has also become a contributing factor. On the latest auction held in Copenhagen, Denmark on 13 April 2010, an average price of N$344 was reached per pelt and showed an increase of 20% in pelt prices from the previous auction held in September 2009.

About 50% of the pelts exported from Namibia derive from the Karas Region. According to the Karakul Board of Namibia, there is a tendency for growth in the communal areas as the selling of small amounts of pelts is a valuable source of income for subsistence farmers in the communal areas. However, it does not appear as if the karakul industry will revert back to the golden era of the 60s as the international market is still small, limited and highly influenced by international trends that are steering away from fur usage because of the negative impact on animal welfare. It is more likely, according to stakeholders that an increasing number of farmers will start to diversify into a mixture of sheep, goat, cattle, wildlife farming and tourism for additional income generation.

### Table 10: Gross margin (N$/ha) for goat & sheep production at varying management levels

<table>
<thead>
<tr>
<th></th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Boer</td>
<td>Dorper</td>
<td>Boer</td>
</tr>
<tr>
<td>Gross output</td>
<td>108.8</td>
<td>129.2</td>
<td>178.6</td>
</tr>
<tr>
<td>Variable costs</td>
<td>23.8</td>
<td>18.7</td>
<td>28.7</td>
</tr>
<tr>
<td>Gross margin</td>
<td>85.0</td>
<td>110.5</td>
<td>149.9</td>
</tr>
</tbody>
</table>

Source: Hager, Claus

Table 10, above, indicates a comparison of the gross margin per hectare between Dorper Sheep and Boer Goat farming on varying levels of management systems. Low (cited according to Hager) refers to “management levels applied in communal areas,” while High refers to commercial farmers with all the management “amenities, infrastructure and skills.”

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33 Media Release from the Cabinet Chambers. “Implementation of the Restrictive measures on the export of live sheep” 
34 MAWF 2006 livestock census 
36 Mr. Visser – Karakul Board 
37 Hager, Claus 
38 Meat Board of Namibia. Goat Marketing Report 2008 
39 Hager, Claus.
The goat farming industry is the second small stock farming enterprise in the Karas Region (especially in communal areas), but it is also an important industry and makes up 19% of the total number of livestock in the Karas Region and 11.4% of the total goat population in Namibia. In 2008, a total number of 99,084 live goats were exported to South Africa in comparison to the 80,520 in 2007. As the export market to South Africa has a higher price than local prices it is more economically viable for farmers to export live goats to the South African market than local slaughtering. Goats are mostly exported for religious purposes to South Africa and according to the Meat Board of Namibia there is also a small and limited market for goats.

### Table 11: Percentage of small stock breeds on commercial and communal areas in south of Namibia

<table>
<thead>
<tr>
<th>Breed</th>
<th>Commercial farms</th>
<th>Communal land</th>
</tr>
</thead>
<tbody>
<tr>
<td>Karakul</td>
<td>73%</td>
<td>27%</td>
</tr>
<tr>
<td>Dorper</td>
<td>95%</td>
<td>5%</td>
</tr>
<tr>
<td>Boergoat</td>
<td>45%</td>
<td>55%</td>
</tr>
</tbody>
</table>

Cattle: Cattle numbers in the Karas Region varied over the years depending on the rainfall in the region and market trends. It has been identified by stakeholders that the cattle numbers in the Karas Region has increased over the past few years. The main reason indentified for this move is the small stock scheme which makes live export of sheep unfavourable for small stock farmers; this indirectly forces farmers to change towards the more economically viable cattle market. Another possible reason for the increase in cattle farming might be due to the above average rainfalls in the region over the past few years. The Karas Region’s cattle only made up 1.5% of the total number of cattle in Namibia in 2006, but the stakeholders may be revealing new information that indeed there is an increase in the number of cattle in the Karas Region in recent years. It is difficult to fully assess the situation as the last livestock census done by MAWF was in 2006 and no new official data is available.

### Map 13: Small Stock Carrying Capacity

NOT TO SCALE HA/SSU means number of hectares per small stock unit.
Map 13 indicates the small stock carrying capacity for the Karas Region as estimated by the Ministry of Agriculture, Water and Forestry. The central and eastern part of the region are more suitable for small stock farming where the carrying capacity varies from 6 hectares per livestock unit to 4.5 hectares needed per small livestock unit. This means that on a resettlement farm of 3,000 ha, the farmer can keep approximately 500 to 666 sheep/goats on the farm, whereas in the more western and southern area, a farmer can keep 200-300 sheep/goats.

The large stock carrying capacity for the eastern part of the region (Map 14) is 24 – 30 hectares of land per livestock unit, while the rest of the region is subject to 999 ha of land needed per livestock unit. This means that on a 3,000 ha farm, situated in the western to central area of the region, the farmer can only stock approximately 3 cattle per farm. This will change the more eastwards it goes, with the numbers changing to approximately 100 head of cattle per 3000 ha.

Caution: The current policy of MLR to allow 150 head of cattle on resettlement farms in the Karas Region is not in line with the carrying capacities of the region.

Map 14: Large stock carrying capacity for Karas Region

![Map showing carrying capacity for Karas Region]

Source: Carrying capacity map MAWF

The Karas Region both traditionally and according to experts is not suitable for large scale cattle farming due to low grazing capacities, as can be seen on Map 14 (above). According to Mendelsohn, environmental resources in the south such as abundant shrub vegetation, makes the area more suitable for sheep and goat farming than for cattle farming. Cattle rely on grass for feeding which is not always that abundant during the normal rainfall years. Map 15 indicates the Agro-Ecological zones for the Karas Region. The AEZ indicates that the Karas Region is only suitable for sheep farming.

The diversification into cattle farming has raised some concerns that if not properly managed this will result in overgrazing of land, especially once rainfall returns to normal. Farmers will also have to feed the cattle in the drier years which can be very costly for the farmers.
Caution: Experts have indicated their concern with the recent trend of cattle farming in the Karas Region. This trend is mainly due to the small stock scheme which is making small stock farming uneconomic and farmers are therefore forced to diversify. The SEA report highlighted farming with cattle in the region as a red flag as it will lead to land degradation and environmental impacts. The SEA report also highlighted the small stock policy scheme of the GRN as a red flag as it directly contributes to “accelerated land degradation in southern Namibia” (SEA Final Report).
Map 15: Agro-Ecological Zones for the Karas Region

Legend
- Central Plateau, sheep grazing only
- Escarpment, sheep grazing only
- Kalahari sands plateau, sheep grazing only
- Namib sand sea and gravel plains, unsuitable for grazing
- River canyons, not available for grazing
- Rocky hills and inselbergs, not available for grazing

Data Source: Map 15: Agro-Ecological Zones for the Karas Region

31 March 2011

Ministry of Agriculture, Water and Forestry
Edited by SAIEA.

Ministry of Lands and Resettlement

Agro-Ecological Zones: Karas

South Africa

Atlantic Ocean

Karas

Hardap

±
**Ostriches:** Ostrich farming in the Karas Region declined sharply over the years. According to the 2006 livestock census there were only 395 ostriches in the Karas Region. The Ostrich Production Namibia (OPN), meant for the slaughtering of ostriches, was replaced by the Karas Abattoir and Tannery where it diversified into sheep and springbok slaughtering as the number of ostriches in the region decreased sharply. According to Mendelsohn\(^{40}\) the decline in production has been due to poor economic returns, high cost of imported feed and low export prices. Many people also believe that Namibia contributed to the decline in ostrich numbers as a large number of live ostriches and eggs were exported to other countries, which resulted in these countries now producing their own ostriches and thus inherently leading to the collapse of the Namibian market.

**Game:** Statistics for game farming in the Karas Region was much more difficult to obtain. According to the Wildlife resource accounts for Namibia in 2004\(^{41}\) the wildlife sector contributed approximately 2.1% to the GDP of Namibia, with wildlife viewing and tourism contributing 62%, hunting 19% and live game production 10% and other activities such as meat production, intensive ostrich farming and taxidermy 2 – 3% to the wildlife sector. Wildlife in the Karas Region consists of predominantly springbok, gemsbok, kudu and Hartman’s zebra. The Karas Region is well known for its biltong hunting practices and night culling, but no data was available from MET to elaborate on this.

According to stakeholders there are an increasing number of farmers diversifying into game farming and tourism to supplement their monthly income. As data is limited: the only information received from the MET office in Keetmanshoop showed that for the months of June and July 2010 a total of 1,328 biltong hunting permits were given in the Karas Region, with 35 “shoot and sell permits” and 21 permits for night culling. It was also identified that there are 14 registered hunting farms in the Karas Region. On average in Namibia trophy hunting generates higher revenue than livestock farming (Brown, JH). Trophy hunting is more predominant in the northern regions as more focus is placed on the biltong hunting practices and night culling.

According to a study undertaken by Barnes and de Jager\(^{42}\) on the economic and financial incentives for wildlife use, it was found that:

- The increase in wildlife stocks and diversity will also have enhanced conservation values;
- Ranching in Southern Africa, generally has a low financial profitability;
- Consumptive wildlife use in the south is more financially and economically profitable that that in the north (primarily due to the higher value of springbok night culling activities);
- There are little incentives for farmers to convert to pure game production either for consumptive or non-consumptive use;
- However, pure wildlife production for wildlife viewing may have an economic advantage over livestock and game production;
- Production of a larger scale within conservancies is more efficient (financially and economically) than on the ranch scale;
- Safari hunting on private land is profitable but only as a supplementary enterprise alongside livestock farming or other wildlife land uses.

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\(^{40}\) John, Mendelsohn. Farming Systems in Namibia. RAISON 2006


Irrigated Agriculture

“In spite of Namibia being an extremely arid country, irrigation still accounts for nearly half the water used in Namibia at 135 million m³ annually of a total quantity of 327 Mm³ used annually. This is about 41% of all water used in Namibia” (Biggs).

There is an increase in irrigation as new markets are opening up and local markets are growing with the higher rate of urbanization taking place. About 50% of the products grown in Namibia are exported to South Africa and Europe. The most popular products grown in the Karas Region are dates, grapes and, to a lesser extent, vegetables. Namibia is being regarded as Southern Africa’s leading date producer (Mendelsohn). Grapes are also popular and are exported to Europe as table grapes. Namibia’s aim is to develop an additional 27,000 ha by 2030 to reach Vision 2030 objectives.

There are a few existing irrigation schemes in the Karas Region: at Noordoewer, Naute Dam, Aussenkehr and smaller irrigation schemes next to the Orange River. There was a bilateral accord with South Africa allowing Namibia to extract 50 Mm³/annum from the Orange River. This was increased to 110 Mm³/annum until 2007, whereafter South Africa needed the water itself and aimed to revert back to 50 Mm³/annum. In 2005, Namibia utilized 80.22 Mm³/annum water from the Orange River for urban, industrial and mining while irrigation accounted for 62 Mm³/annum. According to the Orange River Integrated Water Resources Management Plan the total demand on the Orange System in 2005 was 3250 Mm³/annum, with irrigation being the largest water use sector in the Orange River system using almost 60% of the total demand.

Noordoewer

The irrigation scheme at Noordoewer consists of approximately 286 hectares of land under irrigation. The main crops produced at this scheme are vegetables of which tomatoes are the main crop. Sweet melons, grapes and pumpkins are also produced there. These products are exported mainly to Cape Town (as it is the bigger market with more stable prices), but also to Windhoek, Kimberley and Bloemfontein. It is reported by Biggs that Noordoewer irrigation is more successful because the farmers moved from lucerne production and cereals to vegetables, table grapes and fruit. The farms were also consolidated into larger units, making it more economically viable where farmers only pay 3c/m³ for water usage.

Aussenkehr

According to Hager, the total size of the Aussenkehr Scheme is approximately 1,000 ha of which 300 hectares are government owned. Approximately 80% of these 300 ha are being utilized by 20 small-scale production farmers.

Pictures 1: Irrigation at Aussenkehr
These farmers have four hectares each for irrigation purposes and grapes, dates and vegetables are grown by these twenty farmers. The grapes and dates are exported to South Africa, Europe and Middle Eastern countries. Some 30% of the production must be sold locally according to a policy from MAWF. The remainder of the land at Aussenkehr is utilized by five private owners where they grow dates, watermelons, sweet melons and tomatoes. According to Biggs (2010) irrigation can be successful as long as there are proper management and marketing of products.

Naute Scheme

The irrigation at Naute Dam is coordinated by the Namibian Development Cooperation (NDC) on behalf of the Ministry of Trade and Industry. The project was established during 1989/1990 with the aim to produce fresh dates for the export market. In 1995 the table grape component was added to the project. Currently a total of about 132 hectares are under irrigation of which 80 hectares are under irrigation for date production, 40 hectares table grapes, 10 ha pomegranates and 1 ½ ha cactus pear. The total number of permanent staff employed by the project is 79 with seasonal workers varying depending on the product. For grapes, seasonal workers can vary from 200-240 and with date production seasonal workers can vary from 140-180. The workers do not live at the scheme itself and are accommodated in the Karas Region.

The products grown at the Naute Irrigation are mainly exported to Europe with some export to South Africa when there is excess production. The income for the whole project annually is approx N$7 million of which 20-25% is for expenses. The cost of water is 24c/m3 which is higher than the cost of water at the Orange River according to NDC. NamWater provides water for the irrigation from the Naute Dam and in 2007/2008 a total of 2,243,847m3 was sold by NamWater to the NDC for irrigation. The Naute Dam can provide water for 600 ha of irrigated land as the water from Naute is also distributed to Keetmanshoop for human consumption.

There are future plans for the extension of the scheme to an additional 200 ha of which 180 ha will be for date production and 20 ha will be table grapes. According to Hager, date production can yield returns of N$430,000 to N$540,000 per hectare. It takes an average of 7 years before the production of dates reaches the break-even cost point and by year 12 they should be in full production. Grapes and pomegranates take 3 years to be in full production.

Orange River schemes

According to the Ministry of Agriculture, Water and Forestry, there are several irrigation projects next to the Orange River on farms at Komsberg, Stolzenfels, Haakiesdoorn, Ramansdrift, Silwerstroom and Khaais. Information regarding the irrigation on these farms is scarce as it is privately owned. Haakiesdoorn has been in cooperation with a South African company and will also start producing dates. The farm has been producing white maize for some time. Komsberg farm produces export quality table grapes which are exported to Africa, UK, Russia, the Middle East and China. About 320 hectares of land are currently under irrigation and they are looking into the production of Hoodia and Jatropha for future projects.
Small scale agriculture

Hoodia

The Hoodia Grower’s Association of Namibia (HOGRAN) initiated a Hoodia Poverty Reduction Program in 2007. The initiative was funded by the EU and was aimed at rural poverty reduction. The Hoodia Commercialisation and Poverty Reduction Program (HCPRP) was administered by the NNFU and NAU and the project ran from 2007 until 2009. The aim of the project was to establish small and medium Hoodia enterprises to create new employment opportunities and provide for alternative income in the rural communities. The EU bought a certain number of Hoodia plants which was then distributed to 300 beneficiaries. These beneficiaries were given a period of two years to grow the Hoodia after which it was sold back to the project and each beneficiary could earn approximately N$3,000.41

According to HOGRAN (2010), there is currently no market for Hoodia and the 300 beneficiaries from this project will not be able to proceed with the marketing until such a market has been realized. The Ministry of Environment and Tourism already provided approximately 200 permits for Hoodia nurseries in the Karas Region in 2010 and 3 permits for wild harvesting of Hoodia on Aubures Farm, Geel Schaap and Geinaob Farm. As Hoodia is a protected indigenous plant, strict regulations only allow for harvesting of Hoodia every two years and after a harvest, new Hoodia seedlings must be planted under supervision of the MET office.

Caution: Even though it might seem to be a lucrative business, experts believe that the Hoodia market is non-existent in Namibia and caution should be taken in advising communities on the advantages of Hoodia production if there is no market.

The Namibian-German Special Initiative Programme

The Government of Namibia and Germany has reached an agreement to implement the Special Initiative project with the aim of development and social consolidation at local and community levels and to address poverty in the communities in the projects areas. A Government task force visited almost 250 communities in 7 regions requesting them to prioritize their projects and needs. A total of 133 projects of 13 different types were identified

41 (http://www.komsberg.co.za/index.php)
40 Mr. Beukes. MET office in Keetmanshoop
throughout Namibia in 2007. All direct costs of the programmes are financed by means of a Special Initiative Grant of €20 million (±N$160 million) provided by the German Government. It was estimated that a total of N$21 million will be allocated for projects in the Karas Region.

The Namibian-German Special Initiative Programme (NGSIP) visited the Karas Region in November 2010 to establish whether the projects identified by communities in 2007 were still the projects needed by the community. The following list indicates the most recent projects identified by the communities for which feasibility studies will be done:

- !Khosis – Building Stone project
- Bethanie – Cultural Village project (the previous identified garden project to be replaced by the Cultural Village project)
- Bethanie (!Ama) – Livestock Distribution project
- Blou-Wes – Livestock and Marketing Project and Cultural Village project
- Gainachas – Building Stone project and a Multi-Purpose Cultural Centre project (the garden project replaced by the MPCC)
- Kosis – Conservancy project
- Kuthenhaus – Building Stone project
- Snyfontein – Building Stone project
- Tses - Tourist Information Centre project
- Vaalgras – Livestock project and Cultural Village project
- Berseba/Gainachas – Livestock project
- Warmbad – Livestock project and Multi-Purpose Cultural Centre project
- Aroab – Sport Complex and Multi-Purpose Cultural Centre project
- Koës – Cultural Centre project.

**Country Pilot Partnership (CPP)**

The Country Pilot Partnership (CPP) for Integrated Sustainable Land Management (ISLM) is a joint initiative between the Ministries of Environment & Tourism, Ministry of Agriculture Water & Forestry, Ministry of Lands & Resettlement, Ministry of Regional, Local Government, Housing and Rural Development and the National Planning Commission, UNDP and the Global Environmental Facility (GEF). The main objective of CPP is to “combat land degradation using integrated cross-sectoral approaches which enable Namibia to reach” the Millennium Development Goal No.7, that of “Environmental Sustainability”. NNF is the implementing partner in this project.

Land degradation is becoming a serious problem in Namibia, a country which relies heavily on agriculture for subsistence farming, food and export. There are two types of land degradation:

(a) Vegetation degradation includes rangeland degradation, deforestation and degradation of dryland forests and woodlands;

(b) Soil degradation includes wind and water induced erosion of soils and the loss of soil fertility.

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50 The Special Initiative. Feasibility Report. Submitted to the National Planning Commission and the German Development Bank. By Sum Consult and Urban Dynamics Africa

51 The Special Initiative. Feasibility Report. Submitted to the National Planning Commission and the German Development Bank. By Sum Consult and Urban Dynamics Africa
There are five sites in the Karas Region where the CPP-ISLM project is being piloted - at Gainachas, Berseba, Nuquaes, !Haib and Aus. However, limited funding has resulted in only two projects being operational, at Gainachas and Aus.

The project at Aus focuses on establishing a conservation area and providing water to Aus. The aim is to establish a conservancy on the townlands of Aus, which will be beneficial to the whole of the Aus community. The CPP project is also assisting with support for water provision for the Aus community. The Karas Regional Council has appointed consultants to find solutions for the Aus water situation.

The project at Gainachas focuses on providing an orchard/garden for the community. The aim is to irrigate two hectares of land, with the possibility of expansion, for production of crops such as oranges, figs, mangos, dates, vegetables, etc. Some 15 People were trained so far and further training will be provided.

**Ministry of Agriculture, Water and Forestry**

MAWF also has some smaller initiatives in the region for small scale farmers and communal farmers. These projects are aimed at increasing the income base of the farmers by supporting small stock production and upliftment of the poor in the rural areas. Projects such as the Boergoat Project Inspection and Support Programme, Food for Work and Food for Cash Programmes are being implemented by the MAWF in the region. The Boergoat project provided 922 goats to 46 beneficiaries. The aim of the project was to both support communities in small stock production and alleviate poverty.

**Trends in the Agriculture Sector**

With the continuous increase in population around the world, it becomes necessary to seek alternatives to ensure food security. With the increase in food prices it also becomes a major incentive to ensure food security in Namibia. Namibia’s economy is expected to expand to 3.8% in 2010 and the agriculture sector is expected to expand to 3.8% in line with the national growth. Economic growth is expected to average 4.4% for 2011-2013 mostly driven by expansion of external demand for Namibia’s commodities (uranium and diamonds) and by an increase in consumption investment. The Agricultural Sector will receive N$5.3 billion during 2010/11 to 2012/13 for Green Scheme projects, production loans to farmers, extension services, ploughing and fertilizers subsidies, other agricultural subsidies, and an additional N$200 million from developing partners.

**Figure 3: Share of Agricultural exports in Namibia’s Total Exports**

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16 CPP in Karas. Issue 2: October 2010. Namibia Development Trust and CPP (Namibia)
17 List of projects provided by NNF in 2010
The Agriculture sector exports significantly less than both the mining and manufacturing sector (Figure 3). There is potential to expand the export market for agriculture and programmes and strategies should be strengthened.

Livestock

With the tourism industry growing in Namibia and with the government policies making livestock farming increasingly difficult, more farmers are diversifying from the traditional livestock farming into tourism and game farming. Surprisingly there has also been a move from small stock farming in the Karas Region towards cattle farming. This can be attributed to the exceptional good rainfalls of the past few years, the better prices that cattle are fetching on the international markets and mainly because of the small stock scheme implemented by GRN in 2004. It has become difficult for small stock farmers to export live sheep as they have to slaughter 6 sheep locally for every 1 sheep exported, according to the 6:1 small stock scheme. The new small stock scheme recently approved by Cabinet requires farmers to pay a 15-30% levy on every sheep exported (this will now replace the 6:1 scheme).

Recent trade agreements for beef between Namibia and the EU have also made the export of beef a much better proposition for farmers. Increases in Karakul pelts might also lead to a diversification into karakul farming. According to the Meat Board of Namibia the Karas Region is only suitable for small stock farming with Karakul being the preferred sheep as it is more adapted to the arid region and has less impact on the resources.

Caution: There are concerns among stakeholders that the newly proposed small stock scheme will further force small stock (sheep) farmers in the Karas Region to diversify into cattle farming. Cattle farming are not an ideal farming practice for most of the Karas Region as it can lead to overgrazing and degradation of the natural environment.

Irrigation

With Government Policies such as the Green Scheme Policy, food security programs, the Millennium Challenge Account and horticultural projects, there is a definitive emphasis move towards more irrigation projects in Namibia. Projects such as the proposed irrigation at Tandjeskoppe, the Neckartal Dam and the expansion of the Naute Dam Irrigation are all proposals under one of the above-mentioned policies. It is likely that more irrigation will take place along the Orange River in the future due to the Green Scheme Policy (which is aimed at encouraging the development of irrigation based agronomic production in Namibia), Vision 2030 and initiatives from the Government. According to Biggs (2010) there is a concern that new irrigation schemes are being considered while the current projects are not fully utilized. Dates are one of the more successful crops in the Karas Region due to the rainfall which is favourable for dates.

According to MAWF, high value crops are the most likely future for the region as the area is more suitable for these crops and care should be taken not to focus on food security crops in the south, as it will not be suitable for the region. High value crops also produce more employment opportunities and higher income than food security crops. It was estimated by NDC in 2003 that the Dates (Medjool) had the highest Gross Margin with a Gross Income for 7.2 tons of Medjool grapes being N$180,000, production cost N$84,152 and Gross Margin N$95,848. These projections were done in 2003 and data might have changed in the meantime. However, overall water requirements for date production seemed to be higher. This can be because of unsustainable and inefficient watering methods used by the farmers.
Date production amounts to some 90 kg/palm tree/annum when full maturity is reached at 11 years of age. There are some 120-150 trees/ha, and a kilogram of dates is sold at about N$40. Returns of N$430,000 to N$540,000/ha during full production can thus be realised (Hager).

At Naute Dam irrigation scheme, three thousand boxes of table grapes are harvested/ha, and sold at about N$45/box. Prickly pears are still being tested at the scheme, but they show a lot of promise on more marginal soils. An expansion of some 300 ha of the scheme is envisaged (Namibia Resource Consultants cc, n.d.).

**Climate Change**

It is predicted that by 2080 the rainfall in the Karas Region will be less than 154mm per year. The decrease in rainfall will result in loss of grass cover in the Karas Region and will make most of the region unsuitable for small stock farming (Brown, LH).

The Climate Change Vulnerability and Adaptation Assessment for Namibia’s Biodiversity and Protected Area System paints a bleak picture of the future of Namibia in terms of climate change. This study indicated that commercial crop irrigation is currently responsible for 50% of the national water demand and that is likely that another 80% will be added with the Green Scheme Projects. With climate change there will be a decline in surface water availability which will have an impact on the irrigation industry in Namibia.

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**Table 12: Comparison between different crops (Source: Unpublished report by NDC)**

<table>
<thead>
<tr>
<th>Crop</th>
<th>Ton</th>
<th>Price/Ton (N$)</th>
<th>Gross Income</th>
<th>Production Cost</th>
<th>Gross Margin</th>
<th>Annual Water Requirements (m³/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table Grapes</td>
<td>15</td>
<td>8300</td>
<td>124,500</td>
<td>79,901</td>
<td>44,598</td>
<td>13,500</td>
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<tr>
<td>Dates (Barhee)</td>
<td>9</td>
<td>20,000</td>
<td>180,000</td>
<td>103,104</td>
<td>76,896</td>
<td>14,342</td>
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<tr>
<td>Dates (Medjool)</td>
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<td>25,000</td>
<td>180,000</td>
<td>84,152</td>
<td>95,848</td>
<td>14,342</td>
</tr>
<tr>
<td>Lucerne</td>
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<td>500</td>
<td>9,000</td>
<td>5,652</td>
<td>3,347</td>
<td>22,000</td>
</tr>
<tr>
<td>Wheat</td>
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<td>7,000</td>
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<td>2,636</td>
<td>5,720</td>
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<tr>
<td>Maize</td>
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<td>9,100</td>
<td>5,380</td>
<td>3,720</td>
<td>8,800</td>
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<tr>
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<td>6,500</td>
<td>3,062</td>
<td>2,437</td>
<td>8,800</td>
</tr>
<tr>
<td>Cotton</td>
<td>3</td>
<td>2,800</td>
<td>8,400</td>
<td>5,674</td>
<td>2,725</td>
<td>11,250</td>
</tr>
</tbody>
</table>

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48 Pers. communication
Identified developmental initiatives

Various projects were identified for the agriculture sector in the Karas Region (see Chapter 5 for more detail).

These were:

a) A proposed 5,000 ha irrigation scheme at the proposed Neckartal Dam
b) Extension of the Naute Irrigation Project
c) Proposed Tandjieskoppe Irrigation Scheme
d) CPP projects in the region, Namibia-German Special Initiatives
e) Game farming

Conclusion on the Agriculture Sector

The Government 6:1 small stock policy is leading to unsustainable farming practices as farmers are moving towards more economically feasible farming practices such as cattle farming. The 6:1 GRN Policy has been red-flagged by the SEA report as well as this land use plan. The move away from sheep towards cattle farming can lead to exploitation and degradation of natural resources. Karas already has a limited carrying capacity, especially for large livestock and generally there is a danger of overgrazing – especially during long drought periods. The Strategic Environmental Assessment conducted for the Karas Integrated Regional Land Use Plan indicated that cattle in general require more grass pasture and water than small stock and so are less suited to the arid shrubby habitat. The SEA does not support any large livestock farming in the Karas Region and are not in favour of the large stock zone suggested by the Land Use Plan.

It is further recommended that farms should not be further subdivided into smaller units as this will make farming unsustainable in this arid region. The Resettlement Audit found that the size of allotments for resettlement should be reviewed as it is too small to be economically viable. Care should also be taken that overcrowding on resettlement farms does not occur as this again leads to various environmental and social problems. These overcrowded areas should be better managed, rather than creating unsustainable urban settlements, which cannot be maintained by the population.

According to the SEA findings, water provision is becoming limited in the Karas Region and the amount of water delivered, recharge rates and poor water quality are all factors that will place a limit on the availability of water for livestock productivity. Although irrigation has been identified as a potential for the region, concern on water availability and access to markets has been identified. High value crops for irrigation farming in the Karas Region are more feasible for the region than food for security crops and it is recommended that focus should stay on high value crops. The SEA report recommends that drip irrigation, micro-sprays and underground irrigation methods should be utilized to make irrigation methods more water efficient. Another method suggested by the SEA report is that pricing of water should be used as a demand management strategy that will give farmers incentives to use water-efficient methods and to concentrate on high value crops.

The growing of Hoodia and other indigenous plants has small insignificant contributions towards uplifting local communities. According to the SEA report, small scale gardening projects have little environmental impact and are generally beneficial for local livelihoods, although groundwater supplies may in cases limit the extent of such schemes.

The effect of climate change/global warming must be taken seriously as it will make southern Namibia even less suitable for stock farming with primary productivity expected to decline. The SEA report expects that the insect borne diseases such as Rift Valley Fever will become more prevalent in the region.
Agriculture and Tourism can complement each other and Wildlife and Tourism both compliment farming practices. Policies to encourage synergies between these two land uses such as agri-tourism and eco-tourism should be strongly encouraged.

Neckartal Dam not only has agricultural potential, but can contribute to job creation and development of spin-off industries, especially in Keetmanshoop. However, the Neckartal Dam and proposed irrigation scheme has been red-flagged by the SEA report as it is against many principles of Vision 2030, NDP3 and IWRM. Both environmental experts and the SEA team consider the Neckartal Dam to be an unsustainable development option that will cause irreversible environmental impacts that will ultimately cause long term negative impacts on other important land uses downstream.
3.2 Tourism and Conservation

Tourism has been identified in Vision 2030 as an important “employment generator, particularly in the rural areas where most tourism activities occur”. In 2007, the number of international tourists rose by over 6%, representing an additional 15 million arrivals compared to the same period in 2006.

According to the World Tourism and Travel Council, the travel and tourism industries’ direct contribution to the GDP of Namibia in 2010 is expected to be 3.1%, with the indirect contribution towards the GDP expected to be 13.2% in 2010. It is also expected that the direct contribution of the industry towards employment will be 4.6%, with the indirect contribution being 17.1% in 2010.

In 2006, the travel and tourism demand in Namibia, including all components of travel and tourism consumption, investment, government spending and exports posted N$9.3 billion in terms of economic activity, being 14.2% more than in 2005. The direct contribution to the GDP of Namibia was 3.9% in 2006, with the direct and indirect impact contributing 14.2% to the GDP of Namibia. According to the Namibia Tourism Satellite Account (2006) the travel and tourism industry accounted for 5.1% of total employment in 2006, while hotels and other lodging services contributed almost 50% of the industry’s employment. According to the Preliminary National Accounts compiled by NPC for 2009, the hotels and restaurant real value added has grown in 2009 with a growth rate of 8.5% compared to the growth of 2.7% in 2008.

According to Sherbourne, regional and international arrivals were up 34.6% and 43.4% in June 2010, but in comparison with the same period for 2009 they were down by 11.7% and 5.3% (Figure 4).

Figure 4: International and Regional Arrivals to Hosea Kutako International Airport (HKIA) (2005-2010)

Source: Namibia Airports Company
Overall regional arrivals were down with 1.6% in 2009 and international arrivals down by 2.7%. These statistics only include visitors arriving through Hosea Kutako International Airport (HKIA) and do not include overland visitors. This also does not reflect the purpose of the visits. Tourism suffered from reduced tourist arrivals in 2010 due to the Soccer World Cup that was held in South Africa.

According to statistics obtained from NTB for 2008, 26% of tourists arrived at Hosea Kutako airport with 33% arriving through the Northern Border Posts and 18% from the Southern Border Posts (Figure 5).

Caution: Even though the trends looks promising for tourism, concerns have been raised that tourism should not be seen as the only solution for economic growth and that in most cases it will have to be supplemented by a diversified economic base.

**Figure 5: Tourist Arrival Statistics 2008**

<table>
<thead>
<tr>
<th>Destination</th>
<th>Percentage</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hosea Kutako Airport</td>
<td>26%</td>
<td>243,603</td>
</tr>
<tr>
<td>Eros Airport</td>
<td>0%</td>
<td>1,450</td>
</tr>
<tr>
<td>Northern Border Posts</td>
<td>33%</td>
<td>306,441</td>
</tr>
<tr>
<td>North Eastern Border Post</td>
<td>13%</td>
<td>122,938</td>
</tr>
<tr>
<td>Southern Border Post</td>
<td>18%</td>
<td>160,909</td>
</tr>
<tr>
<td>Trans-Kalahari Border Post</td>
<td>7%</td>
<td>66,252</td>
</tr>
<tr>
<td>Other Airports</td>
<td>3%</td>
<td>29,519</td>
</tr>
</tbody>
</table>

Source: NTB

NTB statistics for the nationality of guests at accommodation establishments in Namibia for the period of January – December 2009 indicates that 29% of visitors are from Germany while 27% are Namibians with South Africans making up 12% of the visitors. These numbers can vary as the information is dependent on the frequency of information provided by accommodation establishments to the NTB. Of these visitors 48% visited Namibia for holiday purposes, 37% for purposes of visiting family/friends and 13% for business purposes (Figure 6).

Tourism statistics show that from 2005 until 2008 there has been a decrease in number of regional tourists visiting Namibia, while visitors from Europe increased by 4.89% and from other countries such as Australia, USA, Brazil and China the increase was by 14.47%.

According to the Namibia Tourism Satellite Account, the top ten destinations in Namibia in 2003 was Windhoek, Swakopmund, Walvis Bay, Sossusvlei, Namib-Naukluft Park, Fish River Canyon, Damaraland, Lüderitz, Spitzkoppe and Waterberg, indicating that three of the top ten destinations are located in the Karas Region.
Status Quo of Tourism and Conservation in Karas

Tourism in the Karas Region is mainly focused around the most southern part and western coastline of the region at the Fish River Canyon, the Namib-Naukluft Park, /Ai-/Ais Hot Springs Park, the Sperrgebiet, Lüderitz, Kolmanskop, the Orange River and the Orange River mouth. Tourism is very much related to conservation in the Karas Region with existing conservation areas such as the /Ai-/Ais Hot Springs Game Park, the Sperrgebiet National Park, the Namib-Naukluft Park, the Naute Recreation Resort and the Namibian Islands Marine Protected Area. These areas are under the jurisdiction of the Ministry of Environment and Tourism and the Ministry of Fisheries and Marine Resources and access by the public is regulated. Conservation is also taking place in the communal areas on the registered Communal Conservancies in the Karas Region.
Communal Conservancies

There are four (4) registered communal conservancies in the Karas Region and one (1) emerging conservancy.

The communal conservancies in the south of Namibia are not as well organized as some of the northern conservancies. The overall management and benefits from these conservancies are also much lower than and not as prominent as conservancies in the north. Most of the community living in the communal conservancies in the Karas Region are dependent on subsistence farming with small incomes being generated by means of shoot and sell activities and small distribution plans. Of the four registered conservancies in the Karas Region, only //Gamaseb and !Khop!Naub had audit reports with the last report being in 2008, while only some has distribution plans.

Table 13: Communal Conservancies

<table>
<thead>
<tr>
<th></th>
<th>!Khop!Naub</th>
<th>//Gamaseb</th>
<th>!Gawachab</th>
<th>!Han/Awab</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Size</strong></td>
<td>2,747km²</td>
<td>1,748km²</td>
<td>132km²</td>
<td>1,923km²</td>
</tr>
<tr>
<td><strong>Members</strong></td>
<td>429</td>
<td>495</td>
<td>158</td>
<td></td>
</tr>
<tr>
<td><strong>Approx. Population</strong></td>
<td>5,000</td>
<td>500</td>
<td></td>
<td>780</td>
</tr>
<tr>
<td><strong>Livestock/wildlife</strong></td>
<td>3,000 Springbok 100 Steenbok 200 Jackal 3,000 small stock 300 large stock</td>
<td>5,000-6,000 small stock Approx. 500 large stock Steenbok, Oryx, Springbok, Jackal</td>
<td>Steenbok, Oryx, Springbok, African Wildcat, Jackal</td>
<td>Oryx, Ostrich, Springbok, Kudu</td>
</tr>
<tr>
<td><strong>Unusual or important features</strong></td>
<td>Giant Quiver Trees Scenic landscape</td>
<td>Gamaseb Mountain Missionary station</td>
<td>Fish River, Naute Dam, Old railway station</td>
<td>Konkiep River Scenic landscape Nama Culture</td>
</tr>
<tr>
<td><strong>Enterprises</strong></td>
<td>Own use hunting, shoot and sell hunting (hunting quota for 150 springboks yearly).</td>
<td>Own use hunting</td>
<td>none</td>
<td>Leather crafts and jewellery</td>
</tr>
</tbody>
</table>
Table 13: Communal Conservancies

<table>
<thead>
<tr>
<th>Institutional facilities</th>
<th>!Kho!Naub</th>
<th>//Gamaseb</th>
<th>!Gawachab</th>
<th>!Han/Awab</th>
</tr>
</thead>
<tbody>
<tr>
<td>2x Primary Schools</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Blouwes and Tses)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 x Secondary School</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Tses)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Various Kindergartens</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinic (Tses)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Annual Income</th>
<th>ICEMA Project</th>
<th>Registration fees</th>
<th>Currently no source of income</th>
<th>Shoot and sell</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shoot and sell Skin</td>
<td></td>
<td>Shoot and Sell</td>
<td>Contribution: Agreement for monthly N$10-00 contribution, but due to high rate of unemployment this does not exist</td>
<td></td>
</tr>
<tr>
<td>Fundraising event</td>
<td></td>
<td>Fund raising = raffle draw/braai</td>
<td>Donations</td>
<td></td>
</tr>
</tbody>
</table>

| Benefit sharing          | 3kg meat to every household in the conservancy area | During the year 2010 there was a quota for 5 Springbok and 4 Ostrich | Benefit sharing, sharing according to household, so each household receives 3kg of meat. | There is a benefit plan and the decision was made that 35 Springbok will be given to the members for the year 2010. |

| Poverty alleviation      | Give training and workshop | The new management committee has a plan to establish: | Within this conservancy there is an unemployment rate of 85%, with 10% being of old age (pensioners). According to the conservancy, members are living below N$2-00 per day. | The Conservancy is in consultation with NDT and MET for a campsite that will assist with creating jobs for the young people. The site has been identified at (Gei /Garis). |
|                         | Employed as game guards   | • A Campsite Cultural village | • Training (any field) | • Initiate projects such as gardening, bricklaying, poultry farming etc. |

In 2008, 973 springbok were counted in the //Gamaseb conservancy and 2 Steenbok, with 55 Gemsbok being introduced and 310 Springbok. During 2008 a quota of 250 springbok was given to the //Gamaseb conservancy for hunting. In the !Kho!Naub conservancy, no live game were sold in 2008 and no trophy animals were hunted in 2008. ‘cont.’
Community based tourism

Existing and new tourism projects are planned for in the conservancy areas, mostly focusing on community campsites. The Brukkaros Community Camping Site is properly the most well-known site with the Brukkaros mountain as its main attraction. The site was recently upgraded and now has two chalets and 5 camping sites. The main problem with this enterprise is management and lack of water. This site is well situated for tourists being only 38km from the B1 main road, but due to poor management and water issues this site has not reached its potential. According to NDT the project has an average annual income of N$20,000 – N$30,000 which is obtained from entrance and overnight fees. The income from the project is to be used for community projects such as providing kindergartens, health projects and should be for the benefit of the community but currently the income goes back into provision of water to the camp site and salaries. Water provision at Brukkaros is a major setback for the camp site and several projects have been attempted, but they have proven to be expensive and not sustainable. A possibility of bringing in water from Berseba (approx 12km) via a pipeline has also been proposed, but the cost of the pipeline will be about N$200,000.

The new camp site at Ganigobes was officially opened in May 2010. The camp site is located 83km on the B1 road to Windhoek and 8km from the main road. Some 8 camp sites were provided at Ganigobes and the main attraction is the hot springs (about 50 metres from the campsite) and a waterfall during the rainy season.

The #Nudi Campsite in the !Khoib!Naub conservancy is still being developed. After completion the site will consist of 9 camp sites and the main attractions will be the quiver trees and wildlife. It is situated a mere 1 ½ km from the B1 main road.

---

Table 14: Number of game in each conservancy as reported during a game count in 2009 and the estimated population

<table>
<thead>
<tr>
<th>Species</th>
<th>!Han/Awab</th>
<th>!Khob!Naub</th>
<th>//Gamaseb</th>
<th>!Gawachab</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baboon</td>
<td></td>
<td></td>
<td>13 (64)</td>
<td></td>
</tr>
<tr>
<td>Gemsbok</td>
<td></td>
<td>3</td>
<td>500</td>
<td>780</td>
</tr>
<tr>
<td>Jackal</td>
<td>5,000</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kudu</td>
<td>3,000</td>
<td>5,000-6,000</td>
<td>Steenbok, Oryx,</td>
<td>Oryx, Ostrich,</td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>Approx. 500</td>
<td>Springbok, African</td>
<td>Springbok, Kudu</td>
</tr>
<tr>
<td></td>
<td>200</td>
<td>large stock</td>
<td>Wildcat, Jackal</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3,000</td>
<td>Steenbok, Oryx,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>small stock</td>
<td>Springbok,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>300</td>
<td>Jackal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ostrich</td>
<td>Giant Quiver Trees</td>
<td>Gamaseb Mountain Missionary station</td>
<td>Fish River, Naute Dam, Old railway station</td>
<td>Konkiep River Scenic landscape Nama Culture</td>
</tr>
<tr>
<td>Springbok</td>
<td>Scenic landscape</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Steenbok</td>
<td>4 (280)</td>
<td>11</td>
<td>3 (107)</td>
<td>4 (56)</td>
</tr>
</tbody>
</table>

()Estimated Population of species

Source: NACSO
The Snyfontein campsite is almost completed and after completion will have 8 camp sites. The main attraction at Snyfontein is the Fish River, the Quiver Tree Forest and close proximity to the proposed Neckartal Dam.

Naute Dam is Namibia’s third largest dam and is situated 50km south west of Keetmanshoop. The dam mainly provides water to Keetmanshoop and water for the irrigation scheme at the Naute Dam. The Naute Recreation Resort (game park) covers an area of 23,000 hectare with the area surrounding the dam being scenically attractive. The park is closed to the general public and only utilised for breeding of wildlife for sale and in some cases for hunting for special occasions (pers.comm. H. Tjihukununa). The Dam is popular with local fresh-water anglers and day visitors but only two campsites are provided. A 600 ha piece of land, south of the park, was de-proclaimed from the Naute Recreation Resort in 1996 and donated to the Municipality of Keetmanshoop for the development of a tourism resort. Unfortunately up to date no development has taken place.

Please see Chapter 5 for additional details on each of the following:

- /Ai-/Ais Richtersveld Transfrontier Park
- Transfrontier Conservation Area (TFCA)
- Sperrgebiet National Park
- Namib-Naukluft Park
- Naute Recreation Resort (game park)

**Private enterprises**

A number of accommodation establishments exist in the Karas Region such as the old hotels located within the urban areas of Seeheim, Bethanie, Koës, Lüderitz, Keetmanshoop, Grünau, Aroab, Oranjemund, Noordoewer, just to name a few. The number of Guest Farms and lodges on commercial farms are increasing in the region. The importance of private game reserves are increasingly being recognized as a long term sustainable alternate to conventional sheep or cattle farming practices, especially within the marginalized agricultural land found along the Namib-Naukluft Park and the lower parts of the Fish River (Community Tourism Market Research for the South of Namibia). The spectacular scenery offered at the coastal belt of the South is the main attraction for tourists frequenting the numerous upmarket lodges developed along the boundaries of the National Parks.

Private game reserves can play an important part in the development of communities and community tourism in general. Training of community members as guides for tours into the surrounding parks and training for skills such as cooks is an important empowerment tool.

**The Greater Fish River Canyon Complex (GFRCC)**

The Greater Fish River Canyon Complex is made up of a number of different farms around the /Ai-/Ais Richtersveld Transfrontier Park (the National Park includes /Ai-/Ais, the Fish River Canyon and the Huns Mountains). The GFRCC stretches from the Orange River in the south to the Naute Recreational Resort in the north and to the west it reaches the top of the Klein Karas Mountains. The vision of the Greater Fish River Canyon Complex is to “co-manage the Greater Fish River Canyon Complex for enhanced landscape and biodiversity conservation and socio-economic development.” The GFRCC is a public-private sector partnership of land owners, administrators and managers that share a common vision. “The focus is on the GFRCC, but within the context of contributing to sustainable development within the Karas Region, within southern Namibia and within the Richtersveld/Ai-/Ais Frontier Conservation Area.” The management plan will also make use of zoning to further optimally manage the area.
Gondwana Canyon Park

This private park was established in 1996 when farmers residing on farms on the eastern rim of the Fish River Canyon decided to preserve the 102,000 ha piece of land. The existing fences were removed and new water points for wildlife were developed. The park makes up part of the Greater Fish River Canyon Complex. Today there are 6 accommodation establishments within the park of which 4 are more established: that of Canyon Roadhouse, Canyon Lodge, Canyon Village and Canyon Mountain Camp. The Park owners are busy reintroducing wildlife species that have become extinct in the area. In addition, they offer mule trekking in the canyon.

Other Private Establishments

According to the Community Tourism Market Research for the South of Namibia, the majority of accommodation establishments fall within the distance of 50 km of the known tourist destinations in the south. This study indicates that the majority of these establishments tend to develop next to popular tourism routes or near to popular and internationally known scenic sites.

In 2009 an average of 35 establishments in the Karas Region provided data to the Namibia Tourism Board (NTB). The Average bed occupancy rate for 2009 was 30% in comparison with the 32% during 2008 (Table 15).

Table 15: Occupancy Rate for Accommodation establishments in the Karas Region

<table>
<thead>
<tr>
<th>Karas Region</th>
<th>2008</th>
<th>2009</th>
<th>2010 (only for period January–April)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Number of Establishments</td>
<td>55</td>
<td>35</td>
<td>33</td>
</tr>
<tr>
<td>Average Beds Available</td>
<td>42,444</td>
<td>28,323</td>
<td>17,680</td>
</tr>
<tr>
<td>Average Beds Sold</td>
<td>13,733</td>
<td>8,369</td>
<td>6,560</td>
</tr>
<tr>
<td>% occupied (average)</td>
<td>32</td>
<td>30</td>
<td>37</td>
</tr>
</tbody>
</table>

Source: NTB (the information is depended on data provided to NTB by establishments and might vary)

Tourism Concessions

There are three tourism concessions in the Karas Region, one in the Sperrgebiet and two in the Namib-Naukluft Park:

- Transgariep River Lodge cc has a concession in the Sperrgebiet National Park.
- Omalweendo Safaris has a concession for a 4x4 route from Lüderitz to Walvis Bay
- Aus Information Centre and Tourism Enterprise has concession rights for day trips to the wild horses, Koichab dunes, Dik Willem and Kirchberg rock paintings.

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69 Brown, C. A Co-management and development plan for the Greater Fish River Canyon Complex. First Draft. July 2006
70 Brown, C. A Co-management and development plan for the Greater Fish River Canyon Complex. First Draft. July 2006
71 No further information could be found on these concession areas
Trends in the Conservation and Tourism sector

A total of 100,340 tourists overnighted (bed nights) in the Karas region during 2009, showing a decline from 2007 to 2009 in visitors to the region (Table 16). In 2007 there was an average of between 76 and 91 registered accommodation establishments in the Karas Region (NTB) with camping sites being the highest number.

Table 16: Comparison of Bed nights sold for 2007-2009 in the Karas Region

<table>
<thead>
<tr>
<th>Number of visitors</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Karas Region</td>
<td>243,414</td>
<td>165,794</td>
<td>100,340</td>
</tr>
</tbody>
</table>

Source: Own calculations from NTB statistics

There has been a decrease in regional tourists since 2005, while visitors from Europe increased by 4.48%. There has been a slight decline in tourist numbers in 2009/2010 due to the international economic downturn and the Soccer World Cup held in South Africa. It is expected that tourism will grow by 6.9% until 2016. According to the WTTC, this makes Namibia the 13th fastest growing country in the world in terms of Travel and Tourism Total Demand. It is expected that the tourism market will recover over the next year.

According to the Statistical Report for 2006-2007 (MET) on tourism most tourists preferred tented lodges, tented camps, rest camps and back-packer facilities as these present a “more outdoor appeal” for tourists. The number of Namibians visiting accommodation establishments ranged from 22-27% during this period.

With the de-proclamation of the Sperrgebiet as a mining license area and the proclamation of the Sperrgebiet National Park as a park, the future of the SNP for tourism it is expected to increase the tourism potential in the region, leading to an increase in overall tourism in the region. Areas surrounding the Sperrgebiet will become ideal locations for tourism establishment and Lüderitz, Oranjemund, Rosh Pinah and Aus will likely become prominent tourist destinations.

Barnes and Alberts conducted a study on four proposed tourism activities around the Sperrgebiet National Park (Sperrgebiet land tours, Sperrgebiet boat tours, Campsites and Lodges) and what their potential impact would be on Lüderitz. It was estimated that the annual number of tourists that will likely visit Lüderitz will be 30,000. This will generate about N$17 million and N$25 million in terms of economic benefits to the town. This will directly support 187-272 jobs in the town and an additional 468-681 jobs in the wider Namibian economy. According to this study there is potential for up to five Sperrgebiet land tours and three Sperrgebiet boat tours, although an EIA would need to be conducted under the Concessions Policy and the Environmental Management Act in order to be entirely sure of the sustainability of the proposed options and sites. It was calculated that the net value to be added in Lüderitz could increase by up to 70% over a 20 year period.

Nature-based tourism is the main reason for tourists visiting Namibia with game viewing attracting 73% of visitors and bird watching attracting 62% in 1997. In 2003, nature and landscape touring contributed 51% and game viewing 45% to the nature-based tourism sector (Table 17).
Table 17: Estimated Net Value added to national income from wildlife-related activities (Us’000, 1996)

<table>
<thead>
<tr>
<th>Tourism Activities</th>
<th>Protected Areas</th>
<th>Communal Land</th>
<th>Private Land</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wildlife viewing</td>
<td>53,181</td>
<td>1,376</td>
<td>3,221</td>
<td>57,778</td>
</tr>
<tr>
<td>Trophy/Safari hunting</td>
<td>215</td>
<td>681</td>
<td>3,655</td>
<td>4,551</td>
</tr>
<tr>
<td>Recreational hunting</td>
<td>0</td>
<td>0</td>
<td>2,229</td>
<td>2,229</td>
</tr>
<tr>
<td>Shore and river angling</td>
<td>3,391</td>
<td>91</td>
<td>0</td>
<td>3,482</td>
</tr>
<tr>
<td>Non-tourism activities</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Venison production</td>
<td>0</td>
<td>24</td>
<td>1,229</td>
<td>1,323</td>
</tr>
<tr>
<td>Live Game sales</td>
<td>138</td>
<td>46</td>
<td>378</td>
<td>562</td>
</tr>
<tr>
<td>Own game consumption</td>
<td>0</td>
<td>28</td>
<td>3,978</td>
<td>4,006</td>
</tr>
<tr>
<td>Ostrich farming</td>
<td>0</td>
<td>0</td>
<td>3,556</td>
<td>3,556</td>
</tr>
<tr>
<td>Crocodile farming</td>
<td>0</td>
<td>0</td>
<td>265</td>
<td>265</td>
</tr>
<tr>
<td>Artisinal fisheries</td>
<td>0</td>
<td>344</td>
<td>0</td>
<td>344</td>
</tr>
<tr>
<td>Total</td>
<td>56,925</td>
<td>2,590</td>
<td>18,581</td>
<td>78,095</td>
</tr>
</tbody>
</table>

Source: Barnes & Ashley 1996, cited in Turpie et al.

The Community Based Natural Resource Management Programme (CBNRM) is one of Namibia’s projects aimed at unlocking the economic potential of wildlife and tourism in communal areas. Generally, community based tourism enterprises in Namibia fall into three categories: Joint Venture Tourism; Camp Sites; and Trophy Hunting. The income generated from these three community based tourism enterprises in Namibia from 1999-2007 contributed 71.5% to the tourism sector income. Income generated from trophy hunting in Namibia from 1999 – 2007 totalled N$24 million, while income generated from campsites totalled N$26 million and Joint Venture Tourism generated N$ 46 million. It is extremely important that the Karas Region start realising the importance of the game, conservation and tourism industry and start utilising the existing potential.

It is expected that more farmers in the Karas Region will diversify into tourism activities as different factors will contribute to this, one being the small stock scheme of the GRN and secondly because of a possible increase in tourism numbers in Namibia.

Caution: Even though there is potential for growth in the region in terms of the tourism industry, care should be taken and a diversification of income base should be perused. In 2009 the Karas Region only had an average of 30% bed occupancy rate. It is highly recommended that upscale sustainable tourism should be the main focus rather than unsustainable tourism initiatives that generate far less income.

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**Identified development initiatives**

Chapter 5 deals in more detail with each project. Projects identified during the KIRLUP process that will have a regional impact includes:

- a) Sperrgebiet National Park
- b) Ai/Ais – Richtersveld Transfrontier Park (ARTP) and the TFCA
- c) Land consolidation strategy to link the Sperrgebiet and /Ai-/Ais
- d) Potential for tourism at the Neckartal Dam
- e) South Tourism Area (Naute Dam)

**Findings on the Tourism and Conservation Sector**

The tourism sector holds immense potential for the region, but care should be taken as studies indicate that an alternative income base is needed together with tourism for economic viability in the Karas Region. Potentials alternatives are farming and tourism, tourism and hunting/wildlife viewing. Climate change will make livestock farming less profitable and less sustainable. A trend from livestock farming towards tourism and game farming may already be observed in the region.

Communal conservancies and community based tourism are not well organized in the south but have potential to be further developed. Lack of access to funding and communal land ownership is limiting factors. Planned community tourism projects require ongoing assistance in terms of training and product delivery.

The /Ai-/Ais-Richtersveld Transfrontier Park needs to be promoted by both Namibia and South Africa. The recommendation of the TFCA study (not yet endorsed by MET) needs to be considered. It is also recommended that the Kgalagadi Transfrontier Park be extended to include the Namibian part of the Kalahari, as suggested by Turpie et al (2010) and as supported by the SEA. This will further enhance the conservation value of the region.

The Fish River Canyon has the potential to be further developed in a sustainable manner, with high end and low end tourism camps to be able to offer different tourism products. Initiatives such as the Greater Gondwana Canyon Complex should be promoted in the region and this is fully supported by the LUP. The conservation value of such initiatives will assist in creating a stronghold for the region in terms of tourism and conservation potential. The SEA recommended that the continuity of areas under conservation management should be strengthened and suggested a motto “Karas Network Natura 2030”.

The Naute Recreation Resort holds the potential to develop a tourism resort linked to the park. The southern area that was de-proclaimed from the park should be investigated for such a potential. Community guided tours in the park have the potential to develop community based tourism products linked to the community hospitality industry.

The recommendations of the Sperrgebiet and /Ai-/Ais Management Plans should be reviewed carefully by MET. Only sustainable options should be implemented in order to generate tourism income. Suggestions made in the plans (such as off-road driving ‘sacrifice’ areas) should be discouraged as these are not sustainable, they degrade the purpose of a park, and they destroy what most tourists are attracted to in Namibia (nature-based tourism). Again, upscale sustainable tourism should be the main focus rather than unsustainable tourism initiatives that generate far less income. The Karas Regional Council should actively promote sustainable tourism in the Karas Region while discouraging unsustainable tourism.
The decreasing volumes of water of the Orange River and the over-exploitation of its water resources negatively impact the tourism potential along the lower Orange River, while also threatening the Ramsar site at the river mouth. The SEA reported that the conservation of the Orange River and the Ramsar wetlands are threatened by all developments along the river, and that heavy abstraction from mines and irrigation and the resultant polluted return flow into the river are the greatest threats. The SEA report further identified mining as a potential threat to this land use, but one which must be managed so that the impacts are considerably reduced.

Since mining has a highly negative irreversible impact on the environment, this land use is incompatible with the tourism sector which is highly reliant on nature-based tourism. In areas where mining takes place, all potential uses for tourism are destroyed both currently and in the future. Although mining contributes 16% to GDP, tourism contributes 13.2%. Once sustainability is incorporated into each land use, it is very clear that tourism should be prioritised as its contribution to GDP is sustainable over the long term. The mining sector should not be allowed to operate in or degrade Nature Parks, areas of high biodiversity or landscape value, or areas where tourism takes place. Mining is by definition an unsustainable land use whereas nature-based upscale tourism and game farming are both sustainable over the long term and directly benefit communities. This must be taken into account in all EIAs for prospecting and mining operations and also when deciding between the different possible land uses available.

Value adding between community projects such as gardening and fish farming projects and tourism should be encouraged so as to ensure greater sustainability of these products. Alternative land uses such as game farming for game meat production should be encouraged and markets for these products should be further investigated and encouraged.

**3.3 Mining Sector**

In 2008 the Mining industry contributed N$ 11.6 billion, which is about 16% of the Namibian GDP and made up 61% of the export sector in Namibia. The mining industry is important to the Namibia economy in terms of contribution to the GDP, export, tax revenue and employment. Diamond mining contributed N$ 5.5 billion and other mining and quarrying added N$ 6 billion. The Ministry of Finance budgeted that profits from tax from the mining industry for 2010/11 will amount to N$184 million from diamond mining and N$ 462 million from other mining activities. Diamond royalties are expected to yield N$ 252 million and other mineral royalties N$ 250 million. Taxes and royalties paid by mines in Namibia accounted for nearly 25% of its revenue.

Namibia is the fourth largest exporter of non-fuel minerals in Africa and the world’s fifth largest producer of uranium. Although diamonds and uranium together account for the bulk of export sales, other minerals, principally copper, silver, gold and lead-normally account for around a fifth of mineral exports by value (World Bank).

The Minerals Policy of Namibia provides the vision for the sector with the Ministry of Mines and Energy being the custodian of Namibia’s minerals, geology and energy resources. The NDP3 supports the mining industry but aims to add value to the mining sector through the introduction of diamond cutting and dimension stone processing facilities throughout the country.

The year 2008 was an exceptional year for the mining industry in Namibia. It was the first year since 1990 when the “contribution of non-diamond mining to the GDP exceeded the contribution” by the diamond mining sector (Chamber of Mines Annual Review) with the value of uranium exports exceeding the value of diamond exports. The year 2009 was a more difficult year for the industry with the value added from the diamond sector falling.
The economy of the Karas Region is mainly dependent on the mining, fishing and agricultural industries. The Private and Public Service sector employed 43.3%, the agriculture, hunting and fishery industry 34.4% and the mining industry together with manufacturing, electricity, gas, water supply and construction employed 17% of the Karas Population in 2001. It should be noted that the mining industry does not always employ Karas residents and mining employment figures normally only refer to employment in general. Sometimes the statistics may refer to Namibian employment, but these figures do not take into account that in the Karas Region it is very common for the mining industry to bring Namibian residents from the North and employ them in the Karas Region. This in itself has a potential negative impact on social structures in the Karas Region.

Status Quo of the Mining Industry in the Karas Region

Products mined in the Karas Region include diamonds at various locations and off-shore, zinc at Rosh Pinah and Skorpion Zinc. There are a number of smaller mines such as marble at Aus and gemstones at various localities. There are three existing mines in the region mined under ten Mining Licenses: Rosh Pinah Zinc Mine, Skorpion Zinc Mine and the diamond mining operations of Namdeb. The majority of the Karas Region is under Exclusive Prospecting Licenses (EPL) (Map 18).

Together with off-shore mining for diamonds there is also the Kudu Gas Field situated about 170km off-shore from Oranjemund. The development of the Kudu gas power plant at Oranjemund could develop into one of the biggest income generators within the Karas Region (Map 42, pg. 151).

There are four major role players involved in the mining industry in the Karas Region:

De Beers Marine

De Beers Marine is jointly owned by De Beers (70%) and NAMDEB (30%). The core business produced by De Beers Marine is rough diamonds that are sold to NAMDEB which is the license holder over the offshore mining areas. De Beers Marine is the marine prospecting and mining contractor for the offshore license areas held by Namdeb. During 2008 an output of 1,039 million carats was produced in comparison with 2009 in which only 600,000 carats were produced. The number of employees also sharply declined from 684 permanent workers during 2008 to 489 permanent workers. De Beers Marine spent N$455 million in 2008 on procurement of goods from Namibian Suppliers in 2008 and N$216 million in 2009.

In 2009, De Beers Marine had to reduce production levels because of the global economic crisis and the drop in demand for diamonds. De Beers Marine had to halt production at the beginning of 2009 and the entire fleet of 7 vessels was in the harbour for two months. According to the Annual Review of the Ministry of Mines and Energy “the outlook for diamond prices during 2010 and beyond remains fragile while fuel prices and the exchange rate add to uncertainty,” but the report also indicates that the demand in the markets in India and China remained strong.
**NAMDEB**

Namdeb is a 50:50 partnership that was created in 1994 between De Beers and the Republic of Namibia. The core business for Namdeb is diamond mining on 6 concession (license) areas, all of which fall within the Karas Region.

- Orange River (ML 42)
- Mining Area 1 (ML43) Sperrgebiet
- Bogenfels (ML44)
- Elizabeth Bay (ML45)
- Douglas Bay (ML46)
- Atlantic No. 1 (ML 47)
- Midwater (ML128A, B and C)

All diamonds mined at Namdeb are sold to the Namibian Diamond Trading Company (NDTC) for resale on both the international and local markets.

**Table 18: Mining operations for NAMDEB for 2008 and 2009**

<table>
<thead>
<tr>
<th>Namdeb</th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output</td>
<td>2,132,165 carats</td>
<td>929,000 carats</td>
</tr>
<tr>
<td>Number of employees</td>
<td>2,594 (permanent)</td>
<td>1,480 (permanent)</td>
</tr>
<tr>
<td>Profit</td>
<td>N$496.5 million</td>
<td>-</td>
</tr>
<tr>
<td>Turnover</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>Wages and Salaries</td>
<td>N$697.6 million</td>
<td>N$484.5 million</td>
</tr>
<tr>
<td>Corporate Tax Paid</td>
<td>N$ 1.2 billion</td>
<td>Zero, incurred losses in 2009</td>
</tr>
<tr>
<td>Royalty tax paid</td>
<td>$565.1 million</td>
<td>N$337 million</td>
</tr>
<tr>
<td>Fixed investment or exploration and prospecting</td>
<td>N$116.3 million</td>
<td>N$21 million</td>
</tr>
<tr>
<td>Procurement from Namibian suppliers</td>
<td></td>
<td>N$ 400 million</td>
</tr>
</tbody>
</table>

Source: Chamber of Mines Annual Review

It is estimated that the end of life for the Daberas Mine will be by 2012, but there are ongoing investigations into possible deposits at Sendelingsdrif and Obib taking place that might be promising. The area falls within the Sperrgebiet National Park.

“In response to the severe global economic downturn, Namdeb was forced to adopt unprecedented and far-reaching measures to enable it to ride out the economic storm” (Chamber of Mines Annual Review). In 2009, production costs were cut by 5% due to the instability in the world market and financial crises. This economic recession also forced Namdeb to start with reduction in its workforce and at the end of 2009 it had less than half of the number of people employed than in the previous year.
Skorpion Zinc Mine

The Skorpion Zinc Mine is rated the 8th largest Zinc mine in the world. It is situated on Mining License Areas ML 108 and ML127. The mine produces special high grade zinc for export to the world markets. The mine was sold by Anglo American to Vedanta recently. The latest life estimate for the mine is 2015. The company is currently busy investigating possible alternative ore deposits so as to extend the life of the mine. If none is found the mine will most likely close down within the next 6 years.

Table 19: Mining Operations at Skorpion Zinc Mine for 2008-2009

<table>
<thead>
<tr>
<th>Skorpion</th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output</td>
<td>145,396 tons</td>
<td>150,400 tons</td>
</tr>
<tr>
<td>Number of employees</td>
<td>690 (permanent)</td>
<td>694 (permanent)</td>
</tr>
<tr>
<td></td>
<td>44 (temporary)</td>
<td>58 (temporary)</td>
</tr>
<tr>
<td></td>
<td>176 (contract)</td>
<td>628 (contractors)</td>
</tr>
<tr>
<td>Profit</td>
<td>N$645.1 million</td>
<td>N$ 344.6 million</td>
</tr>
<tr>
<td>Turnover</td>
<td>N$ 2,288.9 million</td>
<td>N$ 1,962 million</td>
</tr>
<tr>
<td>Wages and Salaries</td>
<td>N$163.1 million</td>
<td>N$217 million</td>
</tr>
<tr>
<td>Corporate Tax Paid</td>
<td>N$41.8 million</td>
<td>N$28.8 million</td>
</tr>
<tr>
<td>Royalty tax paid</td>
<td>N$27.4 million</td>
<td>N$9.7 million</td>
</tr>
<tr>
<td>Fixed Investment</td>
<td>N$125.6 million</td>
<td>N$107.2 million</td>
</tr>
<tr>
<td>Procurement from Namibian suppliers</td>
<td>None</td>
<td>N$604 million of which N$58.7 million spend in Rosh Pinah</td>
</tr>
<tr>
<td>Exploration and prospecting</td>
<td>None</td>
<td>N$38 million</td>
</tr>
<tr>
<td>Water Usage</td>
<td>3.3Mm3/year. Need 22m3 of water per ton. On average 8 495m3/day water are used. With the same amount of water outlet</td>
<td></td>
</tr>
</tbody>
</table>

Source: Chamber of Mines Annual Review 2008 and 2009

In 2009 the mine produced a record of 150, 400 tons which contributed 2% to the country’s GDP. Despite the economic recession the mine remained profitable with a significant rise in prices for zinc during 2009.
Rosh Pinah Zinc Mine

Rosh Pinah Zinc Mine is an underground mine producing zinc and lead concentrates to Exxaro’s Zincor refinery in South Africa and world markets. It is owned by Rosh Pinah Mine Holdings (4.26%), Exxaro Base Metals Namibia (45.79%), PE Minerals Namibia (8%), Jaquar Investments (38.98) and Rosh Pinah Employee Empowerment Participation Scheme Trust (2.98%). The mine is held under ML 39. Recent discovery of new deposits has extended the life of the mine to 2017.

Table 20: Mining operations at Rosh Pinah Zinc Mine for 2008-2009

<table>
<thead>
<tr>
<th>Rosh Pinah Zinc Mine</th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output</td>
<td>94,236 tons (zinc concentrate)</td>
<td>94,000 (zinc concentrate)</td>
</tr>
<tr>
<td></td>
<td>20,155 tons (lead concentrate)</td>
<td>20,000 tons (lead concentrate)</td>
</tr>
<tr>
<td>Number of employees</td>
<td>523 (permanent)</td>
<td>593 (permanent)</td>
</tr>
<tr>
<td></td>
<td>13 (temporary)</td>
<td>10 (temporary)</td>
</tr>
<tr>
<td></td>
<td>236 (contract)</td>
<td>0 (contractors)</td>
</tr>
<tr>
<td>Profit</td>
<td>N$ 436.4 million</td>
<td>N$ 566.178 million</td>
</tr>
<tr>
<td>Turnover</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wages and Salaries</td>
<td>N$ 113.6 million</td>
<td>N$ 133.2 million</td>
</tr>
<tr>
<td>Corporate Tax Paid</td>
<td>N$ 8.5 million</td>
<td>N$ 9.290 million</td>
</tr>
<tr>
<td>Royalty tax paid</td>
<td>N$ 22.2 million</td>
<td>N$ 29.538 million</td>
</tr>
<tr>
<td>Fixed Investment</td>
<td>N$ 88.9 million</td>
<td>N$ 69.331 million</td>
</tr>
<tr>
<td>Exploration and prospecting</td>
<td>N$ 13.1 million</td>
<td>N$ 62.8 million</td>
</tr>
<tr>
<td>Loss</td>
<td>N$ 15.7 million</td>
<td></td>
</tr>
<tr>
<td>Procurement from Namibian suppliers</td>
<td></td>
<td>N$320.9 million of which 30% was spend in Rosh Pinah</td>
</tr>
</tbody>
</table>

Smaller /dormant mines

There are a number of smaller as well as dormant mines in the region. One which is now also used as a “tourist attraction” is that of the Sinclair mine. It was an old copper mine, but has not been in operation since 1998. Small scale mining is also taking place in the region, but to a lesser degree than in the Erongo and Kunene Region. The participatory planning that was held in Aus and Pfalz as part of the KIRLUP identified some small scale mining occurring at Aus where crystals and tourmaline are extracted by small miners. It was also identified that mining for slate takes place at Kosis where slate is abundant and there is a potential market in Lüderitz.

Haib Copper Mine is an old decommissioned mine. There are large copper deposits at Haib near Noordoewer. Various feasibility studies have been done for the Haib Copper Mine and despite this no mining has taken place since the closure of the mine.

Uranium

The surge in oil prices has resulted in a higher demand for non-fossil fuels and resulting in an increase interest in the uranium industry. It is expected that this demand and interest in uranium will continue to rise as developing countries such as India and China are growing and the need for fuel and energy increases. China and the USA are also considering the construction of additional nuclear power plants and this may also result in a future demand for uranium. However, this demand is highly reliant on a consistent world demand and if there were a nuclear disaster, the uranium mining industry could rapidly come to a standstill.
Deposits for uranium have been discovered in the Warmbad area, the Garub/Aus area as well as between Rosh Pinah and the Orange River. The EPL at Warmbad, Aus and Garub are licensed to Namura Minerals Resources (Pty) Ltd in cooperation with Xemplar Energy Corporation. The company has completed almost 80,000 metres of drilling in the Warmbad EPLs. Up to date no mining has started in these areas, mainly due to the economic recession, but in 2010, it was expected to be mined in the near future.

**Trends in the Mining sector**

The year 2009 was a difficult year for the mining industry especially for the diamond mining industry. It is however expected that the industry will show recovery for 2010 with possible markets opening up in China.

The rise in oil prices over the years has forced governments to focus on non-fossil fuels such as nuclear power plants for energy sources. This together with the growing markets in China and India will result in an increase demand for uranium. Large deposits of uranium were found in Namibia and in the Karas Region there are two possible sites at Warmbad and close to the Sperrgebiet. Both of the companies are still in the exploration phase. In 2006, Namibia was the 6th largest uranium producer in the world with 7.8% production level of the world total. The demand for uranium can be attributed to an increase in energy needs and demands and the fact that the total fuel cost for nuclear reactors are a third lower than for coal fired plants and a fifth of the price for gas combined cycle plants (Smith 2007).

In some circles, nuclear energy is considered a green option because it emits a significantly lower amount of greenhouse gases, but the ‘green’ label stops there. It needs to be pointed out that increased significant dangers exist once uranium is enriched (which is used for nuclear power stations). If there is a leak at a power station, the disasters caused by radiation on human health and the environment are irreversible and often immense. The world’s scientists also have not found any solution to storage and disposal of nuclear waste, since even after the substance has been used, it takes thousands of years to become stable to a point where it will no longer release dangerous amounts of radiation. This poses a substantial risk to current and future generations and the environment. According to Smith the perceptions of possible future scarcity of uranium resulted in record high prices in 2007, but scarcity of uranium is not the only factor and prices can change at any time due to other events.

**Caution:** If there is a release of radiation at any nuclear power station in the world, the entire uranium industry can shut down rapidly. There is evidence of this happening after Chernobyl in 1986. More recently, the disastrous earth quakes and tsunami in Japan in March 2011 damaged a nuclear power plant and radiation was released. The world was once again reminded of the dangers of nuclear power and as a result, within days the world uranium price dropped. This goes to show that the market demand for uranium is highly influenced by world events and can both rapidly and drastically decrease the economic viability of uranium prospecting and mining within countries such as Namibia.

Zinc is another important mineral that Namibia exports and Belgium, Japan and Korea are the top importers of Zinc. The price for copper and zinc has increased due to strong demand for these metals particularly from China and India.

It is difficult to predict the future of mining in the Karas Region as it is very much dependent on the world market and the discovery of deposits of minerals or resources. A large part of the Karas Region is under EPLs of which

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90 http://www.infomine.com/index/pr/Pa893442.PDF
at this stage only a few are active. A few years ago no one could predict the growth in mining in the Erongo Region and today the Erongo Region is one of the biggest producers of uranium in Namibia. Such a ‘boom’ in mining generally has some immediate positive effects, but long term effects can be disastrous if mining is not done with caution.

**Identified development initiatives**

There are 11 approved mining licenses in the Karas Region with about 58 EPL’s granted to various companies by MME during August 2010 (Map 18). Due to the extreme difficult nature to predict the next boom in the mining industry, the land use plan will mainly focus on the existing situation.

**Kudu Gas**

The Kudu Gas Field was discovered in 1974 and is located about 170km off-shore from Oranjemund. Since 1974 a number of companies held the license for this field. NamPower is currently busy with negotiations with the license holder to utilize this gas field of 1.3TCF to generate power for Namibia and for distribution to neighbouring countries. The gas will be taken from the gas field via an underwater pipeline to a proposed 800MW combined cycle gas turbine (CCGT) power plant at Oranjemund (Map 42 pg. 151).

**Warmbad, Aus and Garub**

Deposits of uranium have been discovered at Warmbad, Aus and Garub. These areas are currently under EPLs (Map 18, page 99) while testing and viability of the deposit is established.

**Findings and recommendations on the Mining Sector**

Karas has a strong mining sector. However, concerns have been raised as to the long term sustainability of this sector as resources may be depleted over medium to long term which will result in a dramatic decline in job opportunities within the mining and associated sectors.

The impact of mines on the ecology and environment may be much larger than currently known (i.e. water requirements, groundwater or soil contamination, effect on biodiversity, etc.). The SEA reported significant pollution threats (contamination of soils and groundwater by heavy metals) detected at Rosh Pinah and this are identified as a **RED FLAG**. The threat of long-term contamination needs to be properly addressed in the closure plans of this and all mines, so that there is not a legacy of pollution and health risks left by the mines.

Exclusive Prospecting Licences (EPLs) for minerals grant the holder access to any land, and almost the entire Karas Region is covered by EPLs. This is a potential problem in areas that are under farming or conservation management because drilling can cause a hazard to livestock, animals and people and the increased level of off-road driving and poaching can destroy the environment which also has a high wilderness value which is important for other land uses.
An important principle for new mines is that they should not start up new settlements (e.g. for accommodating labour), but should rather invest in existing towns. This is to prevent the future occurrence of ghost towns after mine closure. As part of their social responsibility, mines should invest in training and capacity building programmes that will help to build skills for a diversified economy after closure. The legacy of the mine should continue in improved social and economic conditions, and sustained environmental health, after the mineral resources have been removed. An idea to consider for the future of Rosh Pinah after closure of the mines is to use the town as a centre for solar power generation, research and development (SEA report).

MET must protect the environment through prevention of mining in sensitive areas, increased capacity, and the monitoring of impacts. The Karas Regional Council, MRLGHRD and MME need to establish a policy on how mining towns are to be managed in the future.

Mining companies must engage in development projects having the aim to diversify the local economies and contribute towards the sustainable development of the Karas Region. The recommendation by the SEA report that new mines should not start up with new settlements (for example labour accommodation), but should rather invest in existing towns is fully supported by this land use plan. The aim is to prevent future occurrences of ghost towns after mining closures. In line with Vision 2030, the government may consider developing additional incentives to mines which encourage the processing and manufacturing of goods/products.

3.4 **Energy Sector**

NamPower is the national power utility company in Namibia and specializes in the generation and transmission of electricity. The region is served with a well distributed electricity network. Electricity for urban areas is provided by NamPower. The Regional Electricity Distributors (REDs) are legal entities which have been tasked with the supply and distribution of electricity in a region, combining the electricity distribution departments of the Local Authorities, Regional Councils and NamPower. A few regional REDs have been established but up to date no RED has been established for the South of Namibia.

Namibia’s main sources of electrical power are the thermal, coal-fired Van Eck Power Station near Windhoek (120MW), the hydroelectric plant at Ruacana (240MW), the diesel-driven Paratus Power Station at Walvis Bay (24MW), another diesel-fired power station at Katima Mulilo (3MW), and two interconnecting lines from ESKOM South Africa (200MW + 500MW).

The main in-feeds for the Karas Region are a 220kV and a 400kV interconnector from South Africa to Kokerboom Transmission Station (T/S). Major Transmission Stations along the 220kV line are Harib, Karas T-off and Kokerboom. The 400kV power line has also been extended to Obib T/S from Kokerboom T/S. Noordoewer is connected to Harib T/S via a 132kV line (operated at 66kV). From Kokerboom T/S a 132kV line extends west to feed Namib Distribution Station (D/S), via Konkiep D/S and Aus D/S, while another line, at 66kV, extends east to supply Nabas D/S. Another 132kV line also extends west from Harib T/S to the Rock T/S. Further 66kV lines connect Lüderitz D/S with Namib D/S and Aussenkehr D/S with Noordoewer D/S.Berseba, Tses, Aroab, Koës and their surrounding areas are supplied by 33kV networks from Kokerboom. Ai-Ais and Karasburg receive power from the Karas T-off T/S at 22kV. Oranjemund and Rosh Pinah are supplied at the 66 kV cross-border from South Africa. Ariamsvlei and a few dedicated locations along the Orange River are also supplied from South Africa, at 22kV. (Karas Rural Electrification Master Plan 2005).
In 2001, 31% of the rural population in the Karas Region had access to electricity while 65.7% of the urban population had access to electricity.

Ministry of Mines and Energy together with NamPower has committed itself towards a Rural Electrification Programme. The first Rural Electrification Master Plan was completed in 2000 with a follow up in 2005. A total of 1,237 house connections have been made in the region between 1991 and 2005 costing approximately N$6.4 million. There are approximately 1,827 commercial (resettled and private) farms in the Karas Region of which about 10.29% has access to grid electricity.

In 2005 there were 327 rural localities in the Karas Region of which 270 were not electrified. Together with grid electricity there is also a program for Off-grid electrification in the Karas Region. The off-grid program is focused on rural areas that are not expected to receive grid electricity within five years or longer. These localities will be assisted with renewable energy sources such as solar.

In 2005, with the compilation of the Rural Electrification Master Plan, it was estimated that 246 localities in the region will be assisted under this off-grid program.

Table 21: Comparison of utilization of electricity in Namibia.  

<table>
<thead>
<tr>
<th>AREA</th>
<th>No &amp; % using electricity for lighting</th>
<th>% both rural and urban</th>
</tr>
</thead>
<tbody>
<tr>
<td>Namibia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>254,389</td>
<td>(8,567) 24%</td>
</tr>
<tr>
<td>Urban</td>
<td>136,909</td>
<td>(92,632) 67.66%</td>
</tr>
<tr>
<td>Caprivi</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>18,061</td>
<td>(855) 5%</td>
</tr>
<tr>
<td>Urban</td>
<td>4,748</td>
<td>(3,048) 64.1%</td>
</tr>
<tr>
<td>Erongo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>13,453</td>
<td>(7,159) 53%</td>
</tr>
<tr>
<td>Urban</td>
<td>22,036</td>
<td>(18,797) 85.3%</td>
</tr>
<tr>
<td>Hardap</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>13,358</td>
<td>(3,957) 30%</td>
</tr>
<tr>
<td>Urban</td>
<td>6,474</td>
<td>(4,603) 71.1%</td>
</tr>
<tr>
<td>Karas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>12,046</td>
<td>(4,888) 41%</td>
</tr>
<tr>
<td>Urban</td>
<td>8,373</td>
<td>(5,501) 65.7%</td>
</tr>
<tr>
<td>Khomas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>33,662</td>
<td>(26,186) 78%</td>
</tr>
<tr>
<td>Urban</td>
<td>54,707</td>
<td>(39,398) 71.9%</td>
</tr>
<tr>
<td>Urban</td>
<td>11,737</td>
<td>(7,007) 59.7%</td>
</tr>
</tbody>
</table>

Source: Rural Electrification Master Plan for Namibia (MME)
The Karas Region has no existing renewable energy project as yet. One license has been issued by the ECB to Aeolus Power Generation for a 44MW Wind Farm Project at Lüderitz. The license was given for a 22 year period and another to VTB Capital Namibia for a small hydro power project of 30MW on the Orange River. NamPower is currently busy with negotiations to collaborate with Clackson Power Company to establish 9 small distributed hydro-electric run of the river power stations along the Lower Orange River. Although hydro-electric is a renewable energy resource, there are still many negative environmental consequences of these power stations since even the more environmentally friendly run of the river technique requires some amount of damming. An EIA must be done for any hydro-electric power station set to take place in any watercourse. Environmental and social effects must be considered along with competing land uses which would be negatively affected by the stations. Sustainability should be addressed and plans adjusted accordingly.

Access to fuel wood for cooking is a growing concern in the region. Areas such as Aus are experiencing problems with the availability of firewood for cooking and conflicts arise when community members enter neighbouring commercial farmland when collecting fuel wood. According to the Aus Management Plan no fuel wood should be collected from areas “zoned” as conservation, but due to the availability problem the community makes use of the conservation areas for firewood collection. According to the 2001 Household and Population Census about 35% of the Karas Population relies on wood and charcoal for cooking, while 31% utilize gas for cooking and 27% make use of electricity for this purpose.

Approximately 45% of the urban population makes use of gas while 36.4% utilizes electricity for cooking. The rural population is more reliant on wood/charcoal (66%) with only 15.3% using electricity and 14.3% making use of gas for cooking. In terms of energy used for lighting, the majority of the population in the region rely on Electricity (49.5%), while 30% relied on candles.

**Trends in the Energy Sector**

In terms of energy, Namibia’s total annual per capita energy consumption was approximately 7.5MWh in 2007. According to Von Oertzen, Namibia’s energy intensity is attributed to:

- The dominant economic sectors such as mining and agriculture which are highly energy dependent
- The country’s low population density coupled with high domestic energy use
- The long transport routes to the country and between the few major centres
- The high reliance on imports of fuels, consumer goods and manufactured goods.

Between 1985 and 2002, Namibia’s electricity demand grew at an average rate of 3.62%, to 390 MW in 2004 and is expected to grow by an average of 4% until 2012 to 550MW. The increase in mining activity will also lead to an increase in energy demand. Namibia’s peak demand for energy exceeded 500MW in 2008, with the amount produced in Namibia amounting only to 387MW (von Oertzen) making Namibia highly dependent on the import of energy from South Africa and Zimbabwe.

As South Africa’s energy supply is declining, Namibia will have to look at alternative sources of energy either by generating its own energy or from neighbouring countries. The assumed growth rate is in line with the countries development objectives, which estimates an average annual GDP growth of 6% from 2001 to 2030. This growth will be driven by growth in the agricultural and manufacturing sectors, which are expected to become highly export oriented in the future.
The investment and development of future sources of energy, including fossil fuels such as coal (e.g. around Aranos), natural gas (Kudu gas field) and oil (mainly off-shore) offers real and potential interesting opportunities in the national energy sector (Von Oertzen). Namibia’s solar potential is also very high, but due to high costs, limiting legal frameworks and NamPower’s monopoly over the energy sector the renewable sector is finding it difficult to develop. There is however an increasing realisation that solar power generation needs to be encouraged as an additional source of power generation. The use of solar power at rural settlements and at industrial nodes needs to be investigated for example, the use of solar energy at Rosh Pinah could be taken into account in a PPP partnership where research, manufacturing and power generation can be encouraged.

**Identified development initiatives**

- Kudu Power Project
- Renewable Energy
- Lower Orange Hydro-Power Scheme (LOHEPS)

**Findings and recommendations on the Energy Sector**

The Karas Region holds the potential to develop renewable energy projects (solar/wind/hydro) as well as the Kudu Gas project which could assist in the development of the region. One recommendation by the SEA report is that Rosh Pinah and the mine facilities can be utilized as a solar power “hub” which can help maintain the life of the town after closure of the mines. Electricity generated from these solar plants can be utilized to power desalination at the coast, therefore providing water for Oranjemund and Rosh Pinah and possible a few mines. However, desalination is costly and may have massive impacts on the environment, so such an initiative should be preceded with caution and with an EIA. All possible options to use the recommended solar field should be explored, not just desalination.

The possible Lower Orange Hydro Electric Power Stations (LOHEPS) indicated some possible conflicts surrounding the health of the ecosystem and land uses that rely on water downstream of the stations on the Orange. Although run of river schemes are less damaging, normally they do require some dams which have negative impacts of their own. The project is vulnerable to continued adequate flows in the Orange and there remain risks of impacts on the wetland ecosystems.

The most important impacts of power lines are aesthetic, as well as the dangers to birds such as large raptors and bustards which suffer mortalities from electrocution and collisions. These impacts can be mitigated through careful routing of lines and specific bird-related measures (SEA report 2011).

Domestic energy needs in towns are largely supplied by electricity and paraffin, but there is heavy reliance by low income groups on wood. The alien invasive tree, Prosopis, is the main source of wood for energy, and the SEA suggested that it should continue being used for this purpose. Its removal should not be targeted by others unless it is severely harming the environment or the natural flow of a water courses because it is a major source of energy for communities according to the SEA report (SEA report 2011, pg67).
3.5 Infrastructure

The Karas Region has a relatively well developed infrastructure network. Due to the size of the region, 161,325km², much of these services are located within the bigger urban areas such as Karasburg, Grünau, Keetmanshoop, Lüderitz and Oranjemund with the road network being relatively comprehensive throughout the region.

Roads, Railways, airports, harbour, border posts

Keetmanshoop is considered to be the capital of the south and has direct air, rail and road links with Windhoek, South Africa and the rest of the region. The B1 provides a central north-south transport corridor, connecting the south with the Khomas Region to the north, and to South Africa in the south. Most of Namibia’s imported goods from South African commercial centres, such as Cape Town and Upington are imported by road along the B1. Urban areas such as Keetmanshoop and Grünau provide important supporting services to the transportation industry, such as fuel, motor repair and accommodation (Map 19).

Namibia’s north – south rail line runs parallel with the B1 linking Keetmanshoop with South Africa. From Keetmanshoop a rail link to Aus and Lüderitz has been constructed, but the Aus – Lüderitz section is currently not operational as it is in the process of re-construction. The Aus – Keetmanshoop rail link currently plays an important role in transporting ore from the Rosh Pinah mine to the South African smelters. Once the Aus – Lüderitz rail section has been rehabilitated, the harbour town of Lüderitz can be re-connected to the national rail system (Community Tourism Market Research for the South of Namibia).

Keetmanshoop, Oranjemund and Lüderitz each have an airport with custom offices at Oranjemund and Keetmanshoop. From Oranjemund there are flights to Cape Town, Lüderitz, Walvis Bay and Windhoek. There are several private airstrips that have been constructed on commercial farms in support of the lodges and associated tourism activities offered. The highest concentration of these airstrips is located along the eastern edge of the Namib-Naukluft Park and the Sperrgebiet.

Lüderitz has a deep-sea harbour which has been used in the past only for the fishing industry but over the years has gained importance with the mines making use of this harbour. A number of white fish as well as crayfish boats are also based at the Lüderitz harbour. The Lüderitz harbour had a total import of 126,497 freight tons for the year 2007/08 and a total export of 56,791 freight tons.

There are 8 border posts in the Karas Region at:

- Velverdient/Mata Mata
- Klein Manasse/Rietfontein
- Hohlweg
- Ariamsvlei
- Velloorsdrif
- Noordoewer
- Sendelingsdrif
- Oranjemund

The recent opening of Sendelingsdrif and the Mata-Mata gate is an important aspect in unlocking the potential of the Karas Region as it opens up new areas for development and growth.
**Water Infrastructure and Water Resources**

NamWater and MAWF are the two organizations involved in provision of water in the Karas Region. According to the Central Bureau of Statistics 94% of all households in the Karas Region has access to safe water.

NamWater is the bulk water supplier in Namibia to urban areas and settlements while the MAWF focuses on water supply for rural and communal areas. Commercial farmers provide their own water by means of boreholes which is also regulated by MAWF. There are five dams in the Karas Region at Naute Dam, near Keetmanshoop, Van Rhijn, Ubib and the Dreihuk Dam near Karasburg which are run by NamWater and various smaller NamWater schemes in the Karas Region providing water (see Annexure B for a list of NamWater schemes). A total of 22 NamWater schemes exist in the region and approximately 361 communal boreholes (Karas Rural Electrification Distribution Master Plan for Namibia - 2005). The Dreihuk Dam on the Hom River supplies water to Karasburg. The full storage capacity of the reservoir is 16 million cubic metres and the water supply to Karasburg is augmented from the Bondelsdam and a number of boreholes. There is a small water treatment plant with a capacity of 50 cubic metres per hour at Karasburg, about 5 kilometres from the Dreihuk Dam.

Most of the groundwater resources in the rural areas of the Karas Region are dependent on boreholes. According to MAWF, the water quality of these boreholes is usually B or C grade and not of good quality. The Orange River is also a source of water for urban use, mining activities and irrigation farming. There was a bilateral accord with South Africa allowing Namibia to extract 50Mm³/annum from the Orange River. This was increased to 110Mm³/annum until 2007, whereafter South Africa needed the water itself and wished to revert back to 50Mm³/annum. All water to be used from any watercourse (including the Orange River) needs an extraction permits from MAWF. Other activities that might change the flow of the river or damage the vegetation or soil also need permits by MAWF. A study was done in 2005 for the Orange Senqu River Commission (ORASECOM) in which the demand for water in the Orange River Basin was identified for 2005 and water demand projections were done for 2015 and 2025 (Table 22). A large part of the Karas Region is covered by the Orange-Fish River Basin (Map 20).

According to the estimations by ORASECOM, the irrigation sector was the biggest user of water from the Orange River Basin in 2005. The predications for 2015 and 2025 show this trend continuing with the irrigation sector surpassing the mining sector in water usage

**Table 22: Estimated water requirements in the Orange River Basin within Namibia**

<table>
<thead>
<tr>
<th>Consumer group</th>
<th>2005</th>
<th>2015</th>
<th>2025</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>14.74</td>
<td>15.97</td>
<td>17.47</td>
</tr>
<tr>
<td>Rural</td>
<td>0.317</td>
<td>0.32</td>
<td>0.324</td>
</tr>
<tr>
<td>Livestock</td>
<td>16.42</td>
<td>16.82</td>
<td>16.42</td>
</tr>
<tr>
<td>Irrigation</td>
<td>118.81</td>
<td>217.32</td>
<td>303.52</td>
</tr>
<tr>
<td>Mining</td>
<td>7.35</td>
<td>37.75</td>
<td>38.23</td>
</tr>
<tr>
<td>Tourism</td>
<td>0.56</td>
<td>0.69</td>
<td>0.85</td>
</tr>
<tr>
<td>TOTAL</td>
<td>158.20</td>
<td>288.47</td>
<td>376.82</td>
</tr>
</tbody>
</table>

86 Source: Orange River Integrated Water Resources Management Plan. ORASECOM
**Trends in the Infrastructure Sector**

As there is limited data with regards to infrastructure, it is difficult to assess the growth of infrastructure in the region. A tendency of increasing infrastructure exists on the regional level with new proposed projects such as the Neckartal Dam, possible Kudu Gas Power Project, a hydroelectricity project on the Orange River, upgrading of the Bethanie-Maltahöhe-Solitaire-Walvis Bay Road, possible bridge at the Fish River Confluence, Trans-Kalahari Railway line and renewable energy projects (wind farms).

Water demand for the region is expected to increase and water abstraction from the Orange River will also increase with the proposed T andjieskoppe irrigation scheme and possible new mining operations in the region. The opening up of the Sperrgebiet might also contribute to an increase in water demand from the tourism side.

The proposed Neckartal Dam might also contribute to more infrastructures being required in the region especially around Keetmanshoop. It is possible that the existing airport at Keetmanshoop will be upgraded or expanded for export purposes from the Neckartal irrigation scheme in the future. It is however also a concern that developments such as the Neckartal Dam and the irrigation scheme will contribute to an influx of people seeking work at the irrigation scheme.

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**Caution:** If the Municipality of Keetmanshoop is not prepared (in terms of services provisions, housing provision and social service provision) this can have a negative impact on Keetmanshoop.
Identified development initiatives

Although a number of projects and initiatives were identified during the process, information on these projects was limited. Chapter 5 will discuss each of the following initiatives in further detail.

- Upgrading of Aus-Lüderitz Railway Line
- Trans-Kalahari Railway Line
- Bethanie-Maltahöhe-Walvis Bay Road
- Neckartal Dam
- Vioolsdrift/Noordoewer Dam
- Deep Water Port at Shearwater

Findings and recommendations on the Infrastructure Sector

The development of an industrial harbour at Lüderitz holds the potential to serve southern Namibia, the Northern Cape and Botswana and this together with the possibility of the Trans-Kalahari Railway line from Botswana (still in feasibility stage) will open up immense potential for the Karas Region.

Karas is an arid region and the scarcity of water hampers development. The development of the Neckartal Dam may however lead to the development of spin-off economic activities, especially at Keetmanshoop. However, caution should be recognized as dams can have highly detrimental irreversible environmental impacts on the downstream sensitive ecosystem as well as cumulative impacts on other land uses as discussed in the SEA report. The Neckartal Dam has been identified as a red flag area by the SEA. The KIRLUP however identifies the positives that the Neckartal Dam will have and the benefits for the Keetmanshoop Municipality if the Municipality is prepared in advance for the influx of people. The benefits derived by Keetmanshoop should be weighed against the needs of the region in terms of other land uses as well as the environment and communities downstream. If this dam is indeed approved, it is recommended that the Keetmanshoop Municipality start planning for the development in terms of provision of services, erven, houses and social services. Furthermore the need to increase the capacity at schools, medical and other institutional facilities must be addressed and attended by the Line Ministries responsible to provide these social services.

Keetmanshoop and, to a lesser extent, Lüderitz are the only urban nodes in the Karas Region having well developed institutionalized sectors. These sectors need to be strengthened rather than diversified. As proposed by the SEA report the Karas Region is in urgent need of skills training facilities. It is recommended that a skills training plan be established for the Karas Region to find ways to incorporate all facets of the economy, (such as mining, tourism, farming, fishing and irrigation) into the program and for training in the much needed skills.
3.6 Fishing Sector

Fishing in this chapter includes marine fisheries, mari-culture and aqua-culture. The fishing industry in Namibia is very much dependent on the export of products to traditional markets. The European Union is Namibia’s biggest export market, with hake making up the main export. Discussions are under way to include fisheries into free trade. The fishing industry in Namibia is one of the main contributors to the Namibian GDP and contributed about 6.5% in 2004, showing a decrease from 7.9% in 1998. This decrease can be attributed to stringent conservation and management measures with regards to the hake industry. During 2004-2008 Namibia’s average annual catches amounted to approximately 572,460 metric tons valued at N$3.7 billion. The biggest increase in the fishing industry is that of fish processing which increased by over 36% between 1998 and 2002.

Namibia’s 200 nautical mile Exclusive Economic Zone (EEZ)’s contain about 20 different species consisting primarily of small pelagic species (pilchard, anchovy, horse mackerel and mackerel), lobster (along the shallow onshore waters on the continental shelf), large pelagic species (including adult mackerel and demersal hake) and other deep sea species in the waters further offshore (monkfish, sole and crab). Namibia’s marine capture fisheries are based on 7 species: horse mackerel, hake, pilchards, monkfish, orange roughy, crab and lobster. The horse mackerel fishery has the largest landings (over 300,000 MT annually), but it generates less revenue than the hake fishery which is exported to the EU and reaches better prices.

Other species such as orange roughy and snoek are caught in much smaller quantities but have high unit values. Hake and horse-mackerel account for 80% of the marine resources each year. The hake fishery is the largest employer in the sector and accounts for about 60% of the value of fisheries production. In 2006, an estimated 13,400 people were employed by the fisheries industry in Namibia.

The Total Allowable Catch (TAC) for most major commercial fish species remained more or less unchanged during 2004-2008, with the TAC for hake decreasing during 2006-07 in order to preserve and conserve stock rebuilding. The Cabinet has approved a TAC of 140,000 mt for Hake and 9,000 metric tons for monkfish for the fishing season 1 May 2010 to April 2011. It is estimated that the income to GRN from the hake TAC will be approximately N$75.5 million and from the monkfish N$6.7 million.

Approval for culling of 80,000 seal pups and 6,000 adult bulls was granted for the year 2010-2012. The rock lobster industry had a 325 tons TAC for the year 2009, but only 83% of the TAC was landed by the companies in Lüderitz. The TAC for rock lobster can vary from between 350-400 tons.
Fishing rights are granted for 7, 10, 15 and 20 years. There are 155 fishing rights in Namibia of which 150 have rights for 15 years and 4 have rights for 10 years.

The Directorate of Aquaculture was established with regional offices in order to boost the aqua-culture industry in Namibia. An Aquaculture Inter-Ministerial Committee was also established to assess aquaculture applications and issuing of licenses. According to MFMR up to date 92 aqua-culture licenses have been issued. Aqua-culture production accounts for about 670 metric tons (MFMR Strategic Plan). The main aims of aqua-culture are to alleviate poverty, create employment and satisfy local consumption needs.
The mandate of the Ministry is derived from various policy and regulatory instruments. The primary policy and regulatory instruments for the MFMR are:

- The Marine Resources Act 2000 (Act No. 27 of 2000);
- The Marine Fisheries Regulations (Government Notice No. 241);
- Regulations relating to the exploitation of marine resources, 2001;
- Namibia’s Marine Resources Policy: Towards Responsible Development Management of the Marine Resources Sector (August 2004);
- The White Paper on the Responsible Management of the Inland Fisheries of Namibia (1995);
- Inland Fisheries Resources Act (No.1 of 2003);
- Aquaculture Policy;
- Aquaculture Act (No.18 of 2002); and
- Aquaculture Regulation on Licensing.

Commercial marine aquaculture (mari-culture) is currently dominated by oyster production in Walvis Bay, Swakopmund and Lüderitz. Culture methods include baskets suspended from rafts and longlines and onshore raceways and ponds. Due to the red tide disaster in 2008 the marine aquaculture industry in Namibia suffered a major setback.

**Status Quo of Fishing industry in the Karas Region**

The Karas Region only has one harbour at Lüderitz. The Lüderitz economy is mainly supported by the fishing industry. Recent increases in fishing stocks and the diversification of the industry into mari-culture has shown great potential for the economy of Lüderitz. Diversification into seaweed (kelp) and oyster farming at Lüderitz has opened up new potentials for development and employment in the industry.

Inshore fisheries are limited along the coast in the Karas Region mainly due to few harbours and protected landing sites. The fishing industry at Lüderitz is mainly dependent on Hake, Rock Lobster, Tuna and Swordfish. There are six (6) companies operating from the Lüderitz harbour with 4 processing facilities. The hake industry is the main industry and its peak season is from October to May/June the following year. Rock Lobster is a seasonal industry starting in November and ending in April the following year. Rock Lobster is only fished at Lüderitz with an annual production of 350-400 tons. Tuna is a migratory fish and seasons are mainly from October to May/June the following year. There are two types of Tuna processing- freezer fishing which is done on the vessels and wet fish, which is processed on shore adding value to the industry.

Guano is also being harvested at Lüderitz with one company having a license for the harvesting. The guano harvesting is dependent on the stockpiles on the islands and is mainly exported to Cape Town for fertilizer. Some 175 tons of guano was collected in the year 2010. Seals are also harvested by one company and the TAC for the year has been 30,000 pups and 2,000 bulls (per.comm Mr. Bester).

Angling from the coast is also popular and catch is limited if it includes overexploited stocks of Steenbras, Galjoen, Kob and Blacktail (NACOMA). There are a few operators that conduct deep sea boat-angling tours for species such as Snoek, Broadnose sevengill shark, Yellowtail, Tuna and Bluntnose spiny dogfish.
**Mari-culture**

Currently there are three (3) mari-culture farms in Lüderitz. One farm is producing abalone as well as oyster, while the remaining two farms are producing abalone, oyster and rock lobster. Abalone is mostly exported to China and Hong Kong. One seaweed farm is also currently operating in Lüderitz. The annual export of abalone and oyster at Lüderitz is estimated to be 2.9 metric tons. According to NACOMA, Lüderitz is well suited for further aquaculture development due to its sheltered bays and lagoon and suitable infrastructure. Mari-culture ranching also takes place at the Halifax, Seal and Penguin Islands.

**Aquaculture:**

The following information was provided by the Aquaculture directorate in the Ministry of Fisheries and Marine Resources for aqua-culture taking place in the Karas Region.

### Table 24: Aquaculture project in Karas Region

<table>
<thead>
<tr>
<th>Name of farm / project</th>
<th>Scope of farming</th>
<th>Size of pond/dam used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fonteintjie Fish Farm</td>
<td>Intensive fish farming; 6 circular concrete ponds</td>
<td>Not available</td>
</tr>
<tr>
<td>Snip River Farm</td>
<td>Small scale fish farming; 2 circular concrete ponds</td>
<td>± 25 m³ each</td>
</tr>
<tr>
<td>Blouwes</td>
<td>Small scale fish farming; 2 circular concrete ponds</td>
<td>Not available</td>
</tr>
<tr>
<td>Dabis Farm</td>
<td>Private farmer; small scale; 2 ponds (1 concrete &amp; 1 metal)</td>
<td>50 m² (concrete) 78 m² (metal)</td>
</tr>
</tbody>
</table>

Source: Directorate of Aquaculture, MFMR

According to MFMR there is one project planned in Noordoewer and possible extensions of the Fonteintjie project in Keetmanshoop. Of the existing projects in the Karas Region, the Fonteintjie Fish Farm is the only farm that is a project of the Karas Regional Council. They have been receiving assistance from MFMR in the form of capacity building, fingerling supply, fish feed supply and technical and personnel provision. The rest of the farms are small scale fish farms that are supported by MFMR in the form of fingerling supply, capacity building, technical advice and assistance (such as biological harvesting etc). No data was available on production since most the farms were started in 2009 and no harvesting has taken place yet. The selling of fish will mainly be to neighbouring communities and farmers.
**Trends in the Fishing industry**

Vision 2030 encourages the following:

- Local value adding through domestic processing of fish products;
- Intensive commercial marine and freshwater aqua-culture; and
- Strict pollution control and sustainable yields to be reached and yields to be managed effectively to prevent overexploitation.

Vision 2030 targets the fish stock growth and estimates that if good recovery of fish stock takes place by 2016 the fisheries sector should experience a growth rate of between 6-9% up to 2017. Another target set out by Vision 2030 is the increase in exports of high value fish products to overseas markets. Vision 2030 expects that the opening of the Trans-Caprivi and Trans-Kalahari highways will result in more efficient trade and improved export markets for marine products to SADC countries.

**NDP3**

Both the NDP3 and Vision 2030 calls for promotion of the aqua-culture industry. Lüderitz is identified by the NDP3 as a key aqua-culture area. The aim of the promotion of aqua-culture is to “promote responsible and sustainable aquaculture development to achieve social and economic benefits for communities”.

The main beneficiaries will be the fishing industry and the fish farmers.

Namibia’s fisheries resources are highly dependent on traditional markets for its exports. In this respect, the industry is characterized by the need for improved market diversification. The fisheries industry is adversely impacted by the prevailing and, in some instances, highly volatile external economic factors such as exchange rate fluctuations, ever-increasing fuel prizes, etc. Control over such economic volatility and consequent advisory function to the industry is limited. Fish prices have also not increased as expected mainly due to fish farming activities in mainly Asian countries.

A study undertaken by Meyn (2005) indicated that 62% of the fishing companies in Namibia felt that they were adversely affected by South African companies in competition in the EU market. Some 4 of the 10 companies interviewed by Meyn indicated that profits increased in the period 1999-2003 while 5 indicated a decline in profits with one (1) company indicating stable profits. It was mostly during the 2002-03 years that most companies showed a decline in profits.

The fish consumption of the average Namibian has increases since early 1990 and nearly doubled over this period and is currently 8-9kg per annum per person. This is still lower than the world average of 15-16kg (Meyn 2005). Only 30-40% of fishing products are for the local markets.

As a renewable natural resource, the fishing industry is vulnerable to external shocks, such as the Benguela Niño phenomenon in 1998 that harmed Namibian stocks. Moreover, the Benguela current is being negatively affected by global warming and the resulting variations in the system can damage fish stocks. The biomass of many species is also affected by over-fishing.

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98 Meyn, M. Namibianisation, Exports and Domestic Value Addition in the Namibian Fishing Industry. Chances and Risks of Including Fisheries into a Free Trade Agreement with the EU. NEPRU Research Report No. 33 March 2005
At present, it is increasingly difficult for African countries to compete successfully in the global market, which is highly dominated by trans-national companies. It is suggested by Meyn that by moving strongly towards retail products, the companies would not only employ more people, improve their manufacturing capabilities and create increased domestic value addition but they would also be enabled to create their own product brand and become engaged in marketing and distribution activities in the long run.

Fish capture during 2008 performed relatively well compared to 2002-2006. This was mainly as a result of recovering stock numbers of certain species. According to MFMR the mari-culture industry suffered some setbacks in 2008 due to algal blooms, red tide and sulphur eruptions, which depleted oxygen in the water. Oyster production was heavily affected with an estimated loss of more than 80% of annual production with an estimated value of more than N$70 million.

Overall hake and horse mackerel stock showed an increase over the years due to restrictive measures that were put in place to conserve the species. Pilchards showed an increase of 55% in 2008, while rock lobster still showed low levels in 2008 (Iyambo 2009).

The SEA compiled by NACOMA for the Karas and Hardap Regions recommended that:

- Lüderitz should retain and further evolve its potential for the aqua-culture industry. The added value of post catch processing for both fisheries and aqua-culture should not be allowed to affect other potential developments, in particular the tourism industry.
- The commercial viability of aqua-culture in the former sea-walled mining area on the linear coast must be carefully evaluated with respect to the sustainability regarding maintenance of coastal morphology as compared to economic prospects.

According to MFMR the biggest challenge for the aqua-culture and mari-culture industries is the availability of land. Most Local Authorities are reluctant to provide land situated next to the ocean for mari-culture/aqua-culture as this land is highly sought after for residential development. The MFMR indicated that many investors had to be turned away because of the lack of available land. Due to the rocky shapes along the coast line of Lüderitz as well as its limited area under jurisdiction of the Lüderitz Town Council, land suitable for aquaculture is very limited and the development of additional mari-culture/aquaculture enterprises is hardly possible. The Lüderitz Town Council resultanty considers expanding the local authority boundary and in so doing obtain additional coastline suitable for these developments. This would however entail that these areas need to be de-proclaimed from the surrounding national park. Even though mari-culture and aqua-culture is suggested by both Vision 2030 and NDP3, the availability of land is a huge constraint.

Stakeholders from MFMR indicated that the future of the fishing industry is that of mari-culture and aqua-culture, as it is estimated that the commercial fishing industry will collapse, due to over-fishing. The production of high quality fish, oysters and abalone is seen by stakeholders as the future of the fishing industry. Another constraint identified by MFMR was the expensive harbour fees that fishing companies have to pay at Lüderitz in comparison with fees at the Walvis Bay harbour. These high fees make it financially difficult for smaller fishing companies to survive, which resulted in only 10 of the 21 right holder companies actually utilizing these rights.
Identified development initiatives

The following are proposed development initiatives with regard to this industry:

- Extension of Keetmansfonteintjie Fish Farm project
- Possible project at Noordoewer

Findings and recommendations on the Fishing Industry

The economy of the harbour town of Lüderitz is largely dependent on fishing. However the marine fishing industry is estimated to decline. One example of such a decline mentioned by the SEA report is that of the orange roughy that was discovered in 1990’s as a deep-sea fish with high commercial value. Due to rapid exploitation of this species this led to considerable depletion of stock numbers and the realisation that this slow-breeding fish species will not recover quickly.

The diversification of the fishing industry to mari-culture holds development potential to both Lüderitz and Oranjemund. Recent events in mari-culture at Walvis Bay indicated that oysters are extremely sensitive towards temperature change of water and nutrient loss. Mari-culture farms at Walvis Bay have experienced significant losses over the last year due to temperature changes and nutrient loss. The export of high quality fish (lobster, oyster) has high potential and could be an important economic activity within the Karas Region if done sustainably. Together with promoting mari-culture in the region, it is also important that capacity building takes place so as to broaden the skills base of the people of the Karas Region.

Aqua-culture and inland fishing has limited potential but smaller community projects were however identified. The development of the Neckartal Dam as well as the Naute Dam could be exploited for the development of large scale commercial fish farms. The synergy between fishing and tourism activities needs to be explored and utilised. It is also recommended that utilisation of old mining facilities (ponds and pumping equipment) be utilised for aquaculture/mariculture production (SEA report). This is currently being tested at Oranjemund.

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Stakeholder Meeting with MFMR on 5 October 2010
3.7 Urban Centers

The Karas Region had a population of 69,329 in 2001 of which 54% lived in the urban areas and 46% in the rural areas. The Karas Region is divided into six constituencies namely Lüderitz, Berseba, Oranjemund, Karasburg, Keetmanshoop Urban and Keetmanshoop Rural.

The Karas Region has an employment rate of 36% of which 43% of the employed population work in the private and public sectors, 34% in the agriculture, hunting forestry and fishing sectors, and 17% in the manufacturing and mining sector. Oranjemund has a 90% rate of wages and salaries, with Lüderitz 80%, Keetmanshoop Urban 73%, Keetmanshoop Rural 64%, Karasburg 67%, Berseba Rural 59% and Berseba itself with 32% and 29% from farming. Keetmanshoop Rural has a 19% income from farming and Berseba Rural 15% from farming.

There are eight Local Authorities within the Karas Region and 6 declared settlement areas (Table 25, pg.102). The urban areas of Rosh Pinah and Oranjemund are potential future Local Authorities and are in varying stages of planning. Namibia has five levels of administrative governance, that of Municipality Part 1, Municipality Part 2, Town, Village and Settlement Areas. The Municipalities, Towns and Villages are run by municipal, town and village councils, while the Settlement Areas fall under the direct jurisdiction of the Regional Council.

Keetmanshoop is situated along the region’s major traffic route, while Lüderitz is the region’s only harbour town. The two biggest towns in the Karas Region in terms of population size, according to the 2001 census were Keetmanshoop and Lüderitz. Keetmanshoop and Lüderitz absorb most of the region’s rural-urban migration as these towns have a good municipal infrastructure, education, health and institutional network, and developed industrial and economic sectors.

Map 23: Urban Centres in Karas Region
Growth Points

Keetmanshoop is the administrative capital of Karas Region and much of the regional functions are situated here. Keetmanshoop is strategically located as it is on the B1 road to South Africa, B4 to Lüderitz, the C16 to Aroab and the B1 to Windhoek and various other connector roads to smaller settlements and to the rest of the region. The Keetmanshoop airport facility may be upgraded in the future to an international airport status. Furthermore, Keetmanshoop is located at an important national railway junction, linking the town via Tses with the north of the country, to the west it links via Aus the coastal town Lüderitz, and to the south-east it links via Grünau, Karasburg and Ariansvlei to the neighbouring country, South Africa.

Contrary to the rural areas, urban areas are well placed in terms of formal planning control. While most urban areas do have town planning schemes and some structure plans in place, which are enforceable by a single administrative body, the Local Authorities, development control of rural area is still largely central government driven and fragmented. Urban Areas are responsive to needs of urban areas in terms of service provisions, financial and institutional support and recreation. The larger the urban area, the higher the accessibility in terms of travel distance and time and the larger the influence sphere the urban area has on the rural area.

Keetmanshoop is not only the administrative seat of the Karas Region but also has developed into the largest urban area found within the Karas Region due to its central locality. To further strengthen the town, it is important that programs and development initiatives such as the: (i) decentralization policy; (ii) the development of an international airport at Keetmanshoop from where products can be exported and (iii) the provision of housing and institutional services are promoted at Keetmanshoop. Here the role of the Karas Regional Council, as Regional Administration, needs to be strengthened.

The coastal town of Lüderitz is heavy reliant on fishing and harbour related enterprises. This can be largely attributed to the fact that the presence of the National Park does not generate any agricultural supporting industries as found within the central and eastern Karas Region. Resulting from the limited access possibilities and the long travel distances to the town, tourism is only taking place on a limited scale. The town however has the potential to develop a strong educational function as special schools and vocational training facilities can be developed at Lüderitz. This initiatives needs to be actively promoted by the Karas Regional Council, the Lüderitz Town Council and the Ministry of Education.

The mining towns of Oranjemund and Rosh Pinah, both private urban developments (mining towns), form two important economic centres within the region. Lüderitz, Rosh Pinah, Oranjemund and Aussenkehr have (over the last few years) increasingly attracted more people working in the mining, fishing and agricultural industries. Rosh Pinah faces some uncertainty with the possible closure of the Skorpion Zinc Mine. The mine, it is estimated, will close down in the next 6 years if no new ore deposits are found. As the mine is one of the major contributors to the economy of the town, there is a need to seek alternative measures to ensure the economic viability of the town and to broaden the economic base of the town for future sustainability. One such alternative identified by the SEA report is utilisation of mining facilities for solar plants and therefore transforming the town from a mining town into a centre for solar power generation, research and development.

The proposed declaration of Oranjemund as a town will ensure that the community has security of tenure over land, but without the continuation or with downscaling of the mining activities the economic basis of the town will shrink significantly and alternatives will have to be found. Reliance on the private sector will become essential. The proposed Kudu Gas Project might be one such alternative with possible tourism linked to the Ramsar site and possible irrigation and aquaculture. The possibility of utilising the mine facilities at Rosh Pinah for generation of energy from solar plants can also assist in possibly providing energy for desalination at Oranjemund (SEA report). However, desalination is costly and may have massive impacts on the environment, so such an initiative should be preceded with caution and with an EIA. All possible options to use the recommended solar field should be explored, not just desalination.
According to a community tourism market research study for the south of Namibia, the mining sector, livestock farming, irrigation farming along the Orange River, the fishing industry at Lüderitz and large non-tradable sector drives the economy of Karas. Within the larger urban centres of Keetmanshoop, Karasburg and Lüderitz employment is found mainly in the institutional, retail and service orientated sectors. Although extensive sheep, goat or cattle farming practices are found within the South, the intensive agriculture schemes at Aussenkehr (grapes), Naute Dam, and Noordoewer contribute significantly towards employment opportunities within the agriculture sector. The rural centres of Karasburg, Grünau, Bethanie, Koës (to name only a few) mainly provide essential supporting services for the surrounding farming communities or have an important role to play in terms of transport support facility providers. On 1 September 2010 the Municipality of Karasburg was downgraded by the Ministry of Regional and Local Government, Housing and Rural Development to Town status, indicating the decline in the town.

Growth at Grünau and Bethanie, which is ideally situated in proximity to the B1 Main Road, might be hampered by the settlement status. According to the Regional Councils Act land in settlement areas cannot be sold or leased, which might discourage investors as they cannot obtain land security. This Act will be revised in the near future. There is also possibility for growth at Noordoewer, due to the proposed irrigation scheme at Tandjieskoppe in the future.

The opening of the Mata-Mata gate in the east and the Sendelingsdrif border post in the south may encourage tourism and transport related developments in the currently underdeveloped rural areas. Aroab might experience more growth in the future due to the creation of the Kgalagadi Transfrontier Park in South Africa and Botswana and the new border post at Rietfontein, close to Aroab. There is potential for tourism and service industry development related to this new access link.

Most of the Nama people residing in the southern area still reside in the former ‘Namaland’, which comprises part of the Hardap and Karas Region. Towns like Berseba, Koës and Tses are traditional Nama settlements. These areas have potential for cultural tourism related activities, which should be encouraged and strengthened.
Table 25: Urban Population and status of towns and settlement areas in the Karas Region in 2008

<table>
<thead>
<tr>
<th>Town/Settlement</th>
<th>Status</th>
<th>TYPE</th>
<th>2001</th>
<th>2008</th>
<th>% Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ariamsvlei</td>
<td>Settlement</td>
<td>Service hub</td>
<td>428</td>
<td>1100</td>
<td>157</td>
</tr>
<tr>
<td>Aroab</td>
<td>Village</td>
<td>Service hub</td>
<td>1,492</td>
<td>1750</td>
<td>17</td>
</tr>
<tr>
<td>Aus</td>
<td>Settlement</td>
<td>Tourism hub</td>
<td>691</td>
<td>3850</td>
<td>457</td>
</tr>
<tr>
<td>Aussenkehr (*)</td>
<td>Settlement</td>
<td>Irrigation hub</td>
<td>3,716</td>
<td>6000</td>
<td>61</td>
</tr>
<tr>
<td>Berseba</td>
<td>Village</td>
<td>Service hub</td>
<td>535</td>
<td>2170</td>
<td>306</td>
</tr>
<tr>
<td>Bethanie</td>
<td>Village</td>
<td>Service hub</td>
<td>1,025</td>
<td>2,980</td>
<td>191</td>
</tr>
<tr>
<td>Grünau</td>
<td>Settlement</td>
<td>Service hub</td>
<td>401</td>
<td>760</td>
<td>90</td>
</tr>
<tr>
<td>Karasburg</td>
<td>Town (downgraded 1 September 2010)</td>
<td>Service hub</td>
<td>4,074</td>
<td>5,650</td>
<td>39</td>
</tr>
<tr>
<td>Keetmanshoop</td>
<td>Municipality</td>
<td>Regional Hub/ Main hub</td>
<td>15,777</td>
<td>25,000</td>
<td>58</td>
</tr>
<tr>
<td>Koës</td>
<td>Village</td>
<td>Service hub</td>
<td>929</td>
<td>1,810</td>
<td>95</td>
</tr>
<tr>
<td>Lüderitz</td>
<td>Town</td>
<td>Main hub/ industrial hub/ tourism hub/ educational hub</td>
<td>12,607</td>
<td>25,000</td>
<td>98</td>
</tr>
<tr>
<td>Noordoewer</td>
<td>Settlement</td>
<td>Service hub/ industrial hub</td>
<td>1,084</td>
<td>4,360</td>
<td>302</td>
</tr>
<tr>
<td>Oranjemund (**)</td>
<td>Planned (possible town or village)</td>
<td>Main hub/ tourism hub/ aquaculture</td>
<td>4,451</td>
<td>10,000</td>
<td>125</td>
</tr>
<tr>
<td>Rosh Pinah (**)</td>
<td>Planned (possible town or village)</td>
<td>Main hub</td>
<td>1,537</td>
<td>8,480</td>
<td>452</td>
</tr>
<tr>
<td>Tses</td>
<td>Village</td>
<td>Service hub</td>
<td>908</td>
<td>2,590</td>
<td>185</td>
</tr>
<tr>
<td>Warmbad</td>
<td>Settlement</td>
<td>Service hub</td>
<td>165</td>
<td>270</td>
<td>64</td>
</tr>
<tr>
<td>Gabis</td>
<td>No status</td>
<td>not available</td>
<td></td>
<td>270</td>
<td></td>
</tr>
<tr>
<td>Gainachas</td>
<td>No status</td>
<td>not available</td>
<td></td>
<td>770</td>
<td></td>
</tr>
<tr>
<td>Kosis</td>
<td>No status</td>
<td>not available</td>
<td></td>
<td>450</td>
<td></td>
</tr>
</tbody>
</table>

(*) During harvesting and pruning times on the grape plantations at least another 6,000 workers live in Aussenkehr seasonally
(**) Possible future proclamation to Village or Town Status. Source: OFRB and Division Planning (MRL GHRD)
**Institutional services**

The Government Hospitals are located at the larger urban centres within the region at Keetmanshoop, Lüderitz, and Karasburg and are generally well-equipped and staffed, and can handle most emergency cases. Health centers and smaller clinics in the rural towns provide medical services to the rural communities. According to the Ministry of Health and Social Services there are 3 state hospitals, 3 health centres, 16 clinics and 12 mobile clinics in the region, with several private facilities (Map 19, pg. 112). The private hospitals for the fishing companies in Lüderitz and Oranjemund have closed down.

Overall there are 35 Primary Schools, 4 Combined Schools and 8 Secondary Schools in the Karas Region (Map 19, pg. 112). These schools are mostly based in larger urban centers with children from the rural areas having to make use of hostels when attending these schools, with the exception of some rural schools situated in the communal areas.

The Namibian police are well represented in the South, with 14 police stations in the region, located within most urban centres (Map 19, pg. 85). Magistrates courts are established at Mariental, Keetmanshoop, Lüderitz and Karasburg.

Other social facilities such as postal services, police stations, and courts are provided for within the region, mostly in the major urban centers. Commercial banks and other financial institutions are well represented, but also once again only in major urban areas. Service provisions such as fuel stations and accommodation are provided for in the region with the majority found on the most travelled routes, but in certain areas of the region there are limited strategic locations.

**Trends in the Urban Centers**

With the construction of the Neckartal Dam, it is expected that Karas Region will receive an influx of workers. The workers for the construction of the dam will be “housed” at the construction site and it is possible that the impact of housing the workers at the site might have an impact on the environment (firewood collection) especially if no proper housing facilities and ablution facilities are provided. However, the impact of a new workforce on the economy of Keetmanshoop can either be negative or positive. This all depends on the preparation level of the Keetmanshoop Municipality and whether they are ready to provide sufficient housing, serviced erven and social services. As this is a government project it is recommended that financial assistance for the provision of housing, serviced erven etc should be made available from Government.

The proposed irrigation scheme at Tandjeskoppe and possible future new mines will also lead to an influx of migrant workers in the region. It is suggested that these workers should rather be accommodated in existing urban centers than establishing new sites/ towns.

The planned Film Studio in the most south eastern corner of the Karas Region will also contribute significantly to the number of people looking for employment in the Region. Once of the suggestions made by Desert Star and MAWF (Neckartal Dam) is that they will try to control the influx of workers from other regions and try to control illegal squatting in both areas by opening up offices in either Keetmanshoop or Karasburg that will deal with employment.

It is therefore foreseen, that if the Neckartal Dam and the Desert Star Studio continues, that over the next five years the Karas Region and especially Keetmanshoop will receive a significant increase in the number of job seekers. The economic and social impact of such an influx can be positive if properly planned for and if properly managed, but can also have a negative impact if no proper planning has been done.
Urban centres located close to the border posts will also see an increase in population while urban centres closer to irrigation and mining and even the Sperrgebiet will also experience growth. Increase in tourism opportunities, mining and irrigation will contribute to a growth in areas such as Oranjemund, Rosh Pinah, Lüderitz and Aus.

**Identified development initiatives**

The following are the identified development initiatives with regard to this sector:

- Desert Star Film Studio
- Oranjemund declaration of town

**Findings and recommendations on the Urban Sector**

With the exception of Keetmanshoop (which is the administrative seat of the Karas Region and economic/institutional centre of Karas), Lüderitz (harbour town), Oranjemund and Rosh Pinah (mining towns) and the remaining urban centers of the Karas Region can be classified as service hubs. The importance and role of Keetmanshoop as the administrative, economic and institutional urban centre within the Karas Region needs to be further strengthened. New projects such as the proposed Neckartal Dam will influence the town of Keetmanshoop. It is therefore recommended that part of the project for Neckartal should be to increase finances made available to the Keetmanshoop Municipality for the creation of sufficient serviced erven, houses and other social amenities for the expected influx of people seeking work. If this is not done in time before the project starts it might have a negative impact on Keetmanshoop and contribute to illegal squatting, poverty and other urban problems.

It is recommended that the town of Lüderitz should actively promote the development of special schools and vocational training centres.

Communication and harmonization of development initiatives between MLR and MRLGHRD needs to be improved. The Karas Regional council should be instrumental in achieving this. The administrative and financial capacity of the Karas Regional Council needs to be strengthened and the Karas Regional Council must become the political champion of integrated planning in the region.

Overall, poverty (accompanied by deterioration of social services) and the social fabric in Karas communities, is identified as a Red Flag by the SEA.

It is further recommended that the Regional Council’s Act should be amended to enable the selling and leasing of land in settlement areas. This will enable and encourage investors to buy land for development in settlement areas which they currently cannot do.

It is also recommended that new towns to be developed such as the proposed Desert Star Studio should undertake comprehensive feasibility studies that address the social, economic and environmental feasibility of such projects. These studies should also address possible plans/ suggestions that can be used if such a project will no longer continue.
3.8 CONFLICTS AND SYNERGIES

3.8.1 Conflict and Critical Areas

One of the advantages of the Karas Region is that it is one of the more sparsely populated regions in Namibia and therefore conflict between land uses is minimized to an extent, but it still occurs in the region.

Mining (refer to Map 24)

One such conflicting land use is mining. Mining in most cases, if not properly managed and if no proper environmental management plans are drawn up, can lead to direct conflict with a variety of land uses. In Namibia mining is controlled by The Minerals Act of 1992. Mining in Namibia has contributed to major environmental degradation with about over 240 abandoned mine sites where no rehabilitation was done by the mines after closure. "The lack of concern for the environment most often shown by prospectors and mining companies in the past has led to a loss of key ecological characteristics and tourism potential of some protected areas." Little effective environmental management exists within the Namibian mining industry, mainly due to inadequate co-ordination between MME and MET on these matters. Although EIAs are required under the Minerals Act, with the newly promulgated Environmental Management Act, the submission and approval of EIA’s will be further enforced by MET.

Any company/person can apply for an EPL from the Ministry of Mines and Energy. This EPL gives the person/company the right to explore for resources on a specified piece of land in Namibia, whether private or government owned land. These EPL’s are given for a certain period of time and if the person or company finds viable resources they may apply for a mining license. In this instance, an EIA must be completed. If the person or company is granted a mining license, this license will then provide the company/person with the right to start mining in the specific area listed on the permit, but it must abide by all permit conditions as well as the approved Environmental Management Plan (EMP). Although the Minerals Act (1992) specifies rights granted to the owner/occupier of the land that is under exploration or mining, this Act is not being strictly followed in the region and communities are not aware of their rights.

The main environmental threat from mining in the region is the heavy demand for water and the risk of pollution. The SEA for KIRLUP highlighted the fact that landscape alterations on a large scale (such as by means of coastal diamond mining operations) are relatively benign except for the visual impact that these operations have. However, NACOMA has disagreed with the assumption that impacts are only visual. Mining along the coast “has been and continues to be, an environmentally invasive activity” and according to NACOMA mining operations leads to the degradation of landscapes, destruction of habitats and pollution of groundwater.

Rehabilitation of past mine dumps and ponds along the coast will occur to a limited extent according to the SEA, while the SEA stated that "modern earthmoving operating for diamonds are now rehabilitated as an ongoing mend while you mine policy". The KIRLUP SEA also highlighted the existing pollution at Rosh Pinah that can have an impact on the environment as well as the people.

Potential impacts of mining exploration on natural resources and local communities have been identified in some areas around the Karas region with greater potential conflict in the Warmbad area. Some stakeholders were concerned about the direct damage caused to livestock, potential pollution risk from mines on the water resources, as well as the large quantities of water that are extracted for mining purposes. It was argued by some that these water resources are very scarce in the region and that such scarce resource should rather be put to good use such as for irrigation purpose, where food can be grown.

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105 Minerals Policy of Namibia. Ministry of Mines and Energy
107 Strategic Environmental Assessment for the coastal areas of the Karas and Hardap Region. NACOMA. November 2009
The conflict between mining and conservation/tourism is probably the biggest. Mining can impact tourism and conservation in terms of degradation of valuable conservation and environmental resources. The Sperrgebiet is an excellent example of mining impact on conservation (no.5). Mining along the Orange River and at Rosh Pinah in sensitive areas also is one of the major problems in the Karas Region. The Sperrgebiet has some of the most sensitive and most important biodiversity in the world (no.6). Despite this mining has taken place in the Sperrgebiet in selected areas for the last 100 years and at Rosh Pinah and Skorpion. Degradation of landscapes, destruction of habitats and pollution of groundwater are major impacts resulting from mining. The construction of infrastructure such as buildings, houses and even pipelines can impact the landscape and scenic value of an area. This infrastructure has a considerable negative impact on the desert environment, in particular on wildlife and the landscape aesthetics (the beauty of the desert is compromised and tourists may not want to revisit the Namib).

**Mining, Water Resources, Fisheries and Irrigation (refer to Map 24)**

The impact of mining on water resources such as the Orange River is also a possibility and this will likely have a negative impact on the designated Ramsar site. In many of the existing mines in the Karas Region, mines have taken some responsibility for social development and environmental management of their projects, but not nearly enough.

Diamond mining can have a large impact on the biodiversity of fish species and other aquatic species (no.7). Diamond mining off-shore involves dredging of sediment in search of diamonds and thereby removal of valuable species in the process. Diamond mining along the coast "has been and continues to be, an environmentally invasive activity". According to NACOMA mining operations leads to large scale environmental degradation and sea based operations involve the high impact removal of gravel from intertidal and sub-tidal habitats.

In areas, such as the Sperrgebiet, mining involves the reclamation of land by building a seawall and then pumping out the seawater. This type of activity severely disturbs the biodiversity as whole communities may be disturbed or even removed. NACOMA also states that the impact of these types of activities might even affect the rock lobster population.

According to NACOMA there are a number of threats to the environment and biodiversity along the coast of Namibia including:

- Uncontrolled activities in protected areas and state lands, such as mining and prospecting, off-road driving, tourism, and fishing (recreational angling);
- Land reclamation for urban and industrial development, salt works, etc;
- Marine pollution through mining and prospecting activities, the fishing industry, oil and gas exploration and extraction and harbour activities;
- Overfishing and overharvesting;
- Introduction of invasive alien species through mari-culture development;
- Excessive water exploitation for mining activities and consumption;
- Environmental variability and climate change;
- Lack of integrated conservation and development planning.

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[108] Strategic Environmental Assessment for the Karas Integrated Regional Land Use Plan. (November 2010)
Over-exploitation from commercial fishing can also impact the marine biodiversity, by removing certain portions of stock or even altering the physical habitat of species by means of trawling techniques. Up to 1990, the coastal waters of Namibia were free for any company to fish as there were no regulations. After 1990 Namibia established the 200 nautical mile exclusive economic zone, which resulted in the regulating of fishing in Namibian waters.

The pollution from ships does not have such a big impact on biodiversity as Namibia’s shipping industry is relatively low. However, water at or close to the harbour generally has poor quality due to “uncontrolled waste water disposal of the fishing industry,” sewage from ships, etc (NACOMA). Impacts from mari-culture or aqua-culture may include pollution and introduction of alien species. The environmental impact of aqua-culture is likely to be small, but there might be possible threat of the introduction of alien species into natural rivers (SEA Report) and this is why an EIA must be conducted for these activities (in order to assess the likelihood of such potential issues).

Tourism, Water and Irrigation (refer to Map 25)

Uncontrolled tourism activities can also contribute to degradation of the environment and biodiversity (no.1). Uncontrolled recreational activities such as off-road driving and even extensive angling can have a major impact on the conservation and fish biodiversity. The MFMR has identified potential problems with land based concessionaires in the Namib-Naukluft Park which destroy areas with off-road driving and 4x4 driving. There have also been attempts by some to fish in the Marine Protected Areas which is illegal. NACOMA also identified that another problem with tourism is the impact that low-flying aircraft can have on birds as these aircraft ignore height restrictions over parks and no-fly zones over the Ramsar sites and bird areas (no.5).

\[12\] http://www.nacoma.org.na/Our_Coast/Threats.htm
\[13\] Dr. B.J. van Zyl. A decade of Namibian Fisheries and Biodiversity Management.
Agriculture and tourism can in most cases be complimentary to each other, but in some cases conflicts can arise between these land uses. It was reasoned by the stakeholders that as food security is of national importance, scarce land resources next to the Orange River should rather be used for irrigation purposes than for tourism purposes (no.2). Some stakeholders also believed that the proposed Neckartal Dam for only irrigation purposes would contribute to many issues (no.3). They reasoned that as water is a scarce resource, the construction of a dam for only irrigation purposes is a waste of money and of scarce resources such as water. It was mentioned by some that there are existing irrigation schemes in Namibia that have not even reached their full potential and these schemes should rather be supported by Government than creating a new problem area that will not reach its potential.

Map 25: Critical and Conflicting areas - Tourism, Water, Irrigation and Urban

The issue of water rights between humans and ecosystems such as the Orange River Mouth is a heavily debated issue. Some stakeholders are of the opinion that water rights for human consumption and irrigation are more important than preserving water for the ecological systems such as at the Orange River Mouth. The major threat to this wetland is loss of inflow of water and sediment through human manipulation of water in the Orange River catchment as well as pollution from irrigation and mining activities. Improper management of water resources (Orange River, Fish River and other watercourses) for irrigation and mining can lead to pollution of water resources and have a large impact on sensitive areas such as the Orange River Mouth which has been declared a Ramsar site (no.4).
Urban Areas (refer to Map 25)

Conflicts between land uses can exit in settlement areas such as Aus where communities make use of the townlands for livestock farming (no.6). The Aus townlands management plan was developed in 2007, where certain areas in the townlands were identified as areas for Conservation/Tourism, Grazing, Grazing/Tourism and Urban. Currently these “zones” as suggested in the management plan are not being followed by the community. According to the community of Aus, the problem arises when resources such as firewood and grazing land for their livestock become scarce; this forces the community to make use of the areas demarcated for conservation purposes as it is a choice between livelihood and conservation.

Government Policies (refer to Map 25)

Even though government policies are not a land use, the implementation of such policies can have an impact on land use. One such a policy identified by stakeholders was that of the Small Stock Policy of GRN that was implemented in 2004 (no.1). The aim of the policy was to increase local development and job creation by introducing value-addition in the small stock industry. The policy restricted exports of live sheep by limiting farmers in that they had to slaughter 6 sheep locally for every 1 sheep exported. Although the local slaughtering increased due to this scheme the prices received for local slaughtering was significantly lower than export prices. In 2005 this resulted in a loss of nearly N$20 million in the small stock industry in Namibia. This also indirectly resulted in some farmers diversifying into cattle farming and tourism. The problem with cattle farming in the region is that the region is not suitable for large stock farming due to its aridity and generally low grazing capacities. Indirectly this small stock scheme is now contributing to an unsustainable land use for the region and which might lead to degradation of the rangeland in the region.

Availability of land is a major setback for both the mari-culture and aqua-culture industry. Most Local Authorities are hesitant to provide seafront land for such activities as it is high value land for future residential expansion. The expansion of the Lüderitz Townlands area into the Sperrgebiet National Park for the purpose of land for mari-culture and aquaculture enterprise will result in the loss of land currently proclaimed as a national park.

Natural Occurrences (refer to Map 25)

Another possible conflict is between land uses and natural occurrences, such as during the recent rainy season of January 2011 where some low laying areas next to the Orange River had problems with flooding. Areas with irrigation and structures were submerged during this time, causing damage to property and crops. It was predicted by the farmers that areas hit by the flood will not be able to plant any crops for this season as the fields are still submerged under water (no.2).
Pictures 3: Flood at Noordoewer irrigation scheme (courtesy of the SUN newspaper)

Map 26: Critical and conflicting areas - Policies and Natural Occurrences
Natural occurrences such as the Benguela-Nino in which warm, saline water intrudes into the Benguela current, results in a decrease in plankton abundance, fish mortalities and movements and poor spawning in the mariculture industry (no.3). The intrusion of low-oxygen water can also seriously affect the biodiversity of fish and can seriously damage mariculture activities. Such an occurrence in 1994 had an impact on pelagic species such as pilchard, anchovy and horse mackerel and reduced the numbers of these species significantly.

**Infrastructure (refer to Map 27)**

In the Karas Region there is limited conflict between the infrastructure sector and humans, due to the low population density in the region. The compatibility of the infrastructure sector with other sectors is much more significant as the increase in infrastructure can be positive to most economic sectors in the region, especially in a region such as Karas, where development potential should be encouraged. However, a few cases of possible conflict have been identified.

Infrastructure can have an impact on tourism and conservation potential. Although in most cases it can also be positive as more roads and infrastructure can support the tourism industry. Areas with high scenic value and high levels of biodiversity can easily be impacted by infrastructure such as new roads or powerlines and fences (no.1). Powerlines and new roads can lead to scarring of scenic areas, while fences can impact the migratory movement of certain species. According to the SEA report, the danger of powerlines to birds such as raptors and bustard are more likely.

Other possible conflicts that were identified during the process was the impact of infrastructure such as railways, powerlines, fences and roads on agriculture and livestock. This is not a major impact, but the construction of high fences might have an impact on the movement of certain types of wildlife. Some stakeholders also mentioned that railways can have an impact on movement of animals as it makes crossing difficult and dangerous (no.2).

Another example is the possible tarring of the road between Rosh Pinah and Noordoewer as mentioned by the KRC (no.3). There is a concern that this road construction will damage the sensitive environment and it will spoil the pristine nature of the area. Another concern raised was the potential impact of the increase in amount of visitors when this road is upgraded. Some stakeholders were concerned with the over development of the region as it might jeopardize the unique experience that visitors are seeking in Namibia.
Other conflicts that might be found are with construction of dams or roads in environmentally sensitive areas or cultural heritage areas. Concerns were also raised by some stakeholders on the possible impact of the proposed Neckartal dam (no.4) on the surrounding area, as well as the possible impact on the ecology downstream of the dam and potential water pollution from irrigation schemes through use of fertilisers in the irrigation process.
3.8.2 Synergies

Even though there are a number of conflicting land uses there is also potential for creating synergies between the land uses.

*Agriculture, Irrigation and Tourism, Fishing (refer to Map 28)*

Such possible synergies between livestock farming and tourism have proven to be popular. Many farmers are now diversifying into tourism as a means for additional income (no.1). With appropriate management systems in place, tourism activities pose no threat to farming. This diversification of stock farming into tourism and game farming can be beneficial to each other. There is little human/wildlife conflict in the south, at least on a much smaller scale than in the north of Namibia. Game farming, conservation and protected areas can all contribute to the respective sectors. Game farming encourages farmers to become more conservation oriented and farmers are encouraged to establish private game reserves or private game parks.

Irrigation and tourism can be beneficial to each other by means of encouraging cross sectoral initiatives and value adding in the irrigation sector by means of encouraging irrigation/tourism and agro-tourism. On the other hand tourism and conservation can open the door for investment opportunities in the region. Tourism and conservation can create synergies with the agricultural sector and irrigation. There is a market for “farm tourism”/ agri-tourism in Namibia (no.2). Irrigation can benefit from a strong tourism sector by possibly allowing for cross benefits between the tourism and irrigation sector.

*Tourism, aqua-culture, mari-culture and marine fisheries (refer to Map 28)*

Another possible synergy that can be created is between tourism and fishing. There are currently only a few operators for recreational fishing in the Lüderitz area and it is one that could be expanded. Possible tourism potential also exists with tours to the islands on the coast with bird watching or even seal watching (no.3). Value adding can also take place between mari-culture and tourism by arranging tours to the mariculture farms in Lüderitz and selling of local products at hotels/ lodges etc.

Potential for synergies between the proposed Neckartal Dam and irrigation scheme and tourism exists. This should be further explored and investigated. The deproclaimed area at the Naute Game Park holds potential for tourism development, especially focused on community tourism. Synergies such as agri-tourism can be proposed between the tourism and existing irrigation scheme as Naute Dam (no.4).

*Urban (refer to Map 28)*

Urban nodes are in most cases a much more compatible land use as it contributes significantly towards to the economy of a region. Proximity to urban centres increases the potential for land uses such agriculture, as markets and feed are found in the urban centers. Urban centers are also beneficial for tourism activities as lodges/guest farms need supplies that are provided in these centres.

The mining industry and irrigation industries are also very much dependent on urban centers as the workforce for these industries need a place to live and supplies are needed from these urban centers.

It was identified that areas such as Rosh Pinah, Aus, Lüderitz and Oranjemund will become important tourism areas upon opening of the Sperrgebiet National Park. Potentials for further tourism developments in Berseba, Bethanie, Warmbad, Aroab and Ariamsvlei also exists (no.6). The Orange River Mouth which is a Ramsar site also hold potential for economic support to Oranjemund once proclamation of the town as taken place and the town is opened to the general public (no.7).
There is also potential for synergies with the mining sector, taking Kolmanskop as an example. Old abandoned mines and the “idea of finding diamonds” are an attraction for people. However, there is not much room for expansion in using previously mined areas as tourist destinations. Kolmanskop is very unique with its historical buildings and can hardly be compared to most other mining areas. Care should be taken that the overall negative impact of mining on the environment and tourism far outweighs the potential synergy. Mining is known to be an unsustainable initiative that negatively affects the environment and tourists come to Namibia for nature-based activities in order to see wilderness, not mines.

Mining on the other hand can have a positive influence on the overall economy and infrastructure of a region, taking Rosh Pinah and Oranjemund for example. These urban nodes were developed because of the mining operations in the area. The road infrastructure, the energy provision and general access to the region is a direct result from the mining industry. Overall social contributions from the mining sector are valuable with schools and clinics being provided by the mines. Good road infrastructure plays an important role in boosting tourism in a region, as tourism is very much dependent on access to areas. However, in order to benefit tourism, infrastructure should not destroy what may attract tourists to the area. Too much infrastructure development as a result of mining can decrease tourism potential, as the Karas Region is visited by tourists for its vastness and nature based tourism. Too much infrastructure and mining could kill the tourism industry as most tourists come from industrialized countries and they seek solitude in nature not more of what they aim to get away from by coming to Africa. According to the Sperrgebiet Land Use Plan, mining may be considered to be suitable land use in certain areas, but only with strict environmental control and if managed properly and in a sensitive manner.
One suggestion by the SEA was that there is a possible synergy for the future of Rosh Pinah after the closure of the Rosh Pinah and Skorpion mines as to use the town as a centre for solar power generation, research and development. Another possible synergy is the utilisation of the seawalls created by diamond mining in the area for possible aqua-culture/mari-culture projects, such as at Oranjemund. However, these are suggestions that need to have feasibilities studies completed and eventually EIAs if they are determined to be feasible.

**Infrastructure (refer to Map 29)**

Most land uses if properly managed can create opportunities for other land uses. The problem arises when these land uses are not properly managed and if there is no legislative framework to manage these land uses.

Infrastructure can encourage the development of the mining industry in a region as the mining industry is heavily reliant on proper access for import of construction material and export of products. Infrastructure can also have a positive influence on the region as better access to a region will increase tourism potential in an area. Overall the potential for more development of businesses and institutions will increase the better the infrastructure development is in a region. However, the positive effects of infrastructure must be weighed against the negative effects of infrastructure as described in the previous section.

NamPower has identified the possible use of the tunnels of the proposed LOHEPS for irrigation purposes (no.1). This will enable small irrigation farmers to make use of the water from the tunnels rather than extracting water from the Orange River itself. Another possible synergy that was identified by NamPower was the possible use of the proposed Vioolsdrift/Noordoewer dam of MAWF for hydro-electric generation (no 2). This will enable NamPower to utilize the proposed dam to generate hydro-electricity as well as MAWF to utilize the dam for storage of water.

Other potentials for the region that was identified were (no 3-10):

- The upgrade of the Bethanie –Maltahöhe- Walvis Bay road
- Proposed Trans-Kalahari Railway line
- Kudu Gas
- Neckartal Dam
- Rebuilding of the Aus-Lüderitz railway line
- Upgrade of the Keetmanshoop airport.
- Utilisation of Rosh Pinah as a renewable energy hub
4. REVIEW OF KARAS REGIONAL DEVELOPMENT PLAN

The creation of the Regional Development Plans was the first attempt by the Namibian Government to establish a regional profile that reflects the development potential of the regions in Namibia. The Regional Development Plans reflect the direction of future development, sectoral development as well as programme objectives and activities that aim to achieve development goals. The Regional Development Plan was intended to serve as a guideline to decision and policy makers.

The Karas Regional Development Plan was compiled in 2001 for the period up to 2006. No new development plan was done for the region since 2006. The Vision for the Karas Region put forth in the Karas Regional Development was to “raise living standard and reduce poverty through the equitable, sustainable and decentralised provision of education, health, human resource development and the creation of economic opportunity for all, emphasising the removal of gender discrimination and the development of marginalised groups, whilst improving infrastructure, preserving culture and heritage, reducing crime and ensuring peace, reconciliation and stability.” This vision is very much in line with Vision 2030.

The long term development objective for the Karas Region was to create a suitable framework:

- To develop the full economic potential of the region’s mining, tourism, agriculture and fisheries sector;
- To manage the region’s natural resources sustainably;
- To improve the equitable and decentralised provision of education, social services and infrastructure;
- To develop the human resource potential of peoples of all ages and backgrounds;
- For the Regional Council to support, co-ordinate and spearhead regional development.

Table 26 below is a summary of the programmes as contained in the Karas Regional Development Plan:

---

<table>
<thead>
<tr>
<th>Programme</th>
<th>Status</th>
<th>Responsible agency</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promotion of improved livestock management and marketing</td>
<td>Ongoing</td>
<td>DEES, MAWF</td>
<td></td>
</tr>
<tr>
<td>Resettlement Support</td>
<td>Ongoing</td>
<td>MLR, MAWF</td>
<td></td>
</tr>
<tr>
<td>Livelihood diversification</td>
<td>Ongoing</td>
<td>All rural development support services</td>
<td>The Neckartal Dam is now in feasibility stage and is expected to be constructed in 2011. There may be irrigation opportunities downstream from the dam.</td>
</tr>
<tr>
<td>Irrigation development</td>
<td>Ongoing</td>
<td>MAWF</td>
<td></td>
</tr>
<tr>
<td>Resettlement Support</td>
<td>Ongoing</td>
<td>MLR, MAWF</td>
<td></td>
</tr>
<tr>
<td>Lüderitz and Sperrgebiet mari-culture development</td>
<td>Ongoing</td>
<td>MFMR, UNAM, MTI</td>
<td></td>
</tr>
<tr>
<td>Lüderitz fin-fish farming development</td>
<td>No development</td>
<td>MFMR, UNAM, MTI</td>
<td></td>
</tr>
<tr>
<td>Dam fishery management</td>
<td>No development</td>
<td>MFMR, MET</td>
<td></td>
</tr>
<tr>
<td>Orange River aqua-culture</td>
<td>No development</td>
<td>MFMR, MET, Private</td>
<td></td>
</tr>
<tr>
<td>Sperrgebiet 4×4 route and camp site development</td>
<td>No development</td>
<td>MET, NTB</td>
<td>Sperrgebiet only recently proclaimed as NP. The development and management plan makes provision for tourism developments to take place in SNP.</td>
</tr>
<tr>
<td>Naute Dam tourism development</td>
<td>No development</td>
<td>Local Authority, MET, NTB, Private</td>
<td>The area has been donated to the Keetmanshoop Municipality.</td>
</tr>
<tr>
<td>Sperrgebiet horse and camel route development</td>
<td>None</td>
<td>MET, RC</td>
<td>The SNP management plan has made available certain tourism strategies. This can only be started when the SNP plan has been approved</td>
</tr>
<tr>
<td>Programme</td>
<td>Status</td>
<td>Responsible agency</td>
<td>Comments</td>
</tr>
<tr>
<td>-----------------------------------------------------</td>
<td>------------</td>
<td>--------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Aus community camp site</td>
<td>In process</td>
<td>MET, Donor/ RC</td>
<td>The Aus Community Conservation Trust has identified a campsite as one of their objectives</td>
</tr>
<tr>
<td>Karas Tourist Study</td>
<td>None</td>
<td>RC</td>
<td>A community tourism study has been done, but only for southern areas and not the whole region, so no master plan yet</td>
</tr>
<tr>
<td>Mata-Mata border post opening</td>
<td>Completed</td>
<td>MHA</td>
<td></td>
</tr>
<tr>
<td>Sendelingsdrift pond commissioning</td>
<td>Completed</td>
<td>MHA</td>
<td></td>
</tr>
<tr>
<td>Sperrgebiet/ Richtersveld cross border park development</td>
<td>Completed</td>
<td>MHA</td>
<td>Part of the Au/Ais-Richtersveld Transfrontier Park</td>
</tr>
<tr>
<td>Lüderitz crayfish utilisation policy</td>
<td>Ongoing</td>
<td>MTI</td>
<td></td>
</tr>
<tr>
<td><strong>WILDLIFE AND CONSERVATION</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Garub desert horse support provision</td>
<td>Some</td>
<td>RC, MET</td>
<td>Some support is given</td>
</tr>
<tr>
<td>Snyfontein, Brukkaros and Bethanie Conservancies</td>
<td>In process</td>
<td>RC, MET</td>
<td>Brukkaros and Bethanie have been registered. Snyfontein is in process</td>
</tr>
<tr>
<td>Proclaim the Sperrgebiet as a Nature Reserve</td>
<td>Done</td>
<td>MET</td>
<td>Sperrgebiet has been proclaimed as National Park</td>
</tr>
<tr>
<td>Communal areas forest management plan</td>
<td>None</td>
<td>GRN, MET, MAWF</td>
<td></td>
</tr>
<tr>
<td>Communal areas forest harvesting and management guidelines development</td>
<td>None</td>
<td>GRN, MET, MAWF</td>
<td></td>
</tr>
<tr>
<td>Woodland Management Conservancies establishment</td>
<td>None</td>
<td>MET, GRN, Private</td>
<td></td>
</tr>
<tr>
<td>Forest products and tourism marketing project</td>
<td>None</td>
<td>MET, GRN, private</td>
<td></td>
</tr>
<tr>
<td>Programme</td>
<td>Status</td>
<td>Responsible agency</td>
<td>Comments</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------</td>
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<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Packaging of grapes at Naute dam feasibility study</td>
<td>Ongoing</td>
<td>Donor Agency/ MTI, MET</td>
<td>Packaging of grapes takes place to a certain degree</td>
</tr>
<tr>
<td>Feasibility studies for: a Tomato Paste/ Puree processing at Naute Dam;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small-scale fish factories processing; Processing and packaging of guano;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oyster cultivation; tannery at Keetmanshoop; Small stock slaughter</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>industries at Karasburg, Keetmanshoop, Berseba</td>
<td>NONE</td>
<td>MTI, MAWF, MET</td>
<td></td>
</tr>
<tr>
<td>Entrepreneurial development programme establishment</td>
<td>No</td>
<td>NCCI, MTI</td>
<td></td>
</tr>
<tr>
<td>Database to identify possible business opportunities: compilation</td>
<td>No</td>
<td>NCCI, MTI</td>
<td>The Development Bank of Namibia is also supporting small scale business</td>
</tr>
<tr>
<td>Regional small business infrastructure development: feasibility study</td>
<td>No</td>
<td>Chamber of Commerce, MTI</td>
<td>initiatives. They might assist with such compilation of a database</td>
</tr>
<tr>
<td>Small business infrastructure development: construction</td>
<td>Some</td>
<td>International donor, MTI, Private</td>
<td>Some SME parks have been established in urban areas</td>
</tr>
<tr>
<td>Aerial Geophysical Surveys for Lüderitz and Karasburg Constituencies</td>
<td>Done and ongoing</td>
<td>MME</td>
<td></td>
</tr>
<tr>
<td>Promotion of Mineral Prospecting at Lüderitz, Oranjemund, and Karasburg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constituencies</td>
<td>Ongoing</td>
<td>MME</td>
<td></td>
</tr>
<tr>
<td>Geological Mapping and Maps Production</td>
<td>Ongoing</td>
<td>MME</td>
<td></td>
</tr>
<tr>
<td>Environmental Training Programmes for Lüderitz, Oranjemund and Karasburg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constituencies</td>
<td>Ongoing</td>
<td>MET, ME, RC, MME, SMAN, MHE</td>
<td>Each mining company currently provides environmental training to its</td>
</tr>
<tr>
<td>employees</td>
<td></td>
<td></td>
<td>employees</td>
</tr>
<tr>
<td>Programme</td>
<td>Status</td>
<td>Responsible agency</td>
<td>Comments</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------</td>
<td>----------------</td>
<td>--------------------</td>
<td>-----------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>INFRASTRUCTURE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regional maintenance of district roads</td>
<td>Ongoing</td>
<td>RA</td>
<td></td>
</tr>
<tr>
<td>Sendelingsdrift Pond reinstatement</td>
<td>Done</td>
<td>MWTC</td>
<td>Project completed, but it depends on levels of river</td>
</tr>
<tr>
<td>Luderitz airport upgrading</td>
<td>In process</td>
<td>NAC</td>
<td></td>
</tr>
<tr>
<td>Sperrgebiet/ Richtersveld cross border park development</td>
<td>Completed</td>
<td>MHA</td>
<td>Part of the Ai/Ais-Richtersveld Transfrontier Park</td>
</tr>
<tr>
<td><strong>ENERGY</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural Electrification</td>
<td>Ongoing</td>
<td>MME, Local Authority</td>
<td>MME and NamPower has a rural electrification master plan that is being followed.</td>
</tr>
<tr>
<td>Awareness Campaign for energy conservation and energy efficiency</td>
<td>Ongoing</td>
<td>MME, MET, Local Authority</td>
<td></td>
</tr>
<tr>
<td>Feasibility study for determining alternative sources of domestic fuel</td>
<td>Ongoing</td>
<td>MME, Nampower</td>
<td>No feasibility study, but some NGO’s are busy with projects for domestic fuel sources</td>
</tr>
<tr>
<td>Enforcement of EIA’s to be done in terms of energy planning</td>
<td>Ongoing</td>
<td>MET, MME, NamPower</td>
<td>With the new Environmental Management Act they must conduct EIAs</td>
</tr>
<tr>
<td><strong>WATER AND SANITITATION</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brukkaros, Konkiep River, Fish River (Neckartal) – Feasibility studies for construction of dams</td>
<td>Some</td>
<td>MAWF, MET</td>
<td>Feasibility and EIA for the construction of the Neckartal dam has been completed. The construc-</td>
</tr>
<tr>
<td>Compilation of a Water Master Plan for Lüderitz, Oranjemund, Berseba, Keetmanshoop, Karasburg</td>
<td>In process</td>
<td>NamWater, MFMR, RC</td>
<td>tion of the dam is expected to start in April 2011.</td>
</tr>
<tr>
<td><strong>URBAN SERVICES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provide support to the Karas Regional Council for settlement areas: Noordoewer (65 erven)</td>
<td>In process</td>
<td>RC</td>
<td>Projects are in various stages of development.</td>
</tr>
<tr>
<td>Support to LA (towns and villages) – 150 erven Lüderitz; Keetmanshoop 600 erven; Karasburg sewerage system installation; Lüderitz industrial road surfacing</td>
<td>In process</td>
<td>MRLGHRD, MWTC</td>
<td></td>
</tr>
<tr>
<td>Programme</td>
<td>Status</td>
<td>Responsible agency</td>
<td>Comments</td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>-------------</td>
<td>--------------------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>MINISTRY OF LANDS AND RESETTLEMENT</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Institutional Operations</td>
<td>Ongoing</td>
<td>MLR</td>
<td>No land use planning division/department in the region</td>
</tr>
<tr>
<td>Human Resources Capacity Building</td>
<td>Ongoing</td>
<td>MLR</td>
<td></td>
</tr>
<tr>
<td><strong>ENVIRONMENT</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sustainable and Integrated Natural Resource Management</td>
<td>Ongoing</td>
<td>MET, Donors</td>
<td></td>
</tr>
<tr>
<td>Institutional support</td>
<td>Ongoing</td>
<td>MET, donors, WWF</td>
<td></td>
</tr>
</tbody>
</table>
5. KARAS INTEGRATED REGIONAL LAND USE PLAN, ZONES AND LAND USE SCENARIO’S

5.1 PLANNED AND ONGOING DEVELOPMENT INITIATIVES AND KEY ISSUES

This section specifically deals with regional initiatives that were identified during the KIRLUP process. The first part of the chapter deals with key regional issues that were identified during the process. The second part deals with local level initiatives that were raised during the community participation meetings, with the third part of the chapter assembling these initiatives and recommendations into a land use plan for the region. Some of these initiatives are still in feasibility stage, and therefore difficult to predict whether these projects will actually be implemented. The economic drivers and land uses to be discussed are as follows:

**Neckartal Dam**

The proposed Neckartal Dam will be located in the Fish River approximately 25km north of Seeheim and 40km west of Keetmanshoop and will have a catchment area of 45,365km² with an average annual runoff of 397million m³/annum. It is intended that the dam wall will have a height of 66m. Storage capacity is expected to be 846Mm³.

The sole purpose for constructing the dam will be to provide water for an irrigation scheme of approximately 5,000 hectares of land. The irrigation scheme will be about 20km from the dam itself. According to the scoping report the dam will be built on communal land of the Berseba Traditional Authority. The Director of Rural Water Supply in the Ministry of Agriculture, Water and Forestry will be the project coordinator. There are still discussions on the type of crop to be irrigated at Neckartal, but it will most likely be Lucerne (for export and some local usage), dates and table grapes.

The 5000 hectares will be divided into 50 hectare plots and will be put out on tender for interested parties. According to MAWF it is estimated that the dam construction will start in April 2011, depending on availability of funds for the project.

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117 Environmental Assessment: Scoping Phase for the Neckartal Dam Project. Prepared by Knight Piésold (Pty) Ltd
118 Mr. H. Koch. Director of Resource Management MAWF – 1 Sept 2010
5. KARAS INTEGRATED REGIONAL LAND USE PLAN, ZONES AND LAND USE SCENARIO’S

5.1 planned And Ongoing development initiAtives And key issues

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117 Environmental Assessment: Scoping Phase for the Neckartal Dam Project. Prepared by Knight Piésold (Pty) Ltd
118 Mr. H. Koch. Director of Resource Management MAWF – 1 Sept 2010

Construction of the dam will take about 3 years at which time the construction work force of approximately 1000 people will most likely reside at the dam site. After the construction is completed, all non-permanent employees for the irrigation scheme must be accommodated in Keetmanshoop and only those permanently employed on the farming units may be accommodated. A limited staff component responsible for the operation of the water scheme will be employed and housed at the dam. It is possible that approximately 10 000 seasonal workers be employed at the irrigation scheme when in operation, depending on type of crops grown at the scheme (pers. comm. H. Koch)

Tourism activities will not be allowed at Neckartal Dam in the immediate future according to MAWF.
### Recommendations – Neckartal Dam Project

- No housing schemes, inclusive of schools and clinics should be provided at the Neckartal Dam or at the irrigation scheme. All personnel must be accommodated in Keetmanshoop so as to strengthen the town of Keetmanshoop.

- The project must provide financial assistance to the Keetmanshoop Municipality to ensure that proper and sufficient housing, serviced erven and social facilities are provided for the new workers to be housed in Keetmanshoop.

- Recommended upgrading of the existing airport at Keetmanshoop to a possible international airport so as to provide export opportunities directly from Keetmanshoop.

- Neckartal Dam should be opened to the public for recreational activities such as fishing or boating so as to create additional value through activities such as tourism and tourism related activities.

- Limited tourism accommodation should be provided at the dam, so as not to influence the role of Keetmanshoop as a destination.

- The communal community can benefit from entrance fees paid and a possible site for a kiosk/shop should be considered which can be managed by the community.

- There is a possibility for the creation of a game park and relocation of game to the area which would add value as a tourist destination and likely uplift the local community. MET would have to be involved in such a decision as it is responsible for the creation of game parks and the relocation of animals. A full EIA would have to be conducted in order to make such a decision.

- Development of fish farms along the canal to the irrigation scheme is encouraged.

- A detailed Environmental Flow Study should be done so as to ensure that the proposed Dam does not impact the downstream flow of the Fish River and eventually leading to impacts on the Orange River and the Ramsar site.

### The Strategic Environment Assessment report identified the proposed Neckartal Dam as a Fatal Flaw and identified it as a Red Flag. The SEA listed four major concerns about the Neckartal Development:

- The proposed area and benefits of irrigation farming are not likely to be realized;

- It will be a major capital expense (N$3000 million, likely to be more hidden costs) by government, but it is likely to fail to achieve the NDP3 and Vision 2030 goals that are used as its justification;

- The environmental assessment process for this major development has been inadequate e.g. the lack of an Environmental Flow Study, and under-estimation of the negative social impacts on Keetmanshoop. This undermines the possibility of the development from minimizing environmental harm and from reaching its full economic potential.
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Tandjeskoppe Irrigation Scheme

The proposed Tandjeskoppe Green Scheme Project will be at Noordoewer and Tandjeskoppe in cooperation with the Ministry of Agriculture, Water and Forestry under the Green Scheme policy (Map 34). The Government of Namibia allocated N$1 billion to be made available for investment in the agriculture sector of Namibia over a period of ten years. According to the appraisal report compiled by the African Development Bank the total cost of the project will be N$358.77 million.

The project will cover an area of 960 ha which will be developed into plots of 80 ha each. Out of the 80 hectares, 40 hectares will be allocated to a medium-scale farmer and 40 ha will be shared among 20 small scale farmers each occupying 2 hectares. It is estimated that a total of 273 beneficiaries will be settled under the project.

There are two sites proposed for irrigation:

- Noordoewer State Irrigation Unit which will consist of 868 ha of State land and will be irrigated from a pump station.
- Tandjeskoppe State Irrigation Unit with a total area of 344 ha and an irrigation area of 320 ha.

The main crops to be grown will be grapes, dates and vegetables. It is expected that at full production the total grapes produced on 520 ha will be 6,500 tons. The date production on 390 ha is estimated to be 4,700 tons and 4,000 tons of vegetables is expected to be produced. Table grapes are expected to be marketed mainly to Europe where grapes would likely be placed on the market two weeks earlier than most of the other countries. Dates are expected to be exported to South Africa, Europe and the Gulf States. These dates have the advantage of ripening six months earlier than most other exporting countries. Vegetables are expected to be marketed for local consumption with the surrounding farms and residents of Noordoewer.

According to the African Development Bank report the annual net income for each small scale farmer on the 2 ha will be approximately U$24,000 (N$173,249) while the medium-scale farmer’s annual net income generated from a total of 40 hectares will be approximately U$379,000 (N$2,725,891) at full development of the project. It is also expected that 4,800 people will be employed at the irrigation scheme, which will indirectly benefit 24,000 people (households = 5). It is projected that 16,650m³/ha/year of water will be utilized for this project and farmers will pay approximately 0.50c/m³ for water. According to Lithon/Kwezi V3 the irrigation requirement for an 80ha farming unit will be 1.060Mm³/year.

Recent discussions with the Green Scheme office indicated that it is not clear when this project will start as costs for the project are higher than anticipated and initially planned for. A few private companies have come forward to start developing smaller areas, but these proposals are still under discussion.

It seems that the project is popular but due to the higher than anticipated costs involved this project might take some time before development starts. Earlier reports indicated that the project should have started in 2005 and ended in 2010 already, but up to the date of the publication of this land use plan, no appointments have been made as of yet and no construction or development has taken place. The scope, expenses and incomes reported in the African Development Bank report also changed over the years due to the changes in costs and expenses.

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120 Exchange Rate for September 2010 – 7.21872
### Recommendations for the Tandjieskoppe Irrigation Scheme

- The figures provided by the African Development Bank should be critically analyzed as some stakeholders were of the opinion that the estimates for income were unrealistic and this might create false information.

- All employees at the irrigation scheme should be accommodated at Noordoewer so as to prevent the establishment of a secondary growth point which is not viable.

- As Tandjieskoppe will solely be utilized for irrigation purposes, value adding should be encouraged so as to optimally utilize the potential of the land.

- Proper skills and management of these projects are important.

- Skills training facilities should be encouraged, especially in the industries such as mining, irrigation, farming and tourism. A skills training Plan should be developed for the Karas Region, addressing the shortcomings and needs.

- Proper environmental management should be implemented to control pollution of the Orange River and to encourage sustainable use of water as recommended by the SEA.

- The availability of water extracted from the Orange River needs to be secured by bi-lateral agreement and in accordance with sustainable yield extraction, so as to ensure that the Ramsar site is not negatively affected.

- The Karas Region should focus on crops that are suited to the region such as dates, vegetables, grapes, etc.
Recommendations on the Naute Irrigation Scheme and the Tourism Resort

• The expansion of the irrigation scheme should be brought in line with the MCA proposal or vice versa.
• Proper skills and management are required for these projects to be successful.
• Skills training facilities should be encouraged, especially in the industries such as mining, irrigation, farming and tourism. A skills training Plan should be developed for the Karas Region, addressing the shortcomings and needs.
• Proper environmental management must be implemented to control pollution of water and to encourage sustainable use of water.
• A water management policy for all irrigation projects in the Karas Region should be completed so as to ensure the sustainable and effective utilisation of water.
• The Southern Tourist Forum Area (STFA) should be developed as it holds potential for investment and job creation.
• However, care should be taken as the increase in irrigation and increase in water usage at the Naute Dam, may negatively impact a proposed tourism resort development.

Recommendations from the SEA on the Irrigation Sector

The quantity of water from the Orange River is limited and decreasing due to the growing abstraction upstream and in neighbouring parts of the basin. This eventually limits the total potential for irrigation along the lower Orange River. Declining water quality is another factor that might impact irrigation.

All irrigation should be done using only high-efficiency drip and micro-spray technologies. The arid climate, particularly the high evaporation rate, demands that water should be used more efficiently. More efficient methods of irrigating would in turn also reduce the amount of pesticide- and fertilizer-contaminated water flowing back into the river. Water demand management, i.e. managing the amounts of water consumed through pricing or other incentives, should be urgently introduced. The Orange-Fish River Basin Committee in MAWF should take the lead in promoting demand management for improved IWRM.

Naute Irrigation Expansion and the Tourism Resort

The NDC together with a company from Abu Dhabi are in consultation for the expansion of the Naute Irrigation to include an additional 200 hectares of which 180 ha will be irrigated for date production and 20 hectares will be for table grapes. It is estimated that the project will start as early as February 2011 and the production will mainly be for export. The NDC is also planning to develop another 200ha for irrigation, but no further information was available at the time of publication of this land use plan. According to the Millennium Challenge Account there is a proposal for the extension of irrigation at Naute Dam. However the NDC was not aware of such an initiative by the MCA.

Naute Dam is Namibia’s third largest dam and is situated 50km south west of Keetmanshoop. The Dam mainly provides water to Keetmanshoop and water for the irrigation scheme at the Naute Dam. The Naute Game Park covers an area of 23,000 hectare with the area surrounding the dam being scenically attractive. The park is closed to the general public and only utilised for breeding of wildlife for sale and in some cases for hunting for special occasions (pers.comm. H. Tjihukununa). The Dam is popular with local fresh-water anglers and day visitors but only two campsites are provided. A 600 ha piece of land, south of the park, were deproclaimed from the Naute Game Park in 1996 and donated to the Municipality of Keetmanshoop for the creation of a tourism resort.
### Recommendations on the Naute Irrigation Scheme and the Tourism Resort

- The expansion of the irrigation scheme should be brought in line with the MCA proposal or vice versa.
- Proper skills and management are required for these projects to be successful.
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The Sperrgebiet National Park (SNP) is a proclaimed national park and is about 320 km long and 100 km wide. It covers a total area of about 2.6 million ha and encompasses some of the most important biodiversity rich areas in the world.

The Sperrgebiet is bounded by the low water mark on the west, the Orange River in the south, the Namib-Naukluft Park in the north and farmland to the east. There are two urban areas in the Sperrgebiet, that of Oranjemund and Lüderitz. Aus and Rosh Pinah is located just outside the boundary of the SNP. The largest area of the SNP falls within the Succulent Karoo Biome, with smaller areas in the north-east and north-west falling within the Southern Namib Desert (SNP Development and Management Plan). The Succulent Karoo ecosystem is known as one of the world’s 25 greatest biodiversity hotspots. Not only is the area known for its high biodiversity levels, but it is also known for its spectacular landscapes.

The Sperrgebiet has been closed to the public and under tight security for 100 years, due to the large deposits of diamonds in the area. The areas where diamond mining took place were mostly located along the coast and the Orange River. Large areas of the SNP are still fairly undisturbed (Draft SNP Development and Management Plan). It is estimated that direct conservation cost for the Sperrgebiet is about N$5 974 225.

According to the Draft Sperrgebiet National Park Development and Management Plan a number of areas are considered to be of high sensitivity. These include:

- The Orange River valley (Orange River mouth Ramsar site)
- The coast, coastal dune hummock habitat and coastal rocky outcrops
- Inland inselbergs, mountain ranges and rocky outcrops
- The offshore islands, particularly those supporting significant breeding populations of red data bird species.

The management of the park will possibly be coordinated by means of a zonation plan (Map 34).

The proclamation of the Sperrgebiet as a National Park and the proposed opening up of the park to tourists will result in a positive increase in tourism to the region. The draft management and development plan for the Sperrgebiet makes provision for the creation of control/development zones in the SNP which will regulate the land use and tourism development areas (TDA’s) that will make provision for tourism potential in these areas. The TDA’s will strengthen areas surrounding the Sperrgebiet National Park such as the four urban areas: Oranjemund, Rosh Pinah, Aus and Lüderitz which will become key urban areas and will experience growth in terms of tourism and employment together with possible benefits for land owners adjacent to the park.

The following zones have been identified and mapped in the Draft Sperrgebiet Management and Development Plan (Map 34):

Map 33: Naute Irrigation Scheme Map

Legend
- Expansion of Naute Date project
- Naute dam tourism initiative
- Railway
- Main Road
- Resettlement farms
- Protected Parks and Reserves

Ministry of Lands and Resettlement
05 April 2011

GEOCARTA, Ministry of Lands and Resettlement, National Planning Commission, Namibia Tourism Board, Roads Authority.

Data Source: Map /three.oldstyle/three.oldstyle: Naute Irrigation Scheme Map
Sperrgebiet National Park

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The following zones have been identified and mapped in the Draft Sperrgebiet Management and Development Plan (Map 34):

\(^{123}\) Management and Development Plan for the Sperrgebiet National Park. MET 2009
### Table 27: Draft Zoning categories and activities in the Sperrgebiet National Park

<table>
<thead>
<tr>
<th>Zones</th>
<th>Activities</th>
<th>Specific application in the SNP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strict nature reserve</strong></td>
<td>• Highly sensitive and high value conservation / biodiversity areas</td>
<td>Areas of high endemnicity with highly range-restricted species:</td>
</tr>
<tr>
<td><strong>IUCN category 1a</strong></td>
<td>• Set aside for sensitive and low non-intrusive scientific study</td>
<td>• Kowisberge</td>
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<tr>
<td></td>
<td>• No or minimal mechanized access</td>
<td>• Tsaukhaib-Haalenberg</td>
</tr>
<tr>
<td></td>
<td>• No permanent structures</td>
<td>• Letterkuppe</td>
</tr>
<tr>
<td></td>
<td>• Areas of high endemnicity with highly range-restricted species:</td>
<td>• Grillental outcrops Dreizackberg and Drachenberg</td>
</tr>
<tr>
<td></td>
<td>• Kowisberge</td>
<td>• Schwarzer Berg</td>
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<tr>
<td></td>
<td>• Tsabiams and Klinghardt Mountains</td>
<td>• Tsabiams and Klinghardt Mountains</td>
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<tr>
<td></td>
<td>• Agub</td>
<td>• Namtsoab</td>
</tr>
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<td></td>
<td>• Kleiner and Grosser Münzenberg</td>
<td>• Morgen</td>
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<tr>
<td></td>
<td>• Heioab-Namitsis- Namiams Aurus Mountains</td>
<td>• Heioab-Namitsis-Namiams Aurus Mountains</td>
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<tr>
<td></td>
<td>• Rooiberg</td>
<td>• Rooiberg</td>
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<td></td>
<td>• Chamnaub</td>
<td>• Chamnaub</td>
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<tr>
<td></td>
<td>• Boegoeberg and Boegoeberg lichen fields</td>
<td>• Boegoeberg and Boegoeberg lichen fields</td>
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<tr>
<td></td>
<td>• Schakalsberge</td>
<td>• Schakalsberge</td>
</tr>
<tr>
<td></td>
<td>• Obib mountains Gomtsawibberg – Skorpion inselbergs</td>
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</tr>
<tr>
<td><strong>Wilderness area</strong></td>
<td>• Sensitive ecosystems</td>
<td><strong>Tsabiams wilderness area</strong></td>
</tr>
<tr>
<td><strong>IUCN category 1b</strong></td>
<td>• High value “sense of place”</td>
<td><strong>Namtsoab wilderness area</strong></td>
</tr>
<tr>
<td></td>
<td>• Low impact usage</td>
<td><strong>Heioab wilderness area</strong></td>
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<td></td>
<td>• No or minimal mechanized access</td>
<td><strong>Chamnaub wilderness area</strong></td>
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<tr>
<td></td>
<td>• No permanent structures</td>
<td><strong>Schakalsberge wilderness area</strong></td>
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<td></td>
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<td></td>
<td>• Schakalsberge</td>
<td></td>
</tr>
<tr>
<td><strong>National park</strong></td>
<td>• Managed for conservation and controlled tourism</td>
<td>Whole SNP proclaimed under this category. The other categories are managed as land-use zones within the overall National Park. Where no other zone is provided, the zone is taken to be “National park”</td>
</tr>
<tr>
<td><strong>IUCN category 2</strong></td>
<td>• Mechanised access permitted</td>
<td></td>
</tr>
</tbody>
</table>
### Natural monument

| IUCN category 3 | • Conservation of specific outstanding features, including landscapes, geological and archaeological components, fossil deposits, areas of spiritual significance and areas of heritage value | • Bogenfels Arch  
• Roter Kamm meteorite impact crater |

### Habitat / species management areas

| IUCN category 4 | • Protected areas managed mainly for conservation through active management intervention  
• To deliver benefits to people though within the scope of sustainable practices | • Orange River mouth Ramsar site  
• Lüderitz lagoon, Agate beach  
• Bogenfels- van Reenen Bay  
• Baker’s Bay  
• Atlas and Wolf Bay |

### Protected landscapes / seascapes

| IUCN category 5 | • Relatively open access for public enjoyment  
• Generally higher intensity and lower regulatory areas  
• Add to welfare of local communities | Areas where people can have easy access to take dogs for a walk, go horse riding, and zoned areas for 4x4 and quad bike trails, etc.  
• Lüderitz peninsula (Diamond Coast Recreation Area),  
• Lüderitz dune sacrificial area  
• Oranjemund 4x4 dune sacrificial area  
• Orange River floodplain (horse riding) |

### Managed resource protected areas

| IUCN category 6 | • Managed mainly for the sustainable use of natural resources, e.g. fishing, mining  
• Managed to ensure long-term protection and maintenance of biological diversity while providing at the same time a sustained flow of natural products and services to meet local and national development needs, e.g. mining | • Marine diamond areas  
• Coastal and Orange River mining areas  
• Base metal mining areas (Skorpion)  
• Aquaculture (restricted to ponds in MA1)  
• Irrigation agriculture (restricted to Hohenfels)  
• Gas abstraction, piping, etc |

Source: MET (Draft: Sperrgebiet National Park Development and Management Plan)
The above Table 27 sets out the proposed zoning categories and activities that may be allowed in the Sperrgebiet National Park.

Caution: It is important to note that the IUCN zoning categories proposed in the Management Plans do not coincide with IUCN requirements. According to the IUCN, “Different zones in larger protected areas can have their own category, if the zones are described and fixed in law” (Guidelines for Applying Protected Area Management Categories, pg 36). In Namibia, since these zones are not fixed in law, each park should only receive one IUCN category. Therefore, the IUCN categories suggested in the Management Plan should only be used as guidance, but ultimately all portions of a National Park must receive a high level of protection in accordance with the Nature Conservation Ordinance (1975). High level MET management have agreed that such management plans will not play a large role in park management, particularly where they are contrary to existing laws and regulations. Any new development in a park would require an Environmental Impact Assessment in accordance with the Environmental Management Act, 2007. High impact activities such as mining and off-road driving should be minimised within any park as they are contrary to the purpose of a park and could be a source of conflict. For the purposes of this land use plan, conflicting land uses should be minimised.

Together with these seven zoning categories, a broad draft tourism development plan was also identified with proposed Tourism Development Areas (TDA’s – Map 35):

- The Northern Dune TDA
- Aus-Lüderitz link TDA
- Northern Desert Adventure TDA
- Eastern TDA
- Coastal and Mining History TDA
- Oranjemund Coastal/Orange River TDA
- Southern TDA
- Grand Circular Safari Route

These TDA’s were incorporated into the TFCA report and further expansion of these products was suggested by the TFCA report.
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In 1997 an agreement was reached between the Karas Region and the Northern Cape Province with the aim of promoting tourism, environmental conservation and socio-economic cooperation in these two areas. This was the start of the /Ai-/Ais Transfrontier Park (Map 36) concept which was officially signed in 2003 by the Governments of Namibia and South Africa. The Transfrontier park includes the /Ai-/Ais Hot Springs Game Park and the Richtersveld National Park, all measuring 6,045km². The agreement also made provision for the expanded Transfrontier Conservation Area (TFCA) which includes the park and surrounding areas (Map 38).

The /Ai-/Ais Hot Springs Game Park spans an area of 4,420 km² of the total surface of 5,086 km² of the ARTP across the Orange River. The park was established through three proclamations of various land lots between 1968 and 1989 and in 2002 a further five farms were added and the area around Rosh Pinah was deproclaimed from the Park, bringing the size to approximately 440,627 ha. The Fish River Canyon, which is in the park is up to 27 km wide and 550 m deep and is the second largest canyon in the world. It starts near Seeheim, outside the park, and winds along a distance of 160 km through the fissured Koubis Massif all the way down to /Ai-/Ais. The canyon offers the Fish River Hiking Trail, which is one of the world famous hikes in Southern Africa. (SAN Parks, 2006). The accommodation at /Ai-/Ais was recently completed by NWR and now consists of 36 Luxury rooms, 7 Premier Chalets and 100 campsites.

The /Ai-/Ais Hot Springs Game Park borders private land to the east, north and much of the western side. On the south-western side is the mining town of Rosh Pinah and the Sperrgebiet National Park. The privately owned Gondwana Cañon Park (covering a surface area of about 1,120 km²) straddles much of the eastern side while the Orange River in the south separates the park from the Richtersveld National Park in South Africa. In the southeast the park is bordered by the proposed Aussenkehr Private Nature Reserve (SAN Parks, 2006) It is expected that a substantial capital investment (approx N$12 million) will be needed for the /Ai-/Ais Hot Springs Park.
/Ai-/Ais-Richtersveld Transfrontier Park (ARTP) and the TFCA

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Table 28: Draft Zoning categories in the /Ai-/Ais Hot Springs Park

<table>
<thead>
<tr>
<th>Zones</th>
<th>Activities</th>
<th>Specific application in /Ai-/Ais</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strict Nature Reserve</td>
<td>• Highly sensitive and high value conservation/ biodiversity areas</td>
<td>The area south-east of the park between /Ai-/Ais recreation area and the National Park zone along the Orange River including the Konkiep Fish River Confluence</td>
</tr>
<tr>
<td>IUCN category 1a</td>
<td>• Set aside for sensitive and low non-intrusive scientific study</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• No or minimal mechanised access</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• No Permanent Structures</td>
<td></td>
</tr>
</tbody>
</table>

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124 Turpie, J. Lange, G. M. Martin, R; Davies, R and Baines, J. Strengthening Namibia’s System of National Protected Areas: Subproject 1: Economic Analysis and Feasibility Study for Financing, December 2004
### Karas Integrated Regional Land Use Plan: 2011 - 2016

#### Zones

<table>
<thead>
<tr>
<th>Zones</th>
<th>Activities</th>
<th>Specific application in /Ai-/Ais</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wilderness area</td>
<td>• Sensitive ecosystems&lt;br&gt;• High value “sense of place”&lt;br&gt;• Low impact usage&lt;br&gt;• No or minimal mechanised access&lt;br&gt;• No permanent structures</td>
<td>• The Fish River Canyon and immediate outlying area&lt;br&gt; • Huns Mountains&lt;br&gt; A buffer zone of up to 500 m from the banks of the Fish River outward should be established for increased protection. Low impact tourism could be allowed in this zone such as the 85km hike through the Canyon, Boom River and surrounding environment, geology and landscapes</td>
</tr>
<tr>
<td>IUCN category 1b</td>
<td></td>
<td></td>
</tr>
<tr>
<td>National park</td>
<td>• Managed for conservation and controlled tourism&lt;br&gt;• Mechanised access permitted</td>
<td>• Hobas camping facility and surrounding&lt;br&gt; • Gamkab Development Area, Area North-West of the park around the Apollo 11 caves rock art site.&lt;br&gt; Strip of land in the Park running along the Orange River approximately 3km wide, from the high water mark northward</td>
</tr>
<tr>
<td>IUCN category 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural Monument</td>
<td>• Conservation of specific outstanding features, including landscapes, geological and archaeo- logical components, fossil deposits, areas of spiritual significance and areas of heritage value</td>
<td>• Apollo 11 caves and the rock art around the area</td>
</tr>
<tr>
<td>IUCN category 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protected landscapes/ seascapes</td>
<td>• Relatively open access for public enjoyment&lt;br&gt;• Generally higher intensity and lower regulatory areas&lt;br&gt;• Add to welfare of local communities</td>
<td>• /Ai/Ais Hot Springs Recreation Area&lt;br&gt; Sendelingsdrift</td>
</tr>
<tr>
<td>IUCN category</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Managed resource protected areas</td>
<td>• Managed mainly for the sustainable use of natural resources, e.g. fishing, mining&lt;br&gt; • Managed to ensure long-term protection and maintenance of biological diversity while providing at same time a sustained flow of natural products and services to meet local and national needs, e.g. mining</td>
<td>• The portion of land east of Gamkab which is distinctively isolated from the rest of the park</td>
</tr>
</tbody>
</table>

Source: Draft /Ai-/Ais Development and Management Plan (MET)
The proposed Transfrontier Conservation Area (TFCA) (Map 38) forms an extension of the existing /Ai-/Ais/ Richtersveld Transfrontier Park. The Namibian component of the TFCA covers an area of 72,193km² and includes urban areas such as Lüderitz, Aus, Bethanie, Grünau, Karasburg, Ariamsvlei, Veloorsdrit, Warmbad, Noordoewer, Rosh Pinah and Oranjemund (Map 17; pg. 64).

The ICDP, which forms part of the TFCA, identified 7 broad categories for the Namibian side of the TFCA with existing conservation areas, proposed conservation areas, Multiple Use Areas, Cultural Development Areas, Commercial Farming Areas, Infrastructure Corridors and Urban Settlements. Out of these 7 categories 6 more specific tourism development categories were identified that focus on specific ideas and projects for development of these areas.

These Tourism Development Areas (TDA’s -Map 39) were the:

- /Ai-/Ais Richtersveld TDA
- Sperrgebiet TDA
- Scenic Landscape TDA
- Orange River TDA
- Warmbad Nama Cultural TDA
- Lüderitz/Seeheim TDA
- Bethanie Nama Cultural TDA

The main objectives of creating the TFCA were:

- Help create a network of protected areas throughout Southern Africa in order to conserve the region’s unique and remarkable biological diversity and, in some instances, the cultural heritage as well.
- Create and increase new socio-economic development opportunities for local communities in tourism by marketing and developing the TFCA as a regional destination that offers visitors a variety of nature and culture-based attractions as well as accessible cross border linkages and tourism routes.
- Promote a culture of peace and cooperation between countries and local communities through co-management of shared environmental and tourism resources.
- Allow coordinated management of animals whose ranges extend across international boundaries. (ICDP report – 2009)\(^{125}\)

Please note that the TFCA has not been officially adopted by the Namibian Government and is still a draft document.

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\(^{125}\) Stubenrauch Planning Consultants. Integrated Conservation and Development Plan (ICDP)
Namib-Naukluft Park

The Namib-Naukluft Park is one of the parks that forms part of the bigger coastal National Park which includes The Sperrgebiet, the Namib-Naukluft, the Dorob and the Skeleton Coast Parks. Although the larger park is yet to be officially named, the entire length of the Namib coastline from the Orange River in the South to the Kunene River in the North is now officially designated as parks by MET. This makes the Namibian coastline the 8th largest park in the world. The Namib-Naukluft Park and the Sperrgebiet National Park are two of the largest protected areas in Namibia (SEA for the Coastal Areas of Karas and Hardap).

The Namib-Naukluft Park and Etosha National Park are the two oldest parks in Namibia, both having been proclaimed in 1907. The Namib-Naukluft is a grand wilderness area of almost 50,000km² making it the largest individual park in Namibia. It is vast and stretches across the regional boundaries of the Karas, Hardap and Erongo Regions. The main attractions are the Sesriem Canyon, Sossusvlei (both of which fall in the Hardap Region) and the Wild Horses at Garub/Koichab (which falls in the Karas Region). A number of upmarket tourist lodges have been established along the eastern fringes of the park, especially in the vicinity of Sesriem and in the Tiras mountains.

A Draft management and development plan for the Namib-Naukluft Park is in the process of being compiled. It will follow the same principles as that of the Sperrgebiet and will also make use of zoning to assist in management of the area. The following zones are being proposed for the Park:

- Strict Nature Reserve
- Wilderness area
- National park
- Natural monument
- Habitat / species management areas
- Protected landscapes / seascapes
- Managed resource protected areas

The estimated capital cost expenditure for the Namib-Naukluft Park is extremely high and is estimated to be N$88 million. This is mainly due to the required road infrastructure and the fact that it is the largest of Namibia’s parks.

Caution: see page 177

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126 Management and Development Plan for the Namib-Naukluft Area of the Namib-Skeleton Coast National Park. Final Draft 31 August 2009. MET
127 Strategic Environmental Assessment for the Coastal Areas of Karas and Hardap Region. NACOMA. November 2009
Namib Naukluft Park

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126 Management and Development Plan for the Namib-Naukluft Area of the Namib-Skeleton Coast National Park. Final Draft 31 August 2009. MET
127 Strategic Environmental Assessment for the Coastal Areas of Karas and Hardap Region. NACOMA. November 2009
Recommendations on the Sperrgebiet National Park, /Ai-Ais Hot Springs Game Park, TFCA and Namib-Naukluft Park:

- The zoning categories in the Draft Sperrgebiet National Park, Draft /Ai-/Ais Hot Springs Game Park and Draft Namib-Naukluft Park Development and Management Plans may be used as a guideline for the Land Use Plan, but ultimately all developments inside the parks must legally be in accordance with the Nature Conservation Ordinance (1975) and some of the proposed developments go against the purpose of a park. All parks are effectively managed and regulated under the Nature Conservation Ordinance and MET should avoid introducing policy documents that add confusion.

- With regard to the Development and Management Plans, ultimately MET must require all developments in the parks to be subject to an environmental impact assessment. The developments recommended in the plans have not undergone such assessments. Planning as if all recommended developments will take place should be avoided. These plans will not be binding in law and MET must apply the Nature Conservation Ordinance first and foremost. All Ministries should first consult with MET prior to any planning that would either affect or be affected by the parks.

- It is further recommended that development and management plans for the three parks should be edited so as to be in accordance with both the Nature Conservation Ordinance and IUCN standards. All developments that would undermine the Ordinance should be edited or removed prior to endorsement by MET as this could be a source of confusion within MET and other Ministries that consult these plans.

- Linkages between the Sperrgebiet, the plateau/escarpment zone to the west and the /Ai-/Ais/ Richtersveld Transfrontier Park, the Greater Fish River Complex and Namib Huib Plateau Park and creation of wildlife corridors for free movement of species should be considered.

- It is also recommended that a Regional conservation area for the Karas Region should be established and that a management and development plan should be done for this Regional conservation area, taking into account existing small stock farming practices.

Land consolidation strategy to link the Sperrgebiet and /Ai-/Ais

The area between /Ai-/Ais Hot Spring Park and the Sperrgebiet National Park is commercial farmland. As the area is not really suitable for agriculture and a number of farms contain sensitive biodiversity areas, MET has identified ecologically critical farms in the area that might be willing to participate in the possible creation of a consolidation between the Sperrgebiet and /Ai-/Ais Hot Springs Park (Map 41). The rational for the consolidation is: The southern escarpment, Huib-Hock plateau, forms a natural (eastern) boundary of the southern Namib and would provide the ideal boundary for the protection of a confined geographic unit.

- Linking the two areas would be a highly effective way to re-open and guarantee the restoration and protection of east-west migration routes of large mammals such as Oryx, and the restoration of the large migrating population of this species in the Sperrgebiet (formally 90,000, now 20,000).

- Consolidation of critical farmlands would advance the concept of the Greater !Gariep Transfrontier Conservation Area (TFCA). This would ultimately contribute to integrated, holistic regional management of biodiversity by the possible establishment of the Three Nations Namib Desert TFCA which covers the whole Namib Desert from South Africa through Namibia to Angola.

- All farms fall within the Succulent Karoo and some of the identified critical farms have succulent species endemic to the area. There is great potential for discovering new species; for example, an undescribed species of dwarf succulent was recently found on the farm Spitskop.
• In order to ensure better control over mining and prospecting, and to explore the possibility of excluding certain biodiversity-rich areas from the Exclusive Prospecting License (EPL) zones, government ownership has an advantage with its inter-agency coordination capabilities, compared with private farms that have no say in this matter (Land Consolidation Strategy to link the Sperrgebiet and Ai-Ais, MET 2005).

• The establishment of this link and the land consolidation will further strengthen the Sperrgebiet and Ai-Ais Hot Springs Park and increase tourism potential in the region and will also strengthen the potential for tourism in the surrounding areas.

<table>
<thead>
<tr>
<th>Recommendations on the Land Consolidation Strategy:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• The land consolidation strategy is in line with both Vision 2030 and the NDP3.</td>
</tr>
<tr>
<td>• It is recommended that this strategy should be implemented so as to ensure increased levels of conservation as well as increased tourism value of the area and for better management of the land.</td>
</tr>
<tr>
<td>• This strategy should be the first step in ensuring a regional conservation area, encompassing the land consolidated areas, the Namib-Naukluft Park, the Sperrgebiet, the Ai-Ais Game Park, the Gondwana Park, the Greater Fish River Canyon Complex and the Orange River up to the eastern border of Namibia.</td>
</tr>
</tbody>
</table>
Nampower is expecting that Namibia's demand for energy will grow significantly (4.5%) and it is expected that the country’s demand will be approximately 550MW in 2012. According to NamPower, the Kudu Power Project is one of the preferred options to address this shortfall. Namibia has a coal fired thermal power station in Windhoek with a 120MW installed capacity; a diesel powered station in Walvis Bay of 24MW capacity and a hydro-electric power station at Ruacana of 249MW. This makes a total of 393MW and Namibia currently already utilizes more than 500MW in peak demand.

The first phase of the Kudu Power Project will be the development of an 800MW combined cycle gas turbine (CCGT) power plant at Oranjemund. According to the EIA report, the natural gas reserves at Kudu Gas Field are sufficient for an 800MW power plant operating for a minimum of 20 years. The second phase will only commence if there is a demand for it and if the reserves can be proven. The second phase will consist of an additional 800MW CCGT power plant.

The power plant at Oranjemund will most likely be located about 2.5km from town (Map 42) and will consist of two gas turbines with a possibility of two steam turbines. The site will extend approximately 37 hectares and it is expected that the second phase will also take place within this 37 hectares. It is estimated that during the construction stage there will be 1300 workers. These workers will be accommodated to an area of 10 hectares between the power plant site and the town of Oranjemund. After completion of the construction, the operational workforce will be between 30-40 people. It is expected that major components of the CCGT plan will be delivered from the Port of Lüderitz.

Water for the cooling of the plants will be extracted directly from the sea, from existing mining ponds and possibly from groundwater. The water will be stored in bulk storage tanks and it is expected that water usage will be approximately 70 m$^3$/hr. Approximately 3.5 million m$^3$/day of gas will also be used. Up to date, no progress has been made with the construction of the Kudu Gas Power Plant. According to NamPower, this is mainly due to the high cost of the project and low gas prices.

Recommendations on Kudu Power:

- Implementation of the mitigation measures (suggested in the EIAs) and the revised planning process must take place.
- Possibly synergies between the Kudu Project and other industries should be investigated.
- All workers should be accommodated in Oranjemund so as to prevent the creation of a secondary growth point that is not viable or sustainable and might lead to problems in the future.

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Desert Star Film Studio

Desert Star Studios Namibia (Pty) Ltd’s vision is to “develop the country of Namibia to become one of the world's most dynamic and complete motion picture destinations, utilizing Namibia’s amazing and diverse array of natural locations together with world class movie sets to attract international filmmakers and tourists.”

The Desert Star South Project will be located in the most south eastern corner of the Karas Region on Portion 1 of the Farms Komsberg No. 156 (3,819 ha), the remainder of Farm Komsberg No 156 (3,819 ha), Portion of the Remainder of the Farm Stolzenfels No. 74 (7,140 ha) and Portion 1 (Nog Hoop) of the Farm Jerico No 113 (9,641 ha). The studio will cover an area of 182 ha in phase 1 and eventually the area for the whole project will cover approx. 23,838 ha (phase 1-3).

The closest town is Ariamsvlei with the Orange River forming the southern boundary of the project. Water for the project will be obtained from the Orange River. The project will take place in 3 phases of which phase 1 will consist of the Desert Start Resort and 112 residential units, a championship golf course and the Golf Course of the stars. Bulk electricity for the project will be supplied by NamPower from the Rock Substation on the Farm Jericho which is situated approx. 16 km from the project site.

A waterborne sewerage system will be provided for and sewerage effluent will gravitate or be pumped to sewerage treatment plants with the possibility of the final effluent (after disinfection) to be used for irrigation purposes.

Recommendations for Desert Star Studio:

- If indeed the Desert Star Studio will be completed, it is recommended that the existing airport at Keetmanshoop be upgraded to international status. This would create an opportunity for Desert Star visitors to fly to Keetmanshoop where they can then either be transported by road, rail or air to the Desert Star Film Studio. This will create much needed investment into Keetmanshoop and also link the development of Desert Star to the rest of the region.

- It is not recommended that a bridge be built over the Orange River to facilitate the process as proposed by Desert Star. This will most likely lead to visitors arriving through South Africa, entering at Desert Star and leaving again through South Africa and therefore resulting in little economic and other benefits reaching the Karas Region. Since this studio will be using Namibian resources for money generation, all local economic benefits should come to Namibia.

- The scoping report and brochure states that there is intention to build a golf course, a spa, a rain-forest, and have a non-indigenous plant garden to grow plants for movie sets. All are very water intensive. Although the brochure indicates that there is ample water in the Orange River, this intense removal for non essential uses may not be sustainable and could cause serious effects on communities and the environment locally and downstream. This project could potentially negatively affect irrigation projects downstream.

- Golf courses are very water intensive and use large quantities of fertilisers, pesticides, and herbicides if they are of the international standard. The proposed golf course should aim to be more sustainable and should not aim to be lush and totally covered in grass, as they are in the United States and Europe. The golf course should be made to be in keeping with the Namibian desert environment.

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130 Environmental Consulting. Draft Scoping Report: Phase 1 of the Proposed Desert Studios and Motion Picture Resort, Karas Region, Namibia. 24 August 2010
The planting of non-indigenous plants should be discouraged, especially next to a river where seeds will be carried downstream and spread over vast distances. The Karas region already has a problem with invasive species taking over and no new developments should add to this problem.

Integration of the Desert Star into the Karas Region is essential so as to ensure that it is not operating in isolation from the rest of the region.

It is recommended that training facilities be established at the proposed development for training in film related activities.

It is further recommended that a complete feasibility study be conducted on the viability of establishing a town at Desert Star and possible mitigation plans on the economic basis of the town if the desert star fails to develop. The idea is not to create another town that is not economic viable and feasible which becomes the problem of the Government at a later stage.

### SEA recommendations:

- The SEA supports the Desert Star project as the development intends to attract international recognition for Namibia as an high quality tourism and filming destination.

- The SEA further welcomes the intention of utilising solar power at the development, but conservation measures such as water efficiency must be highlighted and implemented. The EMP should emphasise strong mitigatory measures to minimise any environmental damage that is predicted.

- The second golf course planned for Desert Star is seen as excessive from the SEA viewpoint as the high water demand will have a cumulative impact on the Orange River System.
The planting of non-indigenous plants should be discouraged, especially next to a river where seeds will be carried downstream and spread over vast distances. The Karas region already has a problem with invasive species taking over and no new developments should add to this problem.

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Declaration of Oranjemund as a Town

Oranjemund developed as a result of diamond mining that has taken place in the Sperrgebiet for the last 100 years. Oranjemund is a “closed-town” meaning that all visitors must obtain a permit to enter the town. With the proclamation of the Sperrgebiet as a National Park there is possibility of proclaiming Oranjemund as a town. If proclaimed as a town, Oranjemund would be administered as a local authority. Currently the administration of Oranjemund is run by the Oranjemund Town Management Company, which is the ownership of Namdeb. The OTM Co has since the proclamation of the Sperrgebiet as a national park, started with the preparation of Oranjemund to be proclaimed as a town with surveying and approval of township extensions taking place. According to MRLGHRD there is still a dispute between MET and Namdeb with regards to the entrance access into the SNP. The problem of access is expected to be sorted out in 2011, thus allowing Oranjemund to be proclaimed as a town in 2011.

Recommendations for Oranjemund:

- An alternative income base for Oranjemund should be encouraged so as to ensure that if the mine withdraws from Oranjemund, there will be an alternative economic base to sustain the town.
- The possibilities include:
  - Making the town tourist-friendly and linking the town with the Sperrgebiet and the Orange River Mouth to help increase the level of tourism in the town.
  - Utilisation of renewable energy sources is strongly recommended and should be investigated.
  - Old abandoned mining areas could potentially be used for either aquaculture or mariculture activities.
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Lower Orange Hydro-Electric Power Scheme (LOHEPS)

NamPower, in cooperation with Clackson Power Company, is looking at the possibility of developing nine distributed hydro-electric power stations along the banks of the Lower Orange River. The LOHEPS will consist of 9 small hydro-electric power stations varying in sizes from 6MW to 12MW (Map 45). The idea of the project is to divert the flow (run-of-river) for the Orange River through canals and tunnels into a water turbine which in turn will drive an electric generator (NamPower 2010). The strategic placement of the turbines will enhance the kinetic and potential energy of the river and turn the energy into electrical energy.

According to NamPower, the Orange River has a potential of generating between 80MW and 120MW. This project will enable Namibia to harvest the Orange River’s hydro-electric power potential. Although the run-of-river option is more costly, according to NamPower it is more environmentally viable as it utilises the natural flow of the river and eliminates damming or storage of the waters, as dams and reservoirs have many stand-alone negative environmental impacts.

The LOHEPS proposes the use of tunnels and canals for carrying water from the river to the turbine house. The turbine proposed for the project has a 95% efficiency rate. NamPower estimates the power requirements for the south of Namibia being 7% of the country’s overall demand and as proposed by NamPower the LOHEPS will satisfy these requirements with the excess power transmitted into the central grid system. The power will be transported via 132kV power lines to existing substations in the region. The project will be done in two phases: Phase 1 will consist of the construction of four sites only- Platkop, Rooiberg & Swartberg and Khaais; and Phase 2 will consist of the construction of the remaining 5 sites. It is expected that the construction phase (1 and 2) will employ approximately 2,000 people, with 144 employees needed for the project after construction. The project is still in its feasibility stage.

 SEA recommendations on LOHEPS:
The SEA highlighted the low flows of the Orange River as a seasonal occurrence, but these occurrences may become longer and more frequent as upstream use of water increases and climate variability increases. These low flows might make the LOHEPS scheme vulnerable as the system needs water to run. Environmental components are likely to become more stressed during droughts and maintaining environmental flow requirements during these events will be crucial.
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Namibian Islands Marine Protected Area (MPA)

One of the primary purposes is to facilitate fisheries management in particular the management of components of marine ecosystems that are not protected by traditional fisheries management. The MPAs in Namibia are specifically set out for the purpose of protecting important spawning and nursery grounds for fish and other marine resources such as rock lobster and sensitive ecosystems and breeding areas for seabirds and marine mammals. The MPA comprises of a coastal strip in the south west of Namibia’s marine waters extending from Hollamsbird Island, the northernmost island, to the Sinclair Island in the south, with an average width of 30km (Map 46, pg. 160).

The total MPA zone has been further subdivided into four zones:

- Zone 1: Consists of general conditions applicable to all the islands, islets, rocks and other specific areas
- Zone 2: Consists of stricter conditions, that applies to the proposed lobster-sanctuary areas and proposed land-based mining restrictions
- Zone 3 and Zone 4: Both are island specific with zone 3 containing conditions around each island and zone 4 consisting of higher degrees of protection on each island.

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131 Namibian Islands Marine Protected Area. Ministry of Fisheries and Marine Resources
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Deep Water Port at Shearwater Bay

NamPort has realised that the port of Lüderitz has the potential to be upgraded, from a mainly fishing port into an international port in support of the shipping industry. The operating capacity of the port at Walvis Bay (Namibia), Saldanah and Cape Town (RSA) are stretched and often lead to delays in the handling of ships making use of the harbours. Resulting from the restricted draft of the Lüderitz harbour, NamPort has commissioned a study having the aim to investigate the construction of a deep sea port at Shearwater Bay at Lüderitz. Should this development initiative be found to be feasible, the development of the Shearwater Bay port will encourage SADC countries to make use of this locality to import/export goods to landlocked areas with industries in support of the shipping industry. These activities will include the storage and handling of containers, ship repairs, fuel depot’s, coal and mineral export handling as well as the general supply of goods and supplies required by vessels.

The proposed development of a deep water port will mean job creation and economic potential for the region in terms of import and export. This project is still in feasibility stage and the result of the project is highly dependent on the outcome of the feasibility study for the Trans-Kalahari Railway line.

Recommendation:

It is recommended that a technology/skills training facility be part of the new port development so as to ensure skills training in port related activities.
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Map 47: Proposed Shearwater Bay Harbour
Renewable Energy (refer to Map 48)
The Karas Region is ideally suited for renewable energy such as solar and wind energy. The ECB has provided two licenses for renewable energy projects in the Karas Region. The Aeolus Power Generation for a 44MW wind farm at Lüderitz is still under development and no further information could be obtained from the United Africa Group. A Small Hydro Power Project on the Orange River to VTB Capital Namibia for 30MW was not approved for construction by MAWF and the project is currently off the table according to NamPower.

Another company, Electrawinds has also submitted an application to the ECB for a land-based wind farm in Lüderitz which will be able to generate 50MW. Information on these different projects is scarce and attempts to obtain information from the United Africa Group were not successful.

Recommendations on renewable energy:

- It is recommended that the Karas Region should be marketed as a region well suited for renewable energy as long as such developments are done in a sustainable manner with full use of the EIA process.
- Together with the establishment of renewable energy developments it is also recommended that training, research and even production of renewable energy equipment be encouraged in the Karas Region, thereby creating much needed employment and skills training and possible manufacturing of products.

SEA recommendation on renewable energy:
The SEA supports the generation of energy from wind and solar power as these are less environmentally harmful than fossil fuel and nuclear generation and it is even recommended that the region should become a “thriving hub for renewable.” However, it is recommended by the SEA that the whole EIA process must be followed in order to optimise the development and achieve possible synergies.

Trans-Kalahari Railway line (refer to Map 48)
The Trans-Kalahari Railway Line Development (TKR) is aimed at developing a railway connection between Namibia and Botswana as well as the SADC region. It will be part of the Trans-Kalahari Corridor. The Trans-Kalahari Memorandum of Understanding (MoU) spells out the commitment of Botswana, Namibia and South Africa to address and improve crucial issues for cross-border transport and trade. This railway line is still in feasibility stage and little information was available on this project.

Upgrading of the Aus-Lüderitz Railway (refer to Map 48)
There is an existing railway line between Aus and Lüderitz but is in major disrepair. With the proposed upgrading of this railway line it will create an important link between Lüderitz and the rest of Namibia, as well as South Africa and other parts of the region. The harbour and railway line will serve to develop the southern part of Namibia, the local inhabitants, the fishing and mining industry as well as the agricultural projects of the Karas Region. It is also intended to distribute petroleum products to the southern regions of Namibia through the Lüderitz harbour and the upgraded rail link. This upgrade will play an important role once the deep sea harbour at Lüderitz has been developed.
Renewable Energy (refer to Map /four.oldstyle/eight.oldstyle)

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Recommendations: Aus-Lüderitz Railway

- It is recommended that the upgrading of the railway line be finalised so as to further strengthen the role of the Karas Region in transport/export/import as well as tourism.
- It is also further recommended that synergies should be explored. For example, tour operators could utilise the railway line for the transportation of tourists. This may even be linked to areas such as the Desert Star, Rosh Pinah and in future possibly Oranjemund.

Recommendation on Vioolsdrift/Noordoewer Dam:

It is clear that many developments are being suggested in and around the Orange River. Cumulative impacts on the environment and the communities from all of the various proposed developments and activities must be carefully considered in all decisions being made. For example, small run-of-river hydro-electricity schemes may have a small impact on their own, but by adding a dam, cumulative impacts will likely increase dramatically. The health of the environment and people along the river and all developments in and along the river must be taken into account when deciding on the chosen site and when conducting the feasibility study, EIA and EMP.
Upgrading of Bethanie-Maltahöhe-Walvis Bay Road (refer to Map 48)

The Roads Authority is currently investigating the viability of upgrading the Bethanie-Maltahöhe-Walvis Bay road from a gravel road to a tar road. Initial indicators are that the Maltahöhe-Walvis Bay link could form part of Phase 1 of this development initiative while the Maltahöhe-Bethanie road link will be phase 2. The upgrading of this road section will have a potential positive impact on the tourism and commercial industries located along the road, especially for the increase in cultural tourism in and around Bethanie, as this town has historical and cultural qualities that are highly sought after.

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Recommendations:

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- Tourism and cultural tourism should be marketed for Bethanie and surrounding areas, but negative impacts from tourism should be avoided.
- It is further recommended that a structure plan be compiled for Bethanie to assess the needs of the village and to guide future development.
5.2 Local Level Initiatives

During the KIRLUP process various workshops and meetings were arranged with local communities to identify the needs and initiatives of the communities.

The aim of the Participatory Land Use Planning Process (PLUP) was to ensure participatory land use planning on local level (bottom up) in the region. The main tasks for the consultant were to:133

- Review and analysis of the present planning system (planning practices, planning related structures, laws, rules and regulations etc.) and development concepts in Namibia
- Investigation and analysis of potential stakeholders in Karas Region for bottom-up planning
- Identification of appropriate NGO’s / other organisations and individuals to be trained on the organisation and moderation / facilitation of participatory planning workshops (with support from local organisations or government)
- Development of a participatory planning concept and strategy (with support from GIZ and MLR)
- Identification of appropriate participatory planning tools based on PRA / RRA techniques and tools (Participatory Rural Appraisal / Rapid Rural Appraisal) for the Namibian situation
- Preparation, organisation and carry-out of training seminars on participatory planning (three trainings) based on the results stipulated under result 5
- Practical implementation / practicum in preparing, organising, facilitating and documenting participatory planning workshops within the context of the Karas Regional Land Use Planning project. This includes discussion and elaboration of data material, identification of “critical” areas (e.g. conflicts) and “promising” areas as well as land related development aspects with local communities and other stakeholders through the participatory instruments
- Detailed documentation of the participatory planning concept and participatory planning tools developed and introduced
- Documentation of the identification of appropriate personnel for facilitating participatory planning workshops in Namibia
- Final evaluation of the participatory planning process,
- Evaluation of the final land use plan
- Preparation for necessary monitoring steps / Contribution to the development of a monitoring system

Key issues identified during the PLUP process for land use planning in Karas were:134

- Preparedness for droughts (since the Government stopped to support farmers in case of droughts, farmers in Karas fear to risk the basis of their existence in case of a severe drought in the coming years)135
- Limited land rights of communal farmers (Capacities to manage land optimally are limited as result of communal rights to grazing areas. The registration of customary land rights does not address the problem)
- Groundwater levels (Unknown groundwater levels: water shortages in future might endanger overall development)

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- Evaluation of the final land use plan
- Final evaluation of the participatory planning process,
- Identification of appropriate participatory planning tools based on PRA / RRA techniques and tools
- Development of a participatory planning concept and strategy (with support from GIZ and MLR)
- Groundwater levels (Unknown groundwater levels: water shortages in future might endanger overall problem)
- Limited land rights of communal farmers (Capacities to manage land optimally are limited as result)
- Preparation for necessary monitoring steps / Contribution to the development of a monitoring system
- Documentation of the identification of appropriate personnel for facilitating participatory planning
- Detailed documentation of the participatory planning concept and participatory planning tools development
- Practical implementation / practicum in preparing, organising, facilitating and documenting participatory planning workshops within the context of the Karas Regional Land Use Planning project. This includes discussion and elaboration of data material, identification of “critical” areas (e.g. conflicts and “promising” areas as well as land related development aspects with local communities and other stakeholders through the participatory instruments)

Two areas were identified for training on local level that of Aus (having tourism potential) and the Soromaas communal area (optimal use of grazing land if water access could be provided). Various workshops were held in this regards and with the community to analyze the potentials, conflicts and possible action plans.

**Pfalz case study**

Pfalz is situated within the !Han/Awab communal conservancy located about 48km northeast of Bethanie and consists essentially of five farms: Pfalz, Ganub, Landshut, Misgund and Doachas. The study had to analyze the optimal land usage of the area and include possible conflicts between livestock and wildlife, possible diversification from small livestock farming to game farming and analyze possible potential of the area for aquaculture projects. It was found by the study that the biggest concern for the community is that of lack of water and poor distribution of water points which makes it difficult to utilize all the grazing areas optimally. Some community members were of the opinion that construction and repair of fences (internal and outside boundaries) could assist the community in grazing control and to protect their livestock and game that has been released by MET in the area. It was argued that the only alternative land use that might be possible in the area will be that of slate production. All other land uses are not feasible due to lack of water, fodder constraints and lack of markets.

The following maps 49 - 53 show the results of the participatory mapping exercises of the spatial distribution of resources (i.e. grass and shrub vegetation, slates, kamagu), the functional and dysfunctional boreholes and earth dams (the functional ones being indicated in blue, the dysfunctional ones in brown), the main livestock herding routes as well as other livelihood activities like gardening. The maps also indicate the underutilised grazing/browse areas.
Map 49: Grazing Management Plan for Doachas

Legend

- Homesteads
- Wildlife
- Windmills
- Boreholes
- Livestock herding
- Earth dams
- Cattle Posts
- Well
- Livestock herding in rainy season
- Rivers with tree & shrub vegetation
- Broken fences
- Roads
- Tracks
- Garden
- Areas rich of kamagu
- Flatstones/Rocky areas
- Underutilized Grazing areas
- Hoodia Garden
- Kraal
- Grass and shrub vegetation

Grazing Management in Doachas

Map /five.oldstyle/zero.oldstyle: Grazing Management Plan for Doachas

Map /four.old.style/nine.oldstyle: Grazing Management Plan for Doachas

31 August 2010

1:60 000
Map 50: Grazing Management Plan for Misgund

Legend

- Homesteads
- Wildlife
- Windmills
- Boreholes
- Livestock herding
- Earth dams
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- Well
- Livestock herding in rainy season
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- Kraal
- Grass and shrub vegetation

Grazing Management in Misgund

31 August 2010

Grazing management in Misgund

Map /five.oldstyle/zero.oldstyle: Grazing Management Plan for Misgund

Map /four.oldstyle/nine.oldstyle: Grazing Management Plan for Doachas

Grazing Management in Doachas

1:60 000
Grazing management in Gunab

Legend
- Homesteads
- Wildlife
- Windmills
- Boreholes
- Livestock herding
- Bath-dams
- Cattle Posts
- Well
- Livestock herding in rainy season
- Rivers with tree & shrub vegetation
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- Roads
- Tracks
- Garden
- Areas rich of kamagu
- Flatstones/Rocky areas
- Underutilized Grazing areas
- Hoodia Garden
- Kraal
- Grass and shrub vegetation

Map /five.oldstyle/two.oldstyle: Grazing Management Plan for Gunab

Map /five.oldstyle/one.oldstyle: Grazing Management Plan for Pfalz

Grazing Management in Pfalz

Grazing Management Plan for Gunab

1:60 000

Kilometers

31 August 2010
Aus case study has been identified as an important tourism hub in the region as it is ideally borders both the Namib-Naukluft Areas and the Sperrgebiet National Park and is en-route to Lüderitz. A conservation trust, the Aus Community Conservation Trust (ACCT) has been established for Aus in order to steer conservation and tourism related activities in Aus. In 2005, a tourism information centre was built for the community. Due to management constraints the community has up to date not embarked on any tourism activities and no real benefits reached the community.

The existing zonation of the townlands was found to be unrealistic as it limits the community access to grazing and fuel wood resources in certain areas. Due to absence of internal fences or camps on the townlands, these natural resource (conservation) areas are in danger as grazing land becomes limited due to the animals generally tend to move towards any areas with available feed. The management of wildlife in Aus Townlands is still under control of MET. It was generally found that the capacity building, marketing and internal organization support should be given to the ACCT in order to fulfil its duties and functions and become a feasible organization.
Aus case study

Aus have been identified as an important tourism hub in the region as it is ideally borders both the Namib-Naukluft Areas and the Sperrgebiet National Park and is en-route to Lüderitz. A conservation trust, the Aus Community Conservation Trust (ACCT) has been established for Aus in order to steer conservation and tourism related activities in Aus. In 2005, a tourism information centre was built for the community. Due to management constraints the community has up to date not embarked on any tourism activities and no real benefits reached the community. The existing zonation of the townlands was found to be unrealistic as it limits the community access to grazing and fuel wood resources in certain areas. Due to absence of internal fences or camps on the townlands, these natural resource (conservation) areas are in danger as grazing land becomes limited due to the animals generally tend to move towards any areas with available feed. The management of wildlife in Aus Townlands is still under control of MET. It was generally found that the capacity building, marketing and internal organization support should be given to the ACCT in order to fulfil its duties and functions and become a feasible organization.
Many of these initiatives that were identified have little information and many are still in feasibility stage or in the stage where they are seeking funding for the project. Identification of challenges and opportunities were also obtained. According to farmers in the Karas Region their main challenges in the region for agriculture are:

- Water scarcity and quality
- Unequal land distribution
- Lack of feasible markets for products such as fruits and vegetables
- Bureaucratic systems that delay development
- Conflicting sectoral policies
- Lack of coordination between line ministries
- Low soil quality
- Access to funding from financial institutions due to communal land tenure (no security for farmers on communal land)

**Pictures 5: Participatory land use planning exercise in Pfalz and Aus (GOPA 2010)**

Other constraints identified during the PLUP process was that both established farmers as well as commercial farmers felt that farming operations and capital input has increased significantly over the years, while prices for the meat of their livestock did not necessarily reflect this increase in cost. This resulted in many farmers having to diversify into other kinds of income generation such as tourism or branching into insurance for additional income.

Affirmative Action Loan Scheme farmers mentioned that the size and suitability of the farms were a definitive constraint. Some did not have enough cash flow and enough livestock which resulted in problems with utilization of the full potential of the farms. The beneficiaries of the National Resettlement Programme face similar problems as many of the farm sizes are too small for commercial agriculture purposes. Together with the size issue, some of the farms are also not suitable for farming and others even lack proper infrastructure. It was also mentioned by participants (resettled farmers) that there is little or no post-settlement support.

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137 Workshops held with community members during the PLUP process identified these problems.
Participants argued that on communal land when goats and cattle are left to roam freely, the result is overgrazed land. This poor farming practice results in lowered productivity of the land where only subsistence farming may take place. Participants stated the need for better rangeland management control. The farmers also raised concerns over conflicts caused by mining exploration on land, which can have a severe negative impact on agriculture production. However, along with the problems in the region, the farmers did state that the irrigation project at Naute presented a good opportunity for them.

Traditional Authorities felt that water problems in areas such as Vaalgras, Aus, and Blouwes have an impact on the livelihood of the communities. Development constraints on various projects include failure of implementation due to lack of funding and proper project planning taking place. They also identified the lack of resources such as transport, computers, faxes, telephones and skills as a constraint in terms of development.

Conflicting policies identified by Traditional Authorities include water supply policies, conservancy policies and environmental laws. Mining was specifically identified as being a source of potential conflict in areas such as Warmbad where mining clashes with communal interests. The Traditional Authorities identified gardening projects and green schemes, tourism and cultural villages as potential opportunities for supporting livelihoods within the various communities.

The Regional Council and town councils identified the lack of funds and expertise as one of the major challenges for development in the region. They also identified that the distances between towns, limited coordination between ministries and a lack of commitment from stakeholders all make development more difficult.

NGOs and private sector stakeholders identified the lack of trained community members in sectors such as tourism a definitive challenge. The lack in funding also creates some seriously challenges in the Karas Region. According to the NGOs and private stakeholders, awareness raising on natural resources, the right to manage natural resources, economic development and social upliftment are among the opportunities that may help in overcoming the challenges.

The potential for tourism and hospitality were identified by communities. The biggest potential areas are along the main tourism routes. In terms of community tourism a number of community-based tourism activities are either existing or proposed for the Karas Region. The main problem, as suggested by stakeholders, was that management capacities are low and good marketing strategies are needed. It also seemed that the real aim of conservancies was unclear to many of the community members. Many reasoned that the main aim of conservancies was to obtain hunting rights from annual quotas from MET, while some reasoned that the aim of the conservancy was to demarcate the jurisdiction of traditional authorities and to secure statutory rights over them.

Annexures D and F list all the Regional and Local Level Initiatives identified throughout the various workshops.

**Findings and recommendations**

The amount of small community projects in the region is immense. Unfortunately, no coordination or limited coordination and integration are taking place between the various line ministries, NGOs and donor organizations. Many of the projects are repetitive and no proper studies are being conducted on the feasibility and the reason for failure of these projects.

If the aim of the horticulture projects is not just for subsistence and the goal is to sell products in the market, private organizations such as Spar, Pick and Pay etc, should be involved in close collaboration so as to ensure a viable market for products produced from these projects. The viability of small community horticulture projects should be questioned if there is no support or cooperation from big markets, unless of course these projects aim just to provide food for subsistence.

It is strongly recommended that a study be done to research the feasibility of small community projects and the problems and solutions to make these projects viable. Millions of dollars are being utilised for small community projects, but rarely are they a success. A complete database should be compiled for all projects in the region and a management system should be put in place to prevent replication of projects. Management of these projects should be integrated and coordinated with other line ministries, NGO’s and donor organizations. The Regional Council should be the agency that addresses the feasibility, implementation and funding of community level projects.

5.3 Vision for the Region

Several visions were formulated for the region to enable the sustainable use of land in the region for the future. These were:

- Protect and integrate key biodiversity and protected areas
- Strengthen the transportation corridor
- Strengthen the agricultural industry in the region and promotion of livelihood diversification
- Promote the region as a tourism destination
- Promote renewable energy and industries
- Reinforce the role and functionality of urban centres

5.4 Land Use Scenario’s and Zones

The following land uses or scenarios are proposed for the Karas Region based on the vision of the region. These land uses will contain the development initiatives that were identified in Section 5.1.

(a) Protected Area Zone
(b) Tourism Zone
(c) Agricultural Zone
(d) Mining and Industrial Activities
(e) Fishing, Aqua-culture and Mari-culture Zone
(f) Development/Infrastructure Activities
(g) Urban Area Zone
Vision 1: Protect and integrate key biodiversity areas and protected areas

Objectives:

- To create a regional conservation area including all the sensitive, key biodiversity, scenic and protected areas;
- Create wildlife corridors to ensure the movement of migratory wildlife species;
- Protect the scarce resources of the regions such as water, scenic landscapes and wildlife.

Protected Areas Zone

The Protected Area Zone stretches from the Namib-Naukluft Park south towards the Orange River, including the Sperrgebiet National Park, the /Ai-/Ais Hot Springs Park, the Gondwana Canyon Park, the Greater Fish River Canyon Complex (GFRCC), Naute Dam and all four existing communal conservancy areas in the Region. These are the areas with high levels of environmental sensitivity and biodiversity hot spots which should be protected. Although there are varying degrees of protection through the management of different zones, it is important to note that these zones may effectively weaken the Nature Conservation Ordinance (1975) in some cases (such as areas where mining is encouraged in a zone within a park). These zones also do not comply with IUCN standards. Although the Sperrgebiet, Namib-Naukluft and /Ai-/Ais and the Greater Fish River Canyon Complex have management plans with specific zones, these zones are not enshrined in law and, in some cases the zones are flawed in that they go against the Nature Conservation Ordinance. These zones will guide the management of activities in the Park but only in accordance with the law.

Accordingly, land uses such as mining and infrastructure development should be minimized so as to prevent damage to the environment. All activities to take place in the protected areas should be accompanied by detailed Environmental Impact Assessments and Environmental Management Plans. No activity which will harm or degrade the environment should be allowed in the protected areas. Low impact tourism can be allowed in these areas, but it should be kept in line with the management and development plans compiled for the various parks and conservation areas. All proposed activities must obtain permission from MET in accordance with the Nature Conservation Ordinance (1975). All parks and protected areas should have a complete and updated Development and Management Plan that deals with all types of development issues.

The Protected Area Zone can further be divided into 4 zoning areas:

(i) Proclaimed National Parks and Game Parks

This zone is the most restrictive in this Protected Areas zone. These areas have been identified as priority areas for conservation in terms of high levels of biodiversity, scenic value and conservation value. Varying degrees of tourism activities can be allowed in these areas in accordance with the Nature Conservation Ordinance and Environmental Management Act and the associated regulations for each. The KIRLUP SEA recommendations should help to guide scientifically based decision making (in addition to the MET coastal SEA) whereas the Management and Development plans should serve as guidance for management but they are not a substitute to law.
This area includes the Sperrgebiet National Park, the Namib-Naukluft Park, the /Ai-/Ais Hot Springs Game Park and the Namibian Islands Marine Protected Area. The /Ai-/Ais Hot Springs Park forms part of the /Ai-/Ais Richtersveld Transfrontier Park. The Naute Recreation Resort is an official MET game park but is closed to the general public. It is recommended that a development and management plan should be looked at to control any future development that might take place in and around the surrounding area. All activities within the proclaimed parks must strictly adhere to the Nature Conservation Ordinance (1975), the General Regulations for parks and any additional specific regulations for each individual park. The Marine Protected Area is regulated by the Marine Resources Act and regulations.

(ii) Sensitive Areas

The identification of the sensitive areas in the SEA was based on the importance of these areas to the ecological functioning and environmental flows in the Karas Region (Map 54). Proclaimed National Parks and Game Parks are identified as sensitive areas in the SEA. In addition to the parks listed above, other sensitive areas identified by the SEA are demarcated on the map.

The SEA identified the following areas with environmental sensitivity in the Karas Region (Map 55):

- The /Ai-/Ais Hot Springs Game Park and surrounds such as the Fish River Canyon Complex;
- Area between /Ai-/Ais Hot Springs Game Park and Rosh Pinah, including farms Namuskluft, Zebrafontein, Witputs, Trekpoort and Spitzkop;
- All natural springs in the Karas Region;
- Warmbad plains;
- All main ephemeral river courses, notably Fish, Konkiep, Gamchab, Löwen, Holoog/Gaap;
- Entire length of Orange River and the main tributary valleys flowing into it;
- Tiras Mountains and escarpment; Brukkaros Mountain; Groot Karas Mountains;
- All ephemeral pans;
- Huib-Hock Plateau;
- Sperrgebiet corridor and entire Sperrgebiet area;
- Namib-Naukluft Area;
- Lüderitz peninsula;
- All offshore islands;
- Aus area (particularly the granite outcrops);
- Kalahari dunes south of Aroab;
- Kalahari sparse woodlands on eastern dunes.
All activities that will take place in the Karas Region (no matter where they are located) must be in accordance with the Environmental Management Act of 2007. Additional protection should be granted to the mapped sensitive areas through the Nature Conservation Ordinance of 1975 and no activity which will degrade or harm the environment should be allowed in sensitive areas designated in the plan. Wildlife, protected game, and indigenous and protected plants are granted special protection throughout Namibia under the Nature Conservation Ordinance. In addition, the Forest Act affords special protection to plants such as the Quiver Tree. MAWF also has several other laws that deal with environmental protection and these must be adhered to throughout Namibia. Under MET’s Environmental Management Act, environmental clearance certificates should not be granted to conduct activities which will harm the earmarked sensitive areas or protected plants or animals. It is recommended that a management plan for the ecologically sensitive areas of the region be drawn up in order to enable better control and protection of the areas and the species that inhabit them.

(iii) Private

The Greater Fish River Canyon Complex falls in the protected area zone. Even though tourism activities are taking place in some areas of the complex, the greater area is utilised for conservation purposes with pockets of tourism activities in smaller areas. This zone includes the GFRCC and all other current and future private parks in the region. The Greater Fish River Canyon Complex aims at bringing together a group of farms surrounding the Fish River Canyon to ensure better management and sustainability for the area. This will also ensure the east-west movement of wildlife, creating wildlife corridors that can connect various protected areas.
This complex together with the /Ai-/Ais Hot Springs Park and the proposed land consolidation strategy of MET will eventually create one conservation area stretching from the Namib-Naukluft down the Sperrgebiet, east towards the boundary of the Canyon Complex, along the Orange River up to the eastern boundary of the Karas Region and connecting to the Kgalagadi Transfrontier Park. In itself this will be a major advantage for the region, making this one of the biggest conservation areas in Namibia. Farms surrounding this conservation area should be encouraged to become part of this conservation area and diversify into game farming and tourism. Private Game Reserves and Parks are regulated under the Nature Conservation Ordinance (1975) sections 22-24.

In this zone the land use is conservation mixed with tourism. Within this zone, all efforts must be made to apply conservation methods. All current and future private parks should be officially declared through MET and must be in accordance with the Nature Conservation Ordinance (1975). All protected animals and plants must be conserved in accordance with the Nature Conservation Ordinance, Forest Act, and the Environmental Management Act. Strict implementation of MAWF laws will also afford protection to these areas.

(iv) Conservancies

There are currently four registered communal conservancies in the Karas Region and one emerging conservancy (#Kharis). The conservancies in the Karas Region are generally not well organized and mostly dependant on subsistence farming. It is recommended that management plans should be developed for these conservancies to strengthen their role and economic basis. Linkages between existing protected areas and the conservancies should be strengthened and communities should be educated about the purpose and requirements of the conservancies. Conservation corridors should be created in order to link conservancies with other protected areas. Conservation must receive a high priority in conservancies. Priority areas for higher conservation status within conservancies include Brukkaros Mountain and all natural springs.

The Protected Area zone will overlap in most cases with the tourism and wildlife zone. These two zones should be seen as complementing each other.

There are currently no private commercial conservancies in the Karas Region. It is strongly recommended that farmers should be encouraged to develop these private conservancies so as to enable conservation. The aim of creating such conservancies is based on “a sustainable utilization strategy; promoting conservation of natural resources and wildlife and striving to re-instate the original bio-diversity with the basic goal of sharing resources amongst members” (CANAM). Creating such conservancies will not take away the existing land use rights of farmers, but will encourage sustainability as described above.

Conservancies are regulated under the Nature Conservation Amendment Act (1996). All protected animals and plants must be conserved in accordance with the Nature Conservation Ordinance, Forest Act, and the Environmental Management Act.
PROTECTED AREA ZONE LEGAL REQUIREMENTS

<table>
<thead>
<tr>
<th>ISSUE</th>
<th>LEGISLATION</th>
<th>MANDATORY AGENCY</th>
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<td>Soil</td>
<td>Soil Conservation Act, 1969; Forest Act, 2001.</td>
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<td>Heritage</td>
<td>National Heritage Act, 2004.</td>
<td>MYNSSC</td>
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Table 29: Action Plans for Protection of biodiversity

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<tr>
<th>Vision</th>
<th>Objective</th>
<th>Year</th>
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</thead>
<tbody>
<tr>
<td>Protect and integrate key biodiversity and protected areas</td>
<td>To protect the regional assets such as the Sperrgebiet, Ramsar site, Fish River, Fish River Canyon, Orange River, areas surrounding Aus, Eastern part of region and to create wildlife corridors enabling free movement of key wildlife species</td>
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<td>Responsible agency</td>
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<tr>
<td>Objective</td>
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<tr>
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<td>Y1</td>
<td></td>
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<tr>
<td>Action Plan 3: Compile a hydrology database for the region</td>
<td>Y1</td>
<td></td>
</tr>
<tr>
<td>Action Plan 3: Provide training for efficient utilisation of water and prevention of pollution of water</td>
<td>Y1-5</td>
<td></td>
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<tr>
<td>Water Quality and Quantity  Action Plan 1: Finalise and approve the Namib-Naukluft Management and Development Plan</td>
<td>Y2</td>
<td></td>
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<tr>
<td>Action Plan 2: Finalise and approve the Sperrgebiet Management and Development Plan</td>
<td>Y2</td>
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<tr>
<td>Action Plan 3: Finalise and approve the /Ai-/Ais Hot Springs Game Park Management and Development Plan</td>
<td>Y2</td>
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<tr>
<td>Action Plan 4: Establish a Management and Development Plan for Naute Recreation Resort</td>
<td>Y3</td>
<td></td>
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<tr>
<td>Action Plan 5: Establish a Management and Development Plan for all identified sensitive areas</td>
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<td></td>
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<tr>
<td>Action Plan 6: Adaptation of the TFCA as a Management and Development plan for the TFCA</td>
<td>Y2</td>
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<td>Action Plan 7: Create enabling legislation for the establishment of a regional conservation area</td>
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<tr>
<td>Action Plan 8: Create an integrated regional conservation master plan for the Region</td>
<td>Y3-4</td>
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<tr>
<td>Action Plan 9: Ensure Extension of the Kgalagadi Transfrontier Park to include Namibia</td>
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<td>Action Plan 10: Establishment of a wildlife corridor management plan and related policies</td>
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<tr>
<td>Action Plan 12: Introduction of approved game species into communal conservancies</td>
<td>Y2-5</td>
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<tr>
<td>Action Plan 13: Establish at least 5 commercial conservancies in the region</td>
<td>Y2-5</td>
<td></td>
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<tr>
<td>Objective Protect the region’s scarce water resources from exploitation and pollution</td>
<td>Y1-5</td>
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<tr>
<td>Responsible agency MET, MLR, MAWF, Private, OFRBM</td>
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**Objective:**
Protect the region’s scarce water resources from exploitation and pollution

**Responsible agency:** MET, MLR, MAWF, Private, OFRBM

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</tbody>
</table>
Vision 2: Promote the Region as a tourist destination

Objectives:

- Ensure livelihood diversification through diversifying into tourism and wildlife related activities;
- Promote the cultural and heritage of the Karas Region, by creation of culture/heritage trails;
- Protect the scenic value of the landscapes in the region;
- Create communal and commercial conservancies.

Tourism and Wildlife Zone

This zone is subdivided into the tourism and wildlife zone and the cultural and heritage zone.

The tourism zone will be concentrated around existing natural attractions such as the Sperrgebiet, the Namib-Naukluft, the Fish River Canyon, the Quiver Tree Forest (Keetmanshoop), Brukkaros, the Orange River and the eastern part of the region. Land uses in this zone will focus primarily on tourism, accommodation establishments, conservation and game farming which complement the protected area zone. Urban nodes such as Lüderitz, Aus, Oranjemund and Rosh Pinah will became key nodes in terms of tourism development. Tourism development or structure plans should be compiled for these areas so as to ensure marketing strategies, optimal land use, and to identify potentials for sustainable growth in the towns.

Another area identified for tourism potential is around Aroab, as the border post links the area with the Kgalagadi Transfrontier Park which heightens the potential for tourism development in this area. It is also strongly recommended that the Kgalagadi Transfrontier Park be extended into Namibia.

The tourism and wildlife potential is high and should be encouraged around the Groot and Klein Karasberge, with proposals for a game farm and tourism accommodation establishments. The Groot Karasberge has been identified as an environmentally sensitive area where all efforts should be made to keep conservation as the prioritised vision for this area.

The proposed Desert Start Studio development has the capability of contributing to the tourism potential for the eastern part of the region. However, the proposed development will be located adjacent to the Orange River, an area which has been identified as an environmentally sensitive area and must avoid damage to this precious resource. Care should also be taken not to isolate the proposed development from the rest of the region by allowing new border connections at the development and construction of an international airport at the development. Such development should rather be concentrated in already developed areas, ensuring regional integration. Although this development may bring in some revenue and opportunities, all buildings and activities must be in strict accordance with the Environmental Management Act, the Nature Conservation Ordinance, and the Water Act.
Tourism and Wildlife Zone

Game reserves and upmarket tourist accommodation establishment could be encouraged in this area, provided there is no large risk to the environment. Possible connection to the Kgalagadi Transfrontier Park should be investigated so as to further strengthen the wildlife movement corridors and to further enhance the conservation and tourism potential of the area.

The communal conservancies in the region have great potential for tourism and cultural related development. Wildlife related activities may also be further developed. Sustainable cultural tourism should be encouraged in the communal areas and older more historical urban nodes. Declaring historical areas as cultural conservation areas under the Heritage Act and/or the Nature Conservation Ordinance can also further strengthen the protection and promotion of these communal conservancy areas. It is recommended that a Regional Conservancy Tourism Plan be formulated with the specific aim of developing cultural heritage areas in conservancies and the marketing of them in order to generate greater tourism income. One possibility is to create cultural trails throughout the region which could be used to link various tourism sites.

Most conservancies already have or are busy with the construction of camping sites, but these have not reached their full potential. These campsites should be of good quality and the standards must comply with NTB requirements. These campsites should be complimentary to the various attractions in the region and should be marketed as such.

The potential for tourism development next to the Orange River should not be underestimated. Ideally, the Orange River should only be used for conservation related activities and low-impact sustainable tourism and these land uses should be given priority. However, due to the lack of water in the region, the area surrounding the Orange River will more likely be a mixed use area where mining, tourism, wildlife, irrigation, and possibly energy generation activities take place.

Since many of these activities may be unsustainable on their own but especially if they are combined, it is essential for all activities adjacent to and in the river to adhere to the various laws including Water Acts, Forest Act, Nature Conservation Ordinance and the Environmental Management Act. Close consultation with MET and MAWF must take place. The Orange River has areas of high biodiversity including the Ramsar site which is internationally recognised. Water quantity or quality will likely be affected by any development and impacts must be minimised, as permanent damage to river resources is of great concern. In addition to environmental impacts, any use of the Orange River could potentially cause land use conflicts and the aim should be to minimise these impacts with strong management measures in place.

The potential for tourism and wildlife around the proposed Neckartal Dam should also be investigated. The MAWF indicated that no tourism will be allowed at the Neckartal Dam, but potential for community tourism exists and should be encouraged where it would not conflict with MAWF laws and policies.

The Naute Recreation Resort is closed for the general public, but an area (600 ha of land) was de-proclaimed from the park in 1996 and donated to the Municipality of Keetmanshoop for the purpose of developing a tourism resort. No development has taken place since and it is recommended that a study be conducted in order to identify the potentials and business opportunities for the selected site.
The Transfrontier Conservation Area makes up almost half of the Karas Region. Several Tourism Development Areas were identified for the TFCA with specific focus on /Ai-/Ais, Sperrgebiet, the cultural development of the Bethanie and Warmbad Cultural Area and the Orange River. Although not formerly approved yet, these TDAs can be valuable contributions to the upliftment and empowerment of communities. It is recommended that the TDAs in the TFCA be utilised for tourism and cultural development in the south.

Wildlife corridors are recommended as a way to ensure sustainable biodiversity, environmental connectivity and conservation while also increasing the tourism potential of the Karas Region. The wildlife corridors should link the Namib-Naukluft Park, the Sperrgebiet National Park, the /Ai-/Ais Hot Springs Game Park, the Greater Fish River Canyon Complex, the eastern part of the region (with a corridor through the Karasberge towards to the east), the Kgalagadi Transfrontier Park, and the northern part of the region (linking the ephemeral river systems and the Tiras mountains). These corridors should be granted additional protection by making it a regional conservation area that could be managed through a management plan or policy by Ministry of Environment and Tourism.

For greater detail of the proposed tourism development areas for the TFCA, please see the Integrated Conservation and Development Plan for the Namibian Component of the Transfrontier Conservation Areas along the Orange River. For greater detail of the zoning for the parks, see the Sperrgebiet Management and Development Plan, the Namib-Naukluft Park Management and Development Plan, and the /Ai-/Ais Hot Springs Park Management and Development Plan.

All laws must be adhered to in this zone. Laws regulating tourism and wildlife include, inter alia, the Namibia Tourism Board Act (2000), Nature Conservation Ordinance (1975), the Nature Conservation Amendment Act (1996), the Environmental Management Act (2007), and the Forest Act (2001), among others.

### Tourism and Wildlife Zone Legal Requirements

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<td>Soil Conservation Act, 1969; Forest Act, 2001.</td>
<td>MAWF</td>
</tr>
</tbody>
</table>
### Vegetation

<table>
<thead>
<tr>
<th>Legislation</th>
<th>Agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nature Conservation Ordinance, 1975</td>
<td>MET</td>
</tr>
</tbody>
</table>

### Heritage

<table>
<thead>
<tr>
<th>Legislation</th>
<th>Agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Heritage Act, 2004.</td>
<td>MYNSSC</td>
</tr>
</tbody>
</table>

### Table 30: Action Plans for Cultural Tourism and Tourism

<table>
<thead>
<tr>
<th>Vision</th>
<th>Objective</th>
<th>Responsible agency</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promote Cultural and Heritage Tourism in the region</td>
<td>Ensure livelihood diversification through diversifying into tourism and wildlife related activities</td>
<td>MET, SPAN, HAN, NACOBTA, NTB, MYNSSC</td>
<td></td>
</tr>
<tr>
<td>Promote the Region as a tourist destination</td>
<td>Promote the cultural heritage of the Karas Region</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Protect the scenic landscapes and beauty of the region</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Create communal and commercial conservancies</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Plans and Programmes</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Action Plan 1: Establish a regional cultural and heritage database with all cultural and heritage sites, including those in urban centres and rural areas.</td>
<td></td>
<td></td>
<td>Y1</td>
</tr>
<tr>
<td>Action Plan 2: Compile a cultural and heritage tourism plan</td>
<td></td>
<td></td>
<td>Y2</td>
</tr>
<tr>
<td>Action Plan 3: Create a culture and heritage policy and recommend areas to be granted special protection in order to enable the conservation of heritage areas</td>
<td></td>
<td></td>
<td>Y3</td>
</tr>
<tr>
<td>Action Plan 3: Integrate the cultural and heritage tourism plan into an Integrated Regional Tourism Plan</td>
<td></td>
<td></td>
<td>Y2-3</td>
</tr>
<tr>
<td>Action Plan 4: Establish cultural and heritage trails/corridors</td>
<td></td>
<td></td>
<td>Y2-3</td>
</tr>
<tr>
<td>Action Plan 5: Promote and market the heritage trails/corridors</td>
<td></td>
<td></td>
<td>Y3-5</td>
</tr>
<tr>
<td>Action Plan 6: Ensure development of the Southern Tourism Forum Area</td>
<td></td>
<td></td>
<td>Y3</td>
</tr>
<tr>
<td>Action Plan 7: Create at least 5 commercial conservancies</td>
<td></td>
<td></td>
<td>Y1-5</td>
</tr>
<tr>
<td>Action Plan 8: Tourism Strategy for the Neckartal Dam</td>
<td></td>
<td></td>
<td>Y2</td>
</tr>
<tr>
<td>Action Plan 9: Management and Development Plans for all conservancies</td>
<td></td>
<td></td>
<td>Y4</td>
</tr>
</tbody>
</table>
Vision 3: Strengthen the agriculture industry in the region

Objectives:

- Create policy on sustainable and economic size of agricultural land
- Enable the continued growth of the small stock sector
- Create an enabling environment for investors to invest in irrigation in the region along the Orange River
- Livelihood Diversification

Agriculture Zone

The agricultural zones include small stock, game and irrigation farming zones. This area will include both commercial, communal and government farms. Agriculture is regulated under the Agriculture (Commercial) Land Reform Act, the Communal Land Reform Act, the Soil Conservation Act, the Forest Act, and the Water Acts. All protected animals and plants must be conserved in accordance with the Nature Conservation Ordinance, Forest Act, and the Environmental Management Act.

Analysis of the available data on the carrying capacity for the different areas in the region indicates that the Karas Region is only suitable for small stock farming, although a small north-eastern corner of the region is shown to be somewhat more suitable for large livestock than the rest of the region. The Agro-Ecological Zone (AEZ) and Agricultural Potential map produced by the Ministry of Lands indicates that the whole of the Karas Region is only suitable for small stock farming (Map 15, pg. 49). The Carrying Capacity for the region as compiled by the Ministry of Agriculture, Water and Forestry (Map 14, pg. 47) however indicates that a small area in the north eastern corner of the region may well be able to support some large livestock farming.

In reality and after discussions with stakeholders it came to light that an ever increasing number of farmers, scattered over the region, are farming with large livestock. This can be contributed to exceptionally good rains for the past few years and to the GRN Small Stock Scheme. The SEA does not support any large livestock farming to take place in the Karas Region. However as livestock farming is a practice that is subject to markets and annual rainfall it is highly likely that large livestock farming will take place in the region irrespective of this land use plan recommendations. It is however suggested that the north-eastern corner, as indicated, is somewhat more suitable to a certain degree for large livestock farming as indicated by the carrying capacity determined by MAWF.

The following are the land uses within this agricultural zone:

Small Stock Zone

Land use in the small stock zone will predominantly focus on farming with goats and sheep. Small stock farming can take place in all areas of the region except in the protected areas. The areas demarcated for small stock farming are also subject to carrying capacities as set out by the Ministry of Agriculture, Water and Forestry. It is recommended that new research be conducted on carrying capacity, which should take into account the changes that have taken place over the years and possible climate change predictions.
This zone is not restricted to small stock farming as diversification into tourism and game farming should be encouraged, especially in areas that overlap with the tourism and wildlife zone.

It is further recommended that proper rangeland management techniques should be used among the farmers in the region so as to minimize the impact of stock farming on the environment. In areas such as Aus where conservation, tourism and agriculture areas have been identified, it is essential that rangeland management techniques be used in order to ensure that these areas are protected and managed accordingly. Areas that overlap with either protected areas or the tourism and wildlife zone area should be carefully managed and eco-tourism or wildlife/conservation areas should be encouraged as the recommended uses in the area.

Programs to encourage karakul farming should be reinstated and supported. In order to support such farming it is highly recommended that training facilities should be established for karakul farming. One of the concerns raised by stakeholders was the fact that there is generally a lack of skills in terms of karakul farming as the skills were lost over the years. In order to successfully bring back karakul farming to the south it is also necessary for training facilities to be established, especially in communal areas.

The current small stock scheme policy should be reviewed and amended as this policy is currently indirectly forcing farmers to diversify into unsustainable farming practices such as large livestock farming in the region.

**Large Stock Zone**

The carrying capacity of the region is mostly suited for small livestock, while the north eastern corner of the region has a slightly higher carrying capacity for large livestock farming than the rest of the region. However, this might not be economically sustainable, particularly if this area is compared to other more likely areas in Namibia. The Agro-Ecological Zones indicates that the whole Karas Region is not suitable for large livestock and only suitable for small stock farming.

The predominant land use in this zone will be large stock farming, mixed with small stock farming and game farming. This will be concentrated in areas where carrying capacity permits large stock. Once again diversification into small stock, game farming and tourism are highly recommended land use options that are more likely to be sustainable over the long term. It is further recommended that new research be conducted on carrying capacity in the region so as to ensure sustainable rangeland management that takes into account the impact of climate change, among other things.

It is difficult to enforce rangeland management techniques on privately owned land, but in conservancies and on resettled farms rangeland management can be strictly managed by authorities in order to ensure sustainability. Even though the only large stock zone is indicated in the most north-eastern part of the region, the reality is that there will be large stock farming taking place in areas outside of this zone.

The justification of including a large livestock zone in the north-eastern part of the region is based on the current carrying capacity determined for the region. Currently the north-eastern part of the region has a carrying capacity of 30 hectares per large livestock unit (llu/ha), while the remainder of the region has a carrying capacity of 999ha per livestock unit. Under the resettlement policy, the minimum size of allotment units allowed in the south is 3000 ha. In turn, this means that with a carrying capacity of 999ha per livestock unit, this will result in only 3 large livestock that can be kept, making it economically unviable for the farmer. With a 3 llu/ha carry capacity in the north east, it means that the farmer can keep 100 cattle. In reality, farmers do not always abide by the recommended carrying capacity as it just a guideline which is not enforceable by law.
Irrigation Farming Zone
The designated areas for irrigation farming are located next to the Orange River, the Naute Dam and Neckartal Dam. It is not recommended that irrigation take place in other areas in the region as water is a scarce resource. Sustainable use of water is essential and strict environmental management must be used to prevent further pollution of already scarce resources, such as the Orange River. Irrigation schemes are subject to the control and monitoring of water usage and pollution in order to minimize the impact of this land use on the water resources in the region. A regional policy on water utilisation for mines and irrigation should be established so as to ensure efficient water usage and prevent water pollution.

Game Farming Zone
Game farming is not restricted solely to the zone as indicated on the map. Game farming should not be restricted to specific areas and is generally recommended throughout the region except in areas where it would directly conflict with other land uses. Game farming is given a higher recommendation when it is situated in proximity to existing parks and it should be the land use of choice. Introduction of wildlife species that have become extinct in the region over the years should be encouraged, but care should be taken when introducing such species. Any introduction of wildlife species should be discussed with MET and must be in accordance with the Nature Conservation Ordinance and the Environmental Management Act. Research should be conducted regarding the species that are indigenous to the area and the carrying capacity of species that are recommended for introduction.

The possibility of farming with high value game for income diversification has great potential in the region and should be encouraged. Additional research should be conducted on the economic potential of farming with wildlife compared to traditional livestock farming and ideas should be shared with the communities in the region. Further research should be done on emerging markets and the potential for usage of game meat vs. livestock meat. Communal conservancies should be encouraged to invest in farming with high value game species for sale or for trophy hunting so as to ensure a sustainable income and diversification of their income base.

The Agriculture Zones are in line with the proposals set out in Vision 2030 and NDP3. The identification of certain areas for large stock, irrigation and game farming aim to ensure that land is optimally utilized and land degradation is minimized. Encouraging the diversification into game farming and tourism also ensures a wider economic base for the region.

<table>
<thead>
<tr>
<th>ISSUE</th>
<th>LEGISLATION</th>
<th>MANDATORY AGENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land Tenure</td>
<td>National Land Policy of 1998; Communal Land Reform Act, 2002; Communal Land Reform Amendment Act, 2005; Agricultural (Commercial) Land Reform Act, 1995; Land Survey Act, 1993.</td>
<td>MLR</td>
</tr>
<tr>
<td>Soil</td>
<td>Soil Conservation Act, 1969; Forest Act, 2001.</td>
<td>MAWF</td>
</tr>
</tbody>
</table>

TOURISM AND WILDLIFE ZONE LEGAL REQUIREMENTS
Table 3.1: Action Plans to strengthen the agriculture sector

<table>
<thead>
<tr>
<th>Vision</th>
<th>Strengthen the agricultural industry in the region</th>
<th>Year</th>
</tr>
</thead>
</table>
| Objective                                                              | • Create policy on sustainable and economic size of agricultural land  
  • Prevent further economic loss in the small livestock sector  
  • Focus irrigation schemes only on areas with existing water resources, such as next to dams and Orange River  
  • Livelihood Diversification                                                                                                                                      |      |
| Responsible agency                                                     | MAWF, MET, MLR, NAU, SNAFU, Meatboard of Namibia, Karakul Board of Namibia                                                                                                                                |      |
| Plans and Programmes                                                   | Action Plan 1: Create a policy on the size of farms that is sustainable and economically feasible                                                                                                        | Y1   |
|                                                                        | Action Plan 2: Review the current and proposed small stock scheme policy                                                                                                                                 | Y1   |
|                                                                        | Action Plan 3: Seek alternatives for value adding in the small stock sector                                                                                                                                 | Y3   |
|                                                                        | Action Plan 4: Research and establish new carrying capacities for the region                                                                                                                                 | Y1   |
|                                                                        | Action Plan 5: Implement programmes to encourage Karakul Farming                                                                                                                                                                                               | Y1-5 |
|                                                                        | Action Plan 6: Establish agriculture training facilities in the region (focus on irrigation, small stock farming and karakul farming)                                                                                                                                 | Y3   |
|                                                                        | Action Plan 7: Establish a policy on irrigation in the region with respect to water utilisation and pollution                                                                                                                                                 | Y1   |
### Mining and Industries

It is extremely difficult to predict the mining sector’s growth or future potential areas due to its dependency on the discovery of deposits of natural resources and international markets. The most likely scenarios will be highlighted as potentials for development as discussed with stakeholders. The mining zone is mostly situated on existing mining license areas at the Orange River, the Sperrgebiet, Rosh Pinah and Skorpion mine, with a possible area at Warmbad and at Aus. This zone will overlap with other land use zones as almost 60% of the Karas Region is currently under EPLs, thus making the possibility of future conflict between land uses high.

Possible future mines that are identified at this stage are based on mining activities in the Warmbad area for uranium and tantellite. Some deposits of uranium have also been discovered close to Aus. This might lead to conflicting land uses, as Aus have been identified as a key node for tourism development in the future.

Mining in the sensitive areas and conservation areas should be avoided and discouraged. MET should not grant authority to mine in protected areas and environmental clearance certificates should not be awarded to mine or conduct exploration in sensitive areas or areas where protected plants and animals are located (mining and prospecting in these areas is considered a fatal flaw). All impacts from prospecting and mining companies must consult with the public and must conduct an environmental impact assessment and have an environmental management plan in place prior to the start of any activity in accordance with the Environmental Management Act and the Minerals Act. Where communities are negatively affected, just compensation must be awarded in accordance with the Minerals Act.

The possible closure of the Skorpion Zinc Mine in six years time will have a major impact on the socio-economics of Rosh Pinah. It is recommended that research be done to seek alternative sources for economic development for Rosh Pinah as well as for Oranjemund. With proper planning, Rosh Pinah can become a key urban node with the opening up of the Sperrgebiet with regards to tourism, but this in itself will not sustain the economy of the town. A suggestion by the SEA was that Rosh Pinah has potential to diversify into a solar hub by utilising mining infrastructure. This suggestion should be investigated more substantially.

The Karas Region has the potential to develop industrial nodes with existing infrastructure such as the Lüderitz harbour, Keetmanshoop and it existing service industries and accessibility. Other areas that could be developed into industrial hubs are Noordoewer (it could be used for the packing of agronomic products) and Rosh Pinah (for large scale industries or even research and the development of a solar hub). The RDP for the Karas Region also highlighted the potential of such small stock slaughter industries at Karasburg, Keetmanshoop and Berseba; small-scale factories processing seaweed and fertilisers at Lüderitz; and grape packaging at Naute Dam. All would need to be investigated in terms of feasibility.

<table>
<thead>
<tr>
<th>Action Plan</th>
<th>Description</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action Plan 8</td>
<td>Establish the viability of export of game meat vs. mutton</td>
<td>Y2</td>
</tr>
<tr>
<td>Action Plan 9</td>
<td>Develop a strategy and market plan for the export of game meat</td>
<td>Y3</td>
</tr>
<tr>
<td>Action Plan 10</td>
<td>Livelihood diversification (game farming, tourism, irrigation, conservation)</td>
<td>Y3-5</td>
</tr>
<tr>
<td>Action Plan 11</td>
<td>Promotion of improved livestock management and marketing program (Karas RDP)</td>
<td>Y1-5</td>
</tr>
<tr>
<td>Action Plan 12</td>
<td>Formulation of a wildlife introduction policy and plan for the region</td>
<td>Y2</td>
</tr>
<tr>
<td>Action Plan 13</td>
<td>Research on types of wildlife species suitable for introduction to the region</td>
<td>Y2</td>
</tr>
<tr>
<td>Action Plan 14</td>
<td>Policy and plan on incentives to encourage farmers to diversify into wildlife/game farming</td>
<td>Y2</td>
</tr>
</tbody>
</table>
Vision 4: Promote renewable energy, industries and research

Objectives:

- To create an enabling environment for investment in the renewable energy sector
- To create cross-sectoral opportunities between renewable energy, research and training
- Ensure that mines comply to regulations for protection of the environment, people and resources
- Encourage a more sustainable approach to further exploration and mining in non-sensitive areas in the region

Mining and Industries

It is extremely difficult to predict the mining sector’s growth or future potential areas due to its dependency on the discovery of deposits of natural resources and international markets. The most likely scenarios will be highlighted as potentials for development as discussed with stakeholders. The mining zone is mostly situated on existing mining license areas at the Orange River, the Sperrgebiet, Rosh Pinah and Skorpion mine, with a possible area at Warmbad and at Aus. This zone will overlap with other land use zones as almost 60% of the Karas Region is currently under EPLs, thus making the possibility of future conflict between land uses high.

Possible future mines that are identified at this stage are based on mining activities in the Warmbad area for uranium and tantalite. Some deposits of uranium have also been discovered close to Aus. This might lead to conflicting land uses, as Aus have been identified as a key node for tourism development in the future. Mining in the sensitive areas and conservation areas should be avoided and discouraged. MET should not grant authority to mine in protected areas and environmental clearance certificates should not be awarded to mine or conduct exploration in sensitive areas or areas where protected plants and animals are located (mining and prospecting in these areas is considered a fatal flaw). All impacts from prospecting and mining companies must consult with the public and must conduct an environmental impact assessment and have an environmental management plan in place prior to the start of any activity in accordance with the Environmental Management Act and the Minerals Act. Where communities are negatively affected, just compensation must be awarded in accordance with the Minerals Act.

The possible closure of the Skorpion Zinc Mine in six years time will have a major impact on the socio-economics of Rosh Pinah. It is recommended that research be done to seek alternative sources for economic development for Rosh Pinah as well as for Oranjemund. With proper planning, Rosh Pinah can become a key urban node with the opening up of the Sperrgebiet with regards to tourism, but this in itself will not sustain the economy of the town. A suggestion by the SEA was that Rosh Pinah has potential to diversify into a solar hub by utilising mining infrastructure. This suggestion should be investigated more substantially. The Karas Region has the potential to develop industrial nodes with existing infrastructure such as the Lüderitz harbour, Keetmanshoop and it existing service industries and accessibility. Other areas that could be developed into industrial hubs are Noordoewer (it could be used for the packing of agronomic products) and Rosh Pinah (for large scale industries or even research and the development of a solar hub). The RDP for the Karas Region also highlighted the potential of such small stock slaughter industries at Karasburg, Keetmanshoop and Berseba; small-scale factories processing seaweed and fertilisers at Lüderitz; and grape packaging at Naute Dam. All would need to be investigated in terms of feasibility.
Industry has a high potential for creating land use conflicts revolving around water quality and quantity. Since water is a precious resource, especially in the dry Karas Region, the areas adjacent to the Orange River and other water courses should be seen as areas which will likely have conflicts, especially where industry is proposed. Water quantity or quality will likely be affected by any development and impacts must be minimised, as permanent damage to river resources is highly likely and is of great concern for communities and wildlife.

All industry proposed in this zone (including but not limited to mining and exploration activities) are subject to the Environmental Management Act (2007) and the Minerals Act (1992), among other laws. All protected animals and plants must be conserved in accordance with the Nature Conservation Ordinance, Forest Act, and the Environmental Management Act. Strict implementation of MAWF and MHSS laws is also required.

It is recommended that:

- The Minerals Act must be strictly followed and specifics of mine closure must be included in all Mining licenses. A fund for mine closure must be established in the case that a company goes bankrupt;
- Mining in protected areas should be forbidden under the Nature Conservation Ordinance (1975);
- Mining in areas with high tourism and agriculture value must be discouraged or minimized;
- All mines are subject to complete EIA’s, closure plans and Environmental Management Plans in accordance with the Environmental Management Act and the Minerals Act;
- Footprints of mines must be restricted/minimized as much as possible and rehabilitation requirements must be of a high standard;
- Control over pollution and water management must be monitored;
- All new mines should as far as possible provide ways to ensure their own water and own energy.
- All mining exploration companies must be kept to a high standard and must rehabilitate and compensate in accordance with the Minerals Act.

**MINING AND INDUSTRIAL ZONE LEGAL REQUIREMENTS**

<table>
<thead>
<tr>
<th>ISSUE</th>
<th>LEGISLATION</th>
<th>MANDATORY AGENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mineral Mining and Exploration</td>
<td>Minerals (Prospecting and Mining) Act, 1992; Diamond Act, 1999.</td>
<td>MLR</td>
</tr>
<tr>
<td>Environmental Management</td>
<td>Environmental Management Act, 2007.</td>
<td>MAWF</td>
</tr>
<tr>
<td>Hazardous Substances</td>
<td>Hazardous Substances Ordinance, 1974.</td>
<td>MHSS</td>
</tr>
<tr>
<td>Air</td>
<td>Atmospheric Pollution Prevention Ordinance, 1976.</td>
<td>MHSS</td>
</tr>
</tbody>
</table>
All industry proposed in this zone (including but not limited to mining and exploration activities) are subject to the Environmental Management Act. Strict implementation of MAWF and MHSS laws is also required. Industry has a high potential for creating land use conflicts revolving around water quality and quantity. It is recommended that:

- All new mines should as far as possible provide ways to ensure their own water and own energy.
- All mines are subject to complete EIA’s, closure plans and Environmental Management Plans in accordance with the Environmental Management Act and the Minerals Act; mentions must be of a high standard;
- Control over pollution and water management must be monitored;
- Footprints of mines must be restricted/minimized as much as possible and rehabilitation requirements must also be strictly adhered to. The Nature Conservation Ordinance (Chapter V) also regulates fish in inland waters and all activities must also be in accordance with this law.
- Mining in areas with high tourism and agriculture value must be discouraged or minimized;
- Mining licenses. A fund for mine closure must be established in the case that a company goes bankrupt;
- Compensation in accordance with the Minerals Act.

Fishing, Aqua-culture and Mari-culture Zone

This zone will mostly be confined to the coastal section of the Karas Region, with the exception of mari-culture and aqua-culture projects occurring inland of the coast. Potential of synergies between old mining areas and aqua-culture has been identified and should be encouraged where they are viable. The Orange River has potential for aqua-culture farming which should be further investigated in terms of feasibility and environmental impacts. Cumulative impacts in the Orange River must be taken into account.

Land uses in this zone will are restricted to marine fishing, aqua-culture and mari-culture, with possible synergies between tourism and conservation. The Marine Resources Act deals with the protection of the Marine Protected Areas, fish and other marine resources and all activities must be in compliance with this Act. The Aquaculture Act, the Inland Fisheries Act, the Environmental Management Act and all MAWF laws must also be strictly adhered to. The Nature Conservation Ordinance (Chapter V) also regulates fish in inland waters and all activities must also be in accordance with this law.

It is recommended that training and research facilities linked to the mari-culture and aqua-culture industry should be established at places such as Lüderitz. These facilities and related activities can further strengthen the role of Lüderitz.

TOURISM AND WILDLIFE ZONE LEGAL REQUIREMENTS

<table>
<thead>
<tr>
<th>ISSUE</th>
<th>LEGISLATION</th>
<th>MANDATORY AGENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Management</td>
<td>Environmental Management Act, 2007.</td>
<td>MET</td>
</tr>
</tbody>
</table>
**Table 32: Action Plans for Promoting renewable energy, industries and research**

<table>
<thead>
<tr>
<th>Vision</th>
<th>Enhance and Market the region as a renewable energy hub</th>
<th>Year</th>
</tr>
</thead>
</table>
| Objective | • To create an enabling environment for investment in the renewable energy sector  
• To create cross sectoral opportunities between renewable energy, research and training | |
| Implementing Agencies | NamPower, MWTC, ME, ECB, Regional Council, Private | |
| Action Plans | Action Plan 1: Compile a renewable energy policy for the region to encourage investment | Y1 |
| | Action Plan 2: Develop a marketing strategy for encouraging investment in the renewable sector in the region | Y1 |
| | Action Plan 3: Feasibility studies for renewable energy projects in Rosh Pinah, Lüderitz, Keetmanshoop, Tses, Bethanie, Aroab | Y1 |
| | Action Plan 4: Kudu Gas Power Plan | Y3-5 |
| | Action Plan 5: LOHEPS Run-of-river scheme feasibility | Y3-5 |
| | Action Plan 6: Create hydro-energy from the Neckartal Dam | Y3-5 |
| | Action Plan 7: Create Hydro-energy from the proposed dam at Noordoewer | Y3-5 |

| Objective | Ensure that mines comply to regulations for protection of the environment, people and resources  
• Encourage a more sustainable approach to further exploration and mining in non-sensitive areas in the region | |
<p>| Implementing Agencies | NMME, MET, MFMR, MHSS, ME, MYNSSC, MWTC, Mines, Private, Regional Council | |
| Action Plans | Action Plan 1: Regional mining policy to safeguard the people, environment and resources from mining activities | Y1 |
| | Action Plan 2: Provide unbiased education and training on legislation to stakeholders including communities, government, exploration companies, mining companies, and potential mining companies | Y1-5 |
| | Action Plan 3: Decentralisation of MME and Department of Environmental Affairs (MET) to region so as to ensure compliance of mines with the Environmental Management Act and Minerals Act | Y3 |</p>
<table>
<thead>
<tr>
<th>Objective</th>
<th>Enable investment in the region in terms of industries related to agriculture, fishing, tourism and renewable energy as well as to encourage research and training facilities related to these industries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implementing Agencies</td>
<td>MAWF, MET, MFMR, ME, MME, ECB, MWTC, NamPower, Private, Regional Council</td>
</tr>
<tr>
<td>Action Plan 1</td>
<td>Develop and explore new economic strategies for Oranjemund, Rosh Pinah and Lüderitz</td>
</tr>
<tr>
<td>Action Plan 2</td>
<td>Feasibility study for a renewable energy plant, factory and training facilities at Rosh Pinah</td>
</tr>
<tr>
<td>Action Plan 3</td>
<td>Feasibility studies for: packaging of grapes at Naute Dam; tomato paste/puree processing facility at Naute Dam; and small stock slaughter industries at Karasburg, Keetmanshoop and Berseba (Karas RDP)</td>
</tr>
<tr>
<td>Action Plan 4</td>
<td>Develop facilities for training in: irrigation, game farming, karakul farming, tourism, aqua-culture, mari-culture and renewable energy sectors at Keetmanshoop, Lüderitz, Rosh Pinah, Noordoewer</td>
</tr>
<tr>
<td>Action Plan 5</td>
<td>Establish training facilities at Desert Star in film related activities</td>
</tr>
<tr>
<td>Action Plan 6</td>
<td>Mari-culture development at Lüderitz and Oranjemund</td>
</tr>
<tr>
<td>Action Plan 7</td>
<td>Aquaculture development at Orange River, Neckartal Dam and Naute Dam</td>
</tr>
</tbody>
</table>
Vision 5: Strengthen the transportation corridor

Objectives:

- Increase the benefits transfer from transport corridors
- Increase regional and international transportation

Infrastructure activities

The infrastructure activities will mostly consist of existing infrastructure, as well as newly proposed infrastructure such as the Neckartal Dam, Kudu Gas Power Station, the LOPEHS, the Trans-Kalahari Railway Line, the wind farm at Lüderitz, various dams on the Orange River, the Bethanie-Maltahöhe-Walvis Bay road link and the proposed expansion of the Lüderitz harbour at Shearwater Bay.

Overlapping with other land uses will occur, but the impact of these activities on land uses should be minimized. Infrastructure has a high potential for creating land use conflicts revolving around water quality and quantity. Since water is a precious resource, especially in the dry Karas Region, the areas adjacent to or in water courses should be seen as areas which will likely have conflicts, especially where industry and infrastructure is proposed. Water quantity or quality will likely be affected by any development and impacts must be minimised, as permanent damage to river resources is highly likely and is of great concern for communities and wildlife. As such, the SEA has highlighted the proposed Neckartal Dam as a red flag area as it would likely cause disastrous and irreversible environmental impacts. The Orange River is highlighted as a sensitive area since it is high in biodiversity and unsustainable development could lead to a collapse in the sensitive and internationally recognised ecosystem.

It is recommended that the Karas Regional Council should market the Karas Region as an export and import region. Development such as the proposed Kalahari Railway line should become the focus of such a campaign. Due to long travel distances in the Karas Region, rail and air transport should be promoted in the region. If the feasibility study for the Trans-Kalahari Railway line is found not suitable for the Karas Region, it is recommended that the Karas Regional Council find alternative investors for a similar product. The possible construction of the Shearwater Bay harbour will result in immense positive economic impacts for the region. Rail connection with the harbour will further strengthen the potential.

The Karas Region receives high levels of radiation and long hours of sunshine, making it ideal for solar energy generation. Such renewable energy should be promoted and strengthened in areas where it would be sustainable. One such opportunity that should be investigated and marketed is the proposal to create solar energy generation facilities and products at Rosh Pinah. Training facilities are also suggested in order to train people in solar energy generation.

All infrastructure must comply with the Environmental Management Act, the Water Resource Management Act, the Water Act, the Soil Conservation Act, the Forest Act and the Nature Conservation Ordinance (which affords special protection to listed animals and plants).
The possible construction of the Shearwater Bay harbour will result in immense positive economic impacts. The Karas Region receives high levels of radiation and long hours of sunshine, making it ideal for solar energy generation. The infrastructure activities will mostly consist of existing infrastructure, as well as newly proposed infrastructure such as the Neckartal Dam, Kudu Gas Power Station, the LOPEHS, the Trans-Kalahari Railway Line, various dams on the Orange River, the Bethanie-Maltahöhe-Walvis Bay road link and the proposed expansion of the Lüderitz harbour at Shearwater Bay.

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It is recommended that the Karas Regional Council should market the Karas Region as an export and import region. Development such as the proposed Kalahari Railway line should become the focus of such a campaign. Due to long travel distances in the Karas Region, rail and air transport should be promoted as a sensitive area since it is high in biodiversity and unsustainable development could lead to a collapse of the ecosystem.

Table 33: Action Plans for enhancing and strengthening the transport corridors

<table>
<thead>
<tr>
<th>Vision</th>
<th>Objective</th>
<th>Responsible agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enhance and strengthen the transportation corridor</td>
<td>To promote and encourage developments that can strengthen the transportation corridor and access to and from the Karas Region</td>
<td>MWTC, MET, RA, Regional Council</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Action Plans</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action Plan 1: Upgrade the Keetmanshoop airport to international status</td>
<td>Y2</td>
</tr>
<tr>
<td>Action Plan 2: Marketing of Karas Region as export and import hub</td>
<td>Y1-5</td>
</tr>
<tr>
<td>Action Plan 3: Finalise the Aus-Lüderitz Railway line</td>
<td>Y2</td>
</tr>
<tr>
<td>Action Plan 4: Investigate The Trans-Kalahari Railway line or similar projects</td>
<td>Y1</td>
</tr>
<tr>
<td>Action Plan 5: Develop the Shearwater Harbour</td>
<td>Y2</td>
</tr>
<tr>
<td>Action Plan 6: Develop industrial related land at either Lüderitz or Shearwater Bay</td>
<td>Y3</td>
</tr>
<tr>
<td>Action Plan 7: Construction of the tarred road from Bethanie-Maltahöhe-Walvis Bay Road</td>
<td>Y3-5</td>
</tr>
</tbody>
</table>
Vision 6: Reinforce the role and functionality of urban centres

Objectives:

- Focus key functions in existing urban centres
- Strengthen the role and functions of the existing urban centres
- Promote smaller settlements as tourism locations

Urban Zone

The urban zone contains all the town, villages and settlement areas in the region as well as the proposed upgrading of settlements and the proposed Desert Star Film Studio. Land uses in this zone will be urban functions such as business, educational facilities, offices, regional offices, banks, etc. New proclamations of areas such as Oranjemund and the Desert Star will have to find alternative economic resources to ensure economic viability for these areas if either the mining activities at Oranjemund are scaled down or if the film studio at Desert Star is not feasible.

Alternatives such as the proposed Kudu Gas Project, tourism potential at the Ramsar site and possible irrigation and aqua-culture can be some of the opportunities for Oranjemund. Desert Star will be more difficult as currently the only attraction is the Orange River and scenic landscapes. Possible tourism and irrigation should be seen as alternatives to expand the economic base. Training facilities should be encouraged in the region for specialities in irrigation, tourism, farming, aqua-culture/mari-culture and conservation. These facilities can be located in areas such as Oranjemund, Lüderitz, Keetmanshoop and Desert Star.

Institutional infrastructure needs to be developed at Keetmanshoop, as Keetmanshoop will become increasingly important if projects such as the Neckartal Dam are implemented. The extension of the Naute Irrigation Scheme and possible future tourism at the 600ha south of Naute will also contribute significantly to the growth of Keetmanshoop. The upgrading of the airport at Keetmanshoop is one of the features that might also contribute to the growth of Keetmanshoop with possible exports from the airport and tourist arrivals directly to Keetmanshoop.

In terms of growth points, it is suspected that the following areas will further strengthen the roles as growth points of the region: Keetmanshoop, Lüderitz, Oranjemund (once proclamation and the opening of the road to Oranjemund is finalised and approved), Aus (as a tourism hub) and possibly Ariamsvlei (Desert Star).

The town of Lüderitz holds the potential to develop a strong educational support sector. Areas such as Bethanie have potential to become a tourism hub once the Bethanie-Maltahohe-Walvis Bay road has been upgraded. In Bethanie, the focus should be on heritage and cultural tourism. Berseba has potential to become a secondary tourism hub if Brukkaros is properly marketed for tourism. Both Aroab and Noordoewer hold potential to become important tourism hubs because of the proximity to borders posts and at Noordoewer may even become an agro-industrial hub. The SEA report suggests that Rosh Pinah has potential to become a solar power hub, utilising the infrastructure of the existing mines for such development. It is possible that Rosh Pinah will also develop into a tourism hub, if properly managed.
It is essential that all urban developments are also in keeping with the requirements of the relevant laws of the various ministries as listed in the chart below. The Environmental Management Act (2007) is especially important for the sustainable growth of urban nodes and wherever possible Environmental Management Plans for the larger urban nodes should be completed.

### URBAN ZONE LEGAL REQUIREMENTS

<table>
<thead>
<tr>
<th>ISSUE</th>
<th>LEGISLATION</th>
<th>MANDATORY AGENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban Land</td>
<td>Minerals (Prospecting and Mining) Act, 1992; Diamond Act, 1999.</td>
<td>MLR</td>
</tr>
<tr>
<td>Hazardous Substances</td>
<td>Environmental Management Act, 2007.</td>
<td>MAWF</td>
</tr>
<tr>
<td>Soil</td>
<td>Soil Conservation Act, 1969; Forest Act, 2001.</td>
<td>MHSS</td>
</tr>
<tr>
<td>Environmental Management</td>
<td>Environmental Management Act, 2007.</td>
<td>MET</td>
</tr>
<tr>
<td>Heritage</td>
<td>National Heritage Act, 2004.</td>
<td>MYNSSC</td>
</tr>
</tbody>
</table>

**Table 34: Action Plans for reinforcing the role and functionality of urban areas**

<table>
<thead>
<tr>
<th>Vision</th>
<th>Reinforce the role and function of urban centres</th>
<th>Year</th>
</tr>
</thead>
</table>
| Objective | • To strengthen the existing urban centres Focus key functions in existing urban centres  
• Strengthen the role and functions of the existing urban centres  
• Promote smaller settlements as tourism locations |      |
<table>
<thead>
<tr>
<th>Implementing agencies</th>
<th>MRLGHRD, MET, NPC, Local Authorities, Regional Council, Private</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Action Plan 1</strong>: Provision of serviced erven and other social amenities in Keetmanshoop to cater for the influx of workers to be expected from Neckartal</td>
<td>Y1-2</td>
</tr>
<tr>
<td><strong>Action Plan 2</strong>: Proclamation of Rosh Pinah and Oranjemund as Local Authorities</td>
<td>Y1-2</td>
</tr>
<tr>
<td><strong>Action Plan 3</strong>: Amend the Regional Council’s Act to make provision for selling and leasing of land in settlement areas</td>
<td>Y1</td>
</tr>
<tr>
<td><strong>Action Plan 4</strong>: Compile Structure Plans for Aus, Lüderitz, Oranjemund, Rosh Pinah, Ariamsvlei</td>
<td>Y2-3</td>
</tr>
<tr>
<td><strong>Action Plan 5</strong>: Provide for industrial land in Lüderitz</td>
<td>Y3</td>
</tr>
<tr>
<td><strong>Action Plan 6</strong>: Encourage the tourism activities in Berseba, Bethanie, Tses, Ariamsvlei</td>
<td>Y3-5</td>
</tr>
<tr>
<td><strong>Action Plan 7</strong>: Ensure land availability for mari-culture in Lüderitz and Oranjemund</td>
<td>Y1</td>
</tr>
</tbody>
</table>
Karas Integrated Land Use Plan

Ministry of Lands and Resettlement

Legend
- Towns
- Ephemeral Rivers
- Perennial River
- Irrigation Zone
- Desert Star Studios
- Large and Small Block Zone
- Ephemeral Conserves and Cultural Zone
- Konkraubensee Zone
- Tourism and wildlife Zone
- Tourism and wildlife Zone
- Border Posts
- Aquaculture & Fish Farms
- Herd/acre
- Land Consolidation (MET)
- Proposed Wind Energy
- Proposed Solar Energy
- Airport
- Declaration as Local Authorities
- Possible Mines
- Proposed DAHPS
- Proposed MAVP Area (Irrigation and drainage)
- Proposed Poseidon Rail Station
- Proposed Bethanie Millardore road
- Proposed Von Kolstein Rail Station
- Truck Road
- International Boundary

Data Source:
- Core Strategic Transport Network,
- Namibia Tourism Board,
- National Planning Commission,
- Stubenrauch Planning Consultants.

Action Plan 1: Provision of serviced erven and other social amenities in Keetmanshoop to cater for the influx of workers to be expected from Neckartal Y1-2

Action Plan 2: Proclamation of Rosh Pinah and Oranjemund as Local Authorities Y1-2

Action Plan 3: Amend the Regional Council’s Act to make provision for selling and leasing of land in settlement areas Y1


Action Plan 5: Provide for industrial land in Lüderitz Y3

Action Plan 6: Encourage the tourism activities in Berseba, Bethanie, Tses, Ariamsvlei Y3-5

Action Plan 7: Ensure land availability for mariculture in Lüderitz and Oranjemund Y1

05 April 2011
6. STRATEGIC ENVIRONMENTAL ASSESSMENT: EXECUTIVE SUMMARY

The Strategic Environmental Assessment (SEA) looked at the suggestions and proposals of the Karas Integrated Regional Land Use Plan, with the objective to develop sustainable options, identify the potential of the region’s natural resources and to achieve the land uses that best fit that potential. The parallel processes of Land Use Planning and SEA, can be seen as an assessment and identification of opportunities. In this light, this SEA concludes with some ideas that will help to achieve sustainable development in the region and contribute to achieving Namibia’s Vision 2030 goals.

The SEA process involved the following parts:

- Information gathering (data collection and evaluation, site visits, expert discussions)
- Scoping, to identify the main issues and agree on the method of assessment. Meetings were held internally in Windhoek and invited stakeholder input in Keetmanshoop. The agreed method was to assess identified development proposals and trends against a number of criteria (e.g. their impact on biodiversity, livelihoods, sense of place, and others), to arrive at a conclusion of the most significant impacts and concerns.
- Baseline analysis and sector-by-sector assessment through Focus Group Discussions (FGDs). This process involved many technical decision-makers at relatively high level to achieve ‘buy-in’ from the relevant sectors, to receive well informed opinions and rational proposals, and to achieve integration between sectors.
- Collaboration with the LUP, through properly motivated adjustment and refining of the zoning proposals.
- Compilation of the SEA report

Additionally, the SEA identified the region’s natural strengths and most limiting factors. It considers what’s coming in terms of climate change, and how people can make themselves less vulnerable to the present arid climate and the increasing variability that climate change is expected to bring. The main economic sectors and land uses are considered, at present and with an eye to the future. Issues of concern to the region’s sustainable growth are highlighted as RED FLAGS.

The natural potentials in Karas are based on five main factors:

- Mineral riches, based mainly on the world’s largest productive sedimentary diamond deposits, and on other mineral occurrences;
- Open landscapes and beautiful scenery, an asset of increasing value in a crowded world;
- Plentiful sunlight and localised strong winds, both potentially useful energy resources;
- The Orange River valley with its warm climate and perennial water that favours irrigation farming (but with efficient use of water, see limiting factors below)
- The Atlantic Ocean with its rich Benguela Current and a limitless supply of water for potential desalination.
The greatest limiting factors in Karas include:

- The arid climate and an overall shortage of water. Supply of water from the Orange River, although perennial, is limited and getting scarcer. Groundwater potential is low overall.
- Poor soils and rangeland productivity;
- A poor skills base, evident in high unemployment, little value addition and manufacturing, and severe urban poverty.

Climate change is expected to cause a significant decrease in primary productivity (= growth of fodder), brought on by lower rainfall, higher temperatures, increased variability of rains and higher rates of evaporation. The greatest impact will be on livestock farming, which will become even more marginal.

**Agriculture**

**Irrigation farming**

Conditions in the very hot lower Orange River valley provide a competitive advantage for irrigated, export-quality, high-value crops such as table grapes and dates. Namibia presently achieves great economic benefit from the irrigation farms at Noordoewer and Aussenkehr, although the low price paid for water allows farmers to use wasteful methods such as centre-pivot sprinkler systems. Since Karas is the most water-deficient part of the country (taking high evaporation into account), irrigation methods should be much more water-efficient. Examples include drip irrigation, micro-sprays and underground irrigation (water delivered directly to the root zone).

The apparent abundance of water in the Orange River is misleading, since both the quantity and quality of water is declining. The wetland at the river mouth, which serves as a good indicator of the river’s ecological health (especially in its lower reaches), is classified as internationally important and is listed on the Montreux Record as one that is degraded. Climate change is likely to make the water situation even more critical. Irrigation potential using Orange River water is vulnerable to these risks and to abstraction upstream. Carefully considered tariff systems should be used as a demand management strategy that incentivises farmers to use water-efficient irrigation methods and to concentrate on high value crops.

Orange River water quality is getting poorer from the return flows from irrigation farms (in SA and Namibia) which carry high loads of pesticides and leached fertilizers. This threatens the ecological integrity of the Orange River as an important linear oasis through the arid surroundings, particularly the mouth which is recognised as a wetland of international importance. Return flows of water could be significantly reduced using more efficient irrigation methods.

High-value crops are targeted at discerning overseas customers, so the quality has to be excellent to achieve the profits that are sought. Irrigation farming requires skilled farmers and high capital and running costs. These conditions mean that irrigation farming is not very effective at improving local livelihoods. The main benefit to local people is through their unskilled, seasonal labour. Namibia’s draft Integrated Water Resources Management Plan (MAWF 2010a) states that shortcomings in the water sector are “a focus on developing new sources rather than managing existing ones better, and top-down sector approaches to water management result in uncoordinated development and management of the resource.” The proposed Neckartal Dam is an example of this approach, and is predicted to achieve far less economic growth and benefit to local people in Karas Region than is being proposed. For economic, social and environmental reasons, this SEA considers the Neckartal Dam to go against many principles of Vision 2030, NDP3 and IWRM, and to be unsustainable. This is raised as a RED FLAG.
The irrigation schemes at Noordoewer and Aussenkehr, including proposed expansions, are supported by this SEA, only if water-efficient irrigation methods are used. Monitoring of the amount of water consumed for irrigation along the Orange is very poor. Management of this critical resource should be much tighter.

Livestock farming

The greatest part of Karas Region is dedicated to farming with small stock, predominantly sheep. Although this is consistent with the MAWF’s agro-ecological zoning, the habitat is marginal even for these hardy animals. Karakul are probably the best suited and most profitable domestic animals for this arid terrain. Goats make up about a fifth of all livestock in Karas. Slaughtering of goats and sheep is dictated by the Small Stock (6:1) Policy by which a farmer can only export 1 live animal (and get a good price for it in SA) for every 6 animals slaughtered in Namibia (where the profit is lower). Although the policy is supposed to create an incentive for local value addition and employment, it has almost no support from local farmers. Many are shifting over to cattle farming which is not affected by this regulation, and small stock numbers in the region are declining. Cattle make up less than 5% of the total livestock but their numbers are growing. They require more grass pasture and water than small stock and so are less suited to the arid shrubby habitat, and their growing numbers have a negative impact on rangeland health. The Small Stock Policy in its present form is noted as a RED FLAG. This SEA does not support the zonation for large stock farming (in north-eastern Karas) as proposed in the KIRLUP.

Climate change will make southern Namibia even less suitable for stock farming, with primary productivity (= carrying capacity) expected to decline significantly by 2080. Additionally, insect-borne diseases such as Rift Valley Fever are likely to become more prevalent in the south. Wildlife, especially springbok and gemsbok, are far better suited to arid conditions and many farmers are already diversifying to tourism and wildlife for economic reasons. Night culling of springbok for export to SA is a growing market. If managed and monitored properly, this trend is seen as positive for environmental health and is expected to grow steadily.

Indigenous plants and small-scale agriculture

Hoodia, the desert plant with supposed great pharmaceutical potential as an appetite suppressant, has not risen to commercial expectations and may decline in importance. Devils Claw is harvested in the north-eastern parts of Karas, and offers some commercial benefit. The marketing and promotion of these indigenous products for commercial gain is encouraged, as they diversify local livelihoods. Ad hoc harvesting of wild Hoodia and Devils Claw plants is illegal and is not supported by this SEA. Small-scale gardening projects for local food production are plentiful in the region. These are beneficial for local livelihoods and, individually and cumulatively, have very little environmental impact. However, groundwater supplies may, in some cases, limit the extent of these schemes.

Conservation and Tourism

This sector has been growing steadily and holds the greatest potential for continued strong growth in Karas Region. The competitive advantage of the region relates to a number of key facts and resources:

- Fish River Canyon, the second largest canyon in the world;
- Nomination of the Greater !Gariep area (lower Orange River and surrounds) as a World Heritage Site;
- Established and growing populations of desert animals such as gemsbok, ostrich and springbok, and unique vegetation in the world’s only plant biodiversity hotspot in an arid region;
- Varied recreational activities including 4x4 routes, river rafting, hiking, and camel or mule or horse treks, through spectacular landscapes;
- Historic relicts of diamond mining in the Sperrgebiet and outstanding coastal landscapes;
• Rich cultural and historic heritage of the Nama people and the German colonial period;
• Interesting geological features such as a meteorite crater, fossils, an extinct volcano;
• Good roads and telecommunications, and a growing number and diversity of accommodation establishments, which provide for most tourist necessities. Transit routes into southern Namibia from South Africa, linked with the Trans-Frontier Conservation Area, are well established.

Formal Protected Areas and areas under conservation management (including private game farms and communal conservancies) make up about 40% of the area of Karas. The reality of climate variability, making livestock farming less profitable, is likely to continue the shift towards farming with wildlife and tourism. In particular, land adjacent to protected areas is more profitable under conservation management than under conventional farming, and leads to a reduction in park-neighbour conflicts as land uses become more compatible. This SEA supports this shift for promoting conservation and the improved socio-economic benefits they can bring. As an over-arching guideline, the continuity of areas under conservation management should be increased, under the motto “Karas Network Natura”. The Gondwana Canyon Park complex is seen as a model for turning protected areas and wildlife-landscape resources into economic engines.

Mining is a potential threat to this form of land use but it can and should be managed so that the impacts are considerably reduced. Unavoidable problems only occur if profitable mineral deposits occur in areas of high biodiversity or landscape value.

Other conflicts with conservation and tourism include the loss of aesthetic value from ugly infrastructures such as powerlines, telecommunication towers and roads. These can be planned and constructed so that they provide the necessary services without detracting from the value of scenic landscapes.

**Mining**

Mining operations are strong economic drivers, and increasingly they are responsible developers. They bring large investments which can be used to tackle significant national priorities such as desalination, skills development and infrastructure e.g. town, roads, solar energy. The mining sector in Karas is dominated by diamonds along the lower Orange River and the coastal strip up to Luderitz, and by heavy metal deposits at Rosh Pinah and Skorpion. Other mineral occurrences with possible potential are copper at Haib, and uranium at Warmbad, Aus and Garub.

The main environmental threats from mining in the region are the heavy demand for water, and the risk of pollution. Landscape alterations on a large scale, that have occurred during coastal diamond mining operations, are relatively benign except for the visual impact. Rehabilitation of past mine dumps and ponds along the coast will occur to a limited extent, but all modern earth-moving operations for diamonds are now rehabilitated as an ongoing ‘mend while you mine’ policy.

Significant pollution threats (contamination of soils and groundwater by heavy metals) have been detected at Rosh Pinah and are identified as a RED FLAG. The threat of long-term contamination needs to be properly addressed in the closure plans of this and all mines, so that there is not a legacy of pollution and health risks left by the mines.

Exclusive Prospecting Licences (EPLs) for minerals grant the holder access to any land, and almost the entire Karas Region is covered by EPLs. This is a potential problem in areas that are under farming or conservation management, through activities such as off-road driving, drilling and poaching and just the presence of people where wilderness value is the main land use. The Minerals Ancillary Rights Commission offers a dispute-resolution forum in the case of such conflicts.
An important principle for new mines is that they should not start up new settlements (e.g. for accommodating labour), but should rather invest in existing towns. This is to prevent the future occurrence of ghost towns after mine closure. As part of their social responsibility, mines should invest in training and capacity building programmes that will help to build skills for a diversified economy after closure. The legacy of the mine should continue in improved social and economic conditions, and sustained environmental health, after the mineral resources have been removed.

An idea to consider for the future of Rosh Pinah after closure of the mines is to use the town as a centre for solar power generation, research and development.

**Energy**

Energy developments in the region and in Namibia as a whole are strongly influenced by external factors, especially in South Africa. Local issues are subservient to the strategic decisions of the Southern African Power Pool.

The main manifestation of energy infrastructure in Karas Region is powerlines. Main transmission lines running from South Africa to feed the Namibian network run through Karas, and the network serves all towns and most settlements. The most important impacts of powerlines are aesthetic, as well as the dangers to birds such as large raptors and bustards which suffer mortalities from electrocutions and collisions. These impacts can be mitigated through careful routing of lines and specific bird-related measures.

Generation schemes are proposed along the Orange River and at Oranjemund. Strategically, the development of energy generation capacity using natural resources is supported. Preliminary work on the Lower Orange River Hydro-Electric Power Scheme (LOHEPS) has not identified any fatal flaws, and this project is likely to begin construction in 2012. No major conflicts are identified, but the project is vulnerable to continued adequate flows in the Orange, so that there remain risks of impacts on the wetland ecosystems. The proposed power station close to Oranjemund fuelled by Kudu gas is being started up again as a viable project now that gas price obstacles have been overcome. The most significant impact is the risk of oil pollution from the marine industrial operations. There is a relatively small land-use conflict with Namdeb, since the gas pipeline will exclude diamond mining operations from a specific area. The loss of this potential mining income has been agreed to by Namdeb.

As Namibia’s sunniest region, and its coastal strip the windiest, Karas has great potential for renewable energy generation. A wind park is under consideration for Lüderitz. A few solar power generation projects are proposed in the region, but are still only in the very early stages of planning. There is possibly an argument for using the Rosh Pinah town, its infrastructure and mine facilities as a hub for solar power generation, research and development, which would help to maintain the life of the town after the closure of the Rosh Pinah and Skorpion mines. Electricity could be used to power desalination at the coast, providing water for Oranjemund and Rosh Pinah, and possible new mines.

Domestic energy needs in towns are largely supplied by electricity and paraffin, but there is heavy reliance by low income groups on wood. The alien invasive tree, Prosopis, is the main source, and it should not be removed unless it is severely harming environmental flows in water courses.

**Fishing**

The fisheries sector has been the economic backbone of Lüderitz, which serves as one of Namibia’s two main ports. The harbour town provides services to the fishing industry and the processing factories which preserve and package fish products mainly for export to Europe. For roughly the last two decades there have been diminishing stocks of important species such as hake and rock lobster, and thus the fisheries sector is in steady decline.
Mariculture, the growing and harvesting of marine products such as seaweeds, abalone, oysters and rock lobster, are growing industries in Lüderitz Bay, and show economic potential. While their development is promoted, their vulnerability to occasional natural marine events such as red tides and low-oxygen water must be noted. Big pollution events have not occurred in Namibian waters; an oil-spill or equivalent accidental spill could be disastrous for this sector.

Marine diamond mining involves disturbance of the sea floor and smothering of biota, but this is localized and affects only about 5 km² per year, so the small scale of it and the natural ability to recover make this overall impact quite small. Again, the greatest risk stems from the possibility of pollution if a vessel capsizes.

Fresh-water fisheries (aquaculture) have some potential in Karas as a diversification of local livelihoods. No significant impacts or conflicts are predicted, while their development synergises with existing and planned infrastructures such as Naute and Neckartal Dams.

Towns and Infrastructure

Transport infrastructure such as roads, rail and port facilities are generally well developed in Karas and pose no significant environmental threats as known so far, and mitigation measures at the project level can adequately minimize environmental damage. Especially barrier effects to animal migration mostly due to road kills need to be assessed properly.

With most of its population living in urban settings, there is great pressure on government and local authorities to provide effective social services such as education and health facilities; water, waste and sanitation; and security and recreational outlets. In mining towns such as Oranjemund and Rosh Pinah, these are carried adequately and the towns contain enough employed people that the services can be paid for. Other centres such as Keetmanshoop and Karasburg do not have the benefit of supporting industries and the high proportion of unemployed people in the towns means that little income is available from rates and taxes to pay for the services. Overall, poverty, accompanied by deterioration of social services and of the social fabric in Karas communities, is identified as a RED FLAG.

Assessment of Cumulative IMPACTS (Map 57)

The Orange River is understandably a focus area for development in the Region, but is reaching its limit in terms of availability of water for abstraction. Additionally, water quality is declining significantly. This report cites the considerable body of information which shows that the Orange River water resource is over-exploited and abused, and that its Ramsar wetland at the mouth is now placed on the Montreux Record as a degraded wetland. The cumulative impacts of irrigation schemes, water for towns and luxury developments such as golf courses, and mining, is highly significant and is likely to influence how these developments continue in future. Climate change will exacerbate these impacts. Future planning should not take for granted that ample water will always be available. Planners and developers also need to recognise the importance of environmental flow requirements so that the resource is kept in a healthy state and is able to support people’s needs in future.

The Fish is the most important ephemeral river in the region, and has been described as Namibia’s closest resemblance to a perennial river within its borders. Flows and environmental health downstream are going to be significantly impacted by the Neckartal Dam development, which will also cumulatively add to the pressures on the Orange River mouth since its flow contributions to the Orange will decline.
Conclusions and sustainable development suggestions for Karas Region

Considering the key natural resources and the limiting factors of the Karas Region, the following suggestions are made to help Karas Region achieve sustainable economic development and contribute to Vision 2030.

Strengthen the role of Integrated Water Resources Management

The Orange-Fish River Basin Committee and its parent ministry, MAWF, should take the lead in promoting Integrated Water Resources Management in the region. NDP3 states a key activity in the water sector is to undertake a “pilot study on efficient irrigation methods to be used along the Lower Orange River”. Water demand management, i.e. managing the amounts of water consumed through pricing or other incentives, should be urgently introduced. Demand management is also consistent with NDP3 which urges more value addition per unit of water consumed, and a strong role for functional basin management committees.

Since water is the most critical limiting factor in the region, it is appropriate that the management and monitoring systems around water use should be given a high priority. This places a great responsibility on MAWF and the newly formed Orange-Fish River Basin Committee, as well as on Local Authorities who are responsible for implementing water tariff systems.

Strengthen the wildlife and conservation sector

As an over-arching guideline, the continuity of areas under conservation management should be strengthened, under the motto “Karas Network Natura”. This supports the existing trend to farm with wildlife as these animals are better suited to the arid conditions, and builds adaptation measures to cope with future climate change. Conservation and tourism are the economic future of agricultural land that is marginal. The protected areas and adjacent areas can be used as economic engines for growth in the tourism sector, by providing services to this industry and thereby improving rural livelihoods. It is recommended to implement the following measures:

- Promote wildlife populations by removing fencing to create larger contiguous management areas that facilitate movements in response to seasonal variations.
- Further facilitate wildlife movements by maintaining a corridor network that will allow animals to respond to seasonal variations and changing climates. The eastern edge of the Namib protected areas should be open with farming neighbours into the escarpment area. Open corridors should be maintained along the Orange and main ephemeral rivers,
- Cooperate with neighbouring states to implement trans-frontier conservation areas, as is being done between South Africa and Namibia. The Kgalagadi Transfrontier Conservation Area (shared between South Africa and Botswana) should be extended to include Namibia’s southern Kalahari, where there are currently no protected areas.

Establish Karas as Namibia’s solar power hub

As Namibia’s sunniest region, its coastal strip the windiest, and the Ocean with almost infinite water, Karas has great potential for renewable energy generation and water provision. This SEA strongly supports the proposed wind park for Lüderitz and the scattered solar power generation projects. The argument goes further, to propose the idea of making Karas a hub for renewables. Specifically, Rosh Pinah with its infrastructure and mine facilities qualifies well to be transformed from a mining town to a centre for solar power generation, research and development. Even a production industry could be established in future. Electricity could be used to power desalination at the coast, providing water for Oranjemund and Rosh Pinah, Lüderitz and possibly Aus, as well as new mines and for tourism facilities. Sea salt production could be considered as well. It is recommended to
start with a feasibility study, considering technical, economic and environmental feasibility of this proposal, as well as economic and social benefits.

**Build the skills base**

With a poor skills base, the region will continue to struggle to really move forward. It is therefore essential to implement effective education and training programmes. As partners in this drive, major economic drivers, such as the mines, large irrigation schemes, and large-scale tourism developments like Desert Star, should include support to schools and vocational training as part of their corporate social responsibility programmes. On-the-job training and experience and apprenticeships are invaluable. Irrigation centres such as Green Schemes and Aussenkehr should run well organised training in irrigation farming. Livestock farming training (e.g. in the karakul sector) is offered and should be expanded. Hospitality training should be offered through tourism enterprises. Technological training is offered through NIMT and Cosdef, and should be expanded. All these initiatives are worthwhile and essential investments in the future prosperity of the region.
Areas of Cumulative Impact

Map 57: Areas of Cumulative Impact

- Orange River
- Namib-Naukluft Park
- Sperrgebiet National Park
- Kgalagadi Transfrontier Park
- Karas
- Tandjieskoppe
- Kudu Power Station
- Desert Star Studio

Legend:
- Towns
- Ephemeral Rivers
- Perennial River
- Irrigation Zone
- Areas of Cumulative Impact
- Desert Livestock
- Large and Small Stock Zone
- Large and Small Stock Zone
- Interim Communal Conservancies and Cultural Zone
- Protected Areas Zone
- Tourism and wildlife Zone
- Small stock zone

Infrastructure:
- Border Posts
- Harbour
- Proposed Wind Energy
- Proposed Solar Energy
- Proposed Interim dams (irrigation and storage)
- Declaration as Local Authorities
- Proposed LIMPRA
- Proposed Trans-Kalahari Railway
- Proposed Aus-Luderitz Railway
- Proposed Bethanie-Maltahohe road

Data Source:
Core Strategic Transport Network,
Namibia Tourism Board,
National Planning Commission,
Stubenrauch Planning Consultants.
7. IMPLEMENTATION AND FOLLOW UP OF KIRLUP

The Karas Regional Council is instrumental in successfully implementing and monitoring the recommendations made by the KIRLUP as it holds in trust the Karas Region’s natural and cultural resources for present and future generations, and has a responsibility to the public to ensure that resource management represents a balance of community, economic and environmental needs. The Karas Integrated Land Use Plan (KIRLUP) provides the mechanism for managing the uses of land and resources within the Karas Region, setting out coordinated management directions for future uses of land and resources while allowing for the evaluation of the success of management activities over time. The plan is future orientated and interactive, allowing plans to be adjusted in response to changing social and economic demands and circumstances.

Currently the most clear regulatory framework for implementation of the Integrated Land Use Plan is the Urban and Regional Planning Bill (Draft, 2010). This Bill grants clear authority to MRLGHRD to require the implementation of land use plans and it clearly empowers Regional Councils to act as an “authorized planning authority.” Zoning Schemes in particular are given regulatory teeth under section 41.

However, since this is just the initial stages of the Bill, as an interim measure the regulatory provisions of the Land Use and Zoning Plan could be adopted by the Regional Council as a policy, by-law or regulation in accordance with the regional executive powers granted to them through the Constitution and Regional Councils Act. The Regional Council may also submit this matter to the Central government or make its own motion to the Cabinet or the MRLGHRD under the Regional Councils Act Section 28. The Governor may also initiate planning and development policies or the making of regulations by the regional council under the Act (Section 18).

In order to implement any of these options, it would be very useful to have a Regional KIRLUP Implementation Committee consisting of a representative from each regional line Ministry, regional council members, the Governor, and representatives from Central level MRLGHRD, MLR, MET and other Ministries that may be deemed fit. A consultant should be employed to build capacity and organize meetings and discussions between the committee members in order to ensure implementation of the KIRLUP.

The Following diagram indicates the proposed workflow for KIRLUP. The Karas Integrated Regional Land Use Plan will form the baseline for all planning in the region. The aim is to move from general plans (KIRLUP) to more detailed Regional Development Plans and local economic development plans. Any new plans and initiatives should be included into the integrated regional land use plan with the next review.
It is expected that this Land Use Plan must be reviewed and amended every 5 years. This will enable line ministries to correspond with the strategic plans and regional plans. This land use plan will be in place until 2015/2016. Any programs/plans not implemented within the 5 years must either be removed or be amended accordingly.
8. PLAN ACCEPTANCE AND ENDORSEMENT

Signed at Windhoek on this…… day of ………………… 2011

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(For Client) (For Consultant)
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