



**New Partnership for
Africa's Development (NEPAD)
Comprehensive Africa Agriculture
Development Programme (CAADP)**



**Food and Agriculture Organization
of the United Nations
Investment Centre Division**

GOVERNMENT OF THE REPUBLIC OF NAMIBIA

SUPPORT TO NEPAD–CAADP IMPLEMENTATION

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Volume II of VII

BANKABLE INVESTMENT PROJECT PROFILE

Infrastructure Upgrade of Rural Water Supply

July 2005

NAMIBIA: Support to NEPAD–CAADP Implementation

Volume I: National Medium–Term Investment Programme (NMTIP)

Bankable Investment Project Profiles (BIPPs)

Volume II: Infrastructure Upgrade of Rural Water Supply

Volume III: Support to Smallholder Irrigation Schemes

Volume IV: Development of Infrastructure for Marketing Horticultural Produce

Volume V: Integrated Farming Support Programme for Resettled Farmers

Volume VI: Livestock Improvement

Volume VII: Support to Aquaculture Development

NEPAD–CAADP BANKABLE INVESTMENT PROJECT PROFILE

Country: Namibia

Sector of Activities: Rural Water Supply

Proposed Project Name: **Infrastructure Upgrade of Rural Water Supply**

Project Area: Omaheke Region

Duration of Project: 5 years

Estimated Cost: Foreign Exchange US\$1.1 million
Local Cost..... US\$1.3 million
Total US\$2.4 million

Suggested Financing:

<i>Source</i>	<i>US\$ million</i>	<i>% of total</i>
<i>Government</i>	1.08	45
<i>Financing institution(s)</i>	1.08	45
<i>Beneficiaries</i>	0.24	10
<i>Total</i>	2.40	100

NAMIBIA:
NEPAD–CAADP Bankable Investment Project Profile
“Infrastructure Upgrade of Rural Water Supply”

Table of Contents

Currency Equivalents	iii
Abbreviations.....	iii
I. PROJECT BACKGROUND.....	1
A. Project Origin	1
B. General Information.....	1
II. PROJECT AREA.....	3
III. PROJECT RATIONALE.....	5
IV. PROJECT OBJECTIVES.....	6
V. PROJECT DESCRIPTION	7
VI. INDICATIVE COSTS	8
VII. PROPOSED SOURCES OF FINANCING	8
VIII. PROJECT BENEFITS	9
IX. IMPLEMENTATION ARRANGEMENTS	9
X. TECHNICAL ASSISTANCE REQUIREMENTS	9
XI. ISSUES AND PROPOSED ACTIONS	10
XII. RISKS ANALYSIS	10
ANNEXES.....	13
Annex 1: Administrative Regions of Namibia.....	15
Annex 2: Agro–Ecological Zones of Namibia.....	17
Annex 3: Average Rainfall	19
Annex 4: List of References	21

Currency Equivalents

(July 2005)

Local Currency	=	Namibian dollar (N\$)
US\$1.00	=	N\$6.57
N\$1.00	=	US\$0.15

Abbreviations

CAADP	Comprehensive Africa Agriculture Development Programme
CBM	Community Based Management
DRWS	Directorate of Rural Water Supply
GRN	Government of the Republic of Namibia
LSU	Large Stock Units
MAWF	Ministry of Agriculture, Water and Forestry (<i>since January 2005</i>)
MAWRD	Ministry of Agriculture, Water and Rural Development (<i>prior to January 2005</i>)
NDP1	First National Development Plan
NDP2	Second National Development Plan
NEPAD	New Partnership for Africa’s Development
RSA	Republic of South Africa
SSU	Small Stock Units
WASP	Water Supply and Sanitation Sector Policy
WPC	Water Point Committee

I. PROJECT BACKGROUND

A. Project Origin

I.1. The project has its origin in the NDP1 and NDP2 and the *Regional Development Plan of Omaheke Region* (2001/2002–2005/2006), The *Water Supply and Sanitation Sector Policy* (WASP), approved by Cabinet in 1993, which forms the policy framework within which *Directorate of Rural Water Supply* (DRWS) operates. The Policy states that: “*The equitable improvement of services should be as a result of the combined efforts of government and the users based on community involvement, participation and mutual responsibility*”. This has led to the adoption by DRWS of a comprehensive “*Guidelines for the Implementation of Community Based Management (CBM) in Rural Water Supply*” (Version II, December 2000) as a reference document for the implementation of the WASP.

I.2. The policy outlined a programme for the implementation of CBM throughout the rural regions of the country, starting in August 1997 and ending in 2007. During this ten year period, a gradual transfer of responsibilities for the supply of water to the rural communities would occur, culminating in full ownership of all water points by the users.

I.3. The process would be implemented in three phases, to ensure success of the policy.

- **Phase 1:** Capacity Building.
- **Phase 2:** Operation and maintenance, during which the community assumes responsibility for day-to-day operations and some maintenance aspects of their water points.
- **Phase 3:** Full cost recovery, for the last three years of the process, during which the community would take ownership of the water point’s infrastructure and accept full responsibility for all operations, maintenance and financial aspects.

I.4. The process can only be implemented successfully, if it runs concurrent with the continued support and training of the communities by DRWS.

B. General Information

I.5. Government is committed to facilitate the achievement of sustainable provision of safe drinking water to the people of Namibia and the livestock. Water is the key input for economic development, be it for industry, mining, tourism and agriculture. The government will thus ensure that water consumption reflects the relative contribution of each sector to sustainable economic development, while considering the environmental systems that are sustainable by the hydrological cycle.

I.6. Namibia’s general climatic, geological and topographical features make it the most arid country in Sub-Saharan Africa. Consequently, water is an extremely scarce resource. Rainfall and associated surface water and groundwater sources in the interior of the country are extremely limited and variable. Throughout the country, potential evaporation exceeds precipitation by a factor of between two and five. Natural water sources are few in the country. Hence, border-rivers provide most of the water. It is estimated that 36 percent of water consumption is derived from groundwater, 24 percent from ephemeral rivers and 38 percent from perennial border rivers. Because of high temperatures, it is estimated that 83 percent of the rainfall evaporates; only 1 percent contributes to the

ground water recharge, 2 percent is collected in surface water storage facilities and remaining 14 percent is used by vegetation.

I.7. The combination of low rainfall and high evaporation rate results in irregular and unreliable supply of water from ephemeral rivers. There are nine major dams in the country and large number of small dams constructed mainly on commercial farmland. Most water is drawn from boreholes of which there are approximately 5,000 registered, and an estimated 50,000 unregistered at the end of 1999.

I.8. Rural water supply is the responsibility of the *Directorate of Rural Water Supply* in the *Ministry of Agriculture, Water and Forestry* (MAWF). However, appropriate institutional framework backed by legislation to allow implementation of grazing and land planning is lacking. This is an issue requiring attention at an inter-ministerial level to ensure an enabling environment for integrated or holistic rural development to be implemented effectively.

I.9. *Water Point Committees* (WPCs) are weak and many strong wealthy farmers merely drill their own private borehole to avoid dealing with many users. This is being accompanied by fencing of large tracts of land, limiting expansion of the other smaller communal farmers. Fencing alone does not ensure good range management.

I.10. Farming in communal areas is constraint by land shortages, which are severe in places and which are aggravated by inappropriate location of water points and fencing. Land shortages result in significant movement of young people off the land, as well as trends towards commercialization of farming practices on the part those remaining. In the last ten years there has been overall increase in off-take from the eastern communal areas of around 400 percent as farmers have adopted system of weaner marketing mainly to the RSA feedlot market.

I.11. The region’s crop production sub-sector is of marginal importance due to low rainfall, poor soils and population’s pastoral heritage. Subsidized ploughing services rendered by the government continue to ensure that small areas of maize and beans are cultivated mainly for communal areas subsistence needs. Small-irrigated gardens are of limited significance, but output could be increased with improved management.

I.12. There is diversification of farming from cropping, both for commercial and domestic consumption purposes and diversified livestock farming, including game farming and wildlife and culture based tourism. The Omaheke region can be sub-divided into two general areas: firstly the commercial farmland area, inclusive of the Trans-Kalahari Road Corridor and the major urban centre, Gobabis, secondly the rural communal areas, where almost 80 percent of the regions population lives.

I.13. There are approximately 3,500 communal-tenure farming households in the Omaheke region. Though food security is connected with farming, agricultural production makes only a small and, it is believed, declining contribution to average communal area household income, both actual and imputed.

I.14. Overall development goal is to the sustainable utilization of Omaheke region’s natural resources to improve food security and livelihoods by promoting sustainable land management practices, and the development of agriculture, forestry, tourism, trade and industrial development.

I.15. Development goal for infrastructure is the access to safe water, transport, energy and communications by the people throughout the region, together with well-planned urban environments.

II. PROJECT AREA

II.1. **Population.** Omaheke region has a land surface of 84,612 km², and is inhabited by 69,000 persons (2001 Population and Housing). Some 80 percent of the population lives in the rural areas of the region.

II.2. **Vegetation.** Vegetation of the Omaheke Region can be divided mainly into Highland Savannah in the West, changing gradually to Camelthorn Savannah (Kalahari Sandveld) in the eastern parts.

II.3. In the western Central Highland area acacia species are dominant and include *Acacia hereroensis*, *A. reficiens* and *A. erioloba* amongst others. Shrubs are more prevalent than trees. The grass cover is dense and of good quantity in undisturbed areas. Low shrubs trees and bushes of varying density become sparser towards the east. Here *A. erioloba* (camel thorn tree) savannah dominates the vegetation in the eastern Kalahari Sandveld. These areas are characterised by dense grass stands of some of Namibia’s best grazing species with isolated trees and mixed stands of shrubs.

II.4. Bush encroachments have a significant influence on vegetation composition in the communal areas as well as commercial areas of Omaheke region. In the northern communal areas, namely Otjinene, Epukiro and Talismanis areas, it is mainly *Terminalia sericea* and *Acacia mellifera* that has encroached. These encroaching species in northern Omaheke all into the height class 2 to 4 meters tall. In contrast the Aminuis block and Corridor area have lower acacias that are encroaching e.g. *Acacia reficiens* and *A. mellifera*.

II.5. **Rainfall.** The annual rainfall of the project area varies.

- Aminuis is between 200 mm – 300 mm;
- Rietfontein, Otjinene is between 300 mm – 400 mm.

II.6. The development potential identified in the *Regional Development Plan* relates specifically to agriculture and wildlife and tourism activities. These are likely to be community based and should have little impact on the supply of water in the rural areas.

II.7. There is no major dams and permanent rivers in the region, which makes irrigation an unlikely proposition on a large scale. Irrigation may take place on a small scale around strong water points and will mainly be used for growing products for own consumption. Irrigation along the rivers is unlikely to take place due to the sandy and poor soil conditions and also in that free flowing water is only available for a short time during the year..

II.8. The proposed project area includes the following communal settlements, i.e.

- The Epukiro/Talismanus/Eiseb, 35,946 km²;
- Aminuis/Corridor, 7,084 km²;
- Ben Hur area, 1,008 km².

II.9. In total the project area consists of 44,038 km², which is approximately half of the Omaheke region. A large number of rural settlements found are further than the expected minimum of 2.5 km away from the existing water points.

II.10. **Livestock farming.** The livelihood of the rural population virtually depends exclusively on livestock, especially cattle production. The region contributes about 20 percent to the national cattle production, 11 percent to sheep and 8 percent to goats¹. The area is characterised by communal largely subsistence farming activities with settlements concentrated around water points under the jurisdiction of the DRWS. Therefore, the region is a major player in the livestock industry in Namibia, and by extension, major playing in the meat Industry of Namibia and therefore makes significant contribution to the foreign exchange earnings of the country.

II.11. **Water demand.** From the recently completed socio-economic study it is clear that the human population in the project area will decrease from 33,000 (1991) to 14,500 in 2021. Water demand for human consumption will therefore reduced from 825 m³/day to 363 m³/day. The water demand for livestock will however significantly alter these demand figures.

Table 1: Water consumption rates	
Consumer	Consumer daily rate (litres)
Human	25
Large stock unit	45
Small stock unit	12
Source: MAWF, <i>Regional Water Supply Development Plan</i>	

II.12. There is as unconfirmed consumption rate between 12 m³/day and 89 m³/day for water used for gardening. This will vary enormously, depending on the manner in which vegetable patches are watered, e.g. by bucket or by flood irrigation. Furthermore, the intensity of use will cause greater demand.

II.13. A typical 10 m² patch will probably use about 100 litres of water per day if buckets are used, and three or four times as much if flood irrigation is used. At specific water points with low numbers of people and livestock, this could be a significant form of water use. As this factor varies too much to be able to be included in standard demand calculations, it is best allowed for in the form of a safety factor applied to the calculated water demand. However, in the Omaheke Region it has been found that only a small number of water points have any gardens or vegetable patches. It is therefore considered that little allowance needs to be made for this factor.

II.14. Based on the survey findings regarding numbers of people and livestock at each of the water points surveyed, the expected present water demand has been calculated and is shown in table below. The stock figures in the table have not been adjusted to reflect a ‘sustainable’ stocking density. A summary of the calculated present water demand is shown in the table below.

II.15. A total of 116 water points is included in this table.

Table 2: Calculated present water demand	
Total calculated present water demand per day for all 116 active water points surveyed	3,122 m ³
Number of water points with a demand less than 5 m ³ /day, but more than 1 m ³ /day	15 or 13%
Number of water points with a demand less than 10 m ³ /day, but more than 5 m ³ /day	21 or 18%
Number of water points with a demand less than 10 m ³ /day, but less than 20 m ³ /day	26 or 22%
Number of water point with a demand exceeding 20 m ³ /day	54 or 47%
Highest daily demand at any water point	131.5 m ³
Average daily demand per water point	26.9 m ³
Source: MAWF, <i>Regional Water Supply Development Plan</i>	

¹ Source: *Meat Board of Namibia Annual Report*.

II.16. Eighty-seven percent of all surveyed water points therefore have a daily water demand greater than 5 m³, which is the typical volume that a windmill can deliver, and consumed by 20 people and 100 LSU’s. If a safety factor of 20 percent is applied to these demand figures to allow for natural variations in demand and for additional water for gardening, then the percentage of all surveyed water points with a revised daily demand of more than 5 m³ rises to 92 percent. The current equipment by and large is able to meet these demands.

II.17. Given the trend in population growth in the project area, which has been in decline since 1990 in the region, the rural population can be expected to continue declining. Future water demand based on human population and stock numbers are therefore unlikely to increase, assuming that stock numbers remain fairly constant. Thus, the planning and design of improvements to the present rural water infrastructure can be based on the present figures of water demand shown above. The total present water demand for the whole study area is extrapolated from the detailed results of the 116 surveyed water points. Applying this method is not necessarily accurate, but gives a reasonable theoretical indication of the total rural water consumption.

II.18. Table 3 is based on calculated demand for the 116 surveyed water points, linearly extrapolated to the total of 481 water points in the study area. These figures do not include any allowance for water used for gardening or wastage; however this is a very small amount.

Table 3: Expected total daily water demand for the study area		
	2001	2016
Calculated daily water demand 116 active surveyed water points	3,122 m ³	3,122 m ³ or less
Extrapolation to total of 481 WP	12,946 m ³	12,946 m ³
Source: MAWF, <i>Regional Water Supply Development Plan</i>		

III. PROJECT RATIONALE

III.1. Given the role of livestock production in the socio-economic development of the region and therefore to the overall development of the country as a whole, and the scarcity of water, problems of overgrazing in many parts of the region, a comprehensive intervention is called for.

III.2. Sixty-five percent of water points in the region are considered to be in a poor state of repairs, while 20 percent are in fair state of repair, and only 15 percent are considered to be in good state of repair. Eighty-two percent of water points obtain their water from boreholes, while 17 percent obtain water from piped water from adjacent water points (mainly in the Ben-Hur area).

III.3. Eighty-three percent of the pumping installation is diesel driven, while 12 percent of the water points have both windmills and diesel engines for back up operations. Only 3 percent are equipped with solar driven pumps, and 1 percent is equipped with a hand pump. Seventy percent have elevated tanks, but most of these do not conform to the DRWS standards, and 29 percent of these do not have elevated tanks/storage. As a result, water points have insufficient storage capacity to serve larger communities.

III.4. About 55 percent of the water points has leaking reservoirs. Only 37 percent of water points have ground reservoirs, which are in good conditions, without leaks. About 75 percent of stock troughs is leaking or is deficient, which means replacement.

III.5. As far as the water supply is concern the region is not well endowed and has no major water sources, either ground or surface water. The White and Black Nossob Rivers bisect the southern part of the region and support the Otjivero dam and the Daan Viljoen Dam respectively. These dams were constructed to secure water to Gobabis. Communal farmers in the northern part of the region constantly struggle to find enough water and grazing.

III.6. As all the communities are already supplied with water and it is not recommended that new water points be constructed, the upgrade of existing water points can be implemented as each water point committee becomes functional, with the appropriate basic training in place. Cost sharing for diesel, which is currently 50/50 between DRWS and the communities have indicated their resistance to paying for water, unless water points are upgraded. Upgrading should therefore proceed as quickly as possible.

IV. PROJECT OBJECTIVES

IV.1. The objectives of the project are clearly in line with both national as well as the regional objectives as rehabilitation of water infrastructure will ensure that a safe, sustainable, reliable and sufficient water supply is delivered at an affordable cost to the water point communities.

IV.2. *National objectives* are contained in NDP2 and include the following:

- Provide access to water of acceptable quality for the whole population of Namibia, with priority in the rural areas;
- Utilize, conserve and protect all water resources in an environmentally sustainable manner;
- Manage and allocate scarce water resources in an equitable and efficient manner with due consideration to the environment;
- Promote institutional efficiency and financial sustainability taking into account affordability and equity for all consumers; and
- Ensure that the availability of water promotes and supports gender balance, social and economic development.

IV.3. *Regional Objectives*

- To promote development of accessible water sources;
- To promote the development of safe water sources;
- To promote development of sustainable water sources;
- To promote development of water sources which serve the water supply needs; and
- To promote development of water sources at an affordable costs.

IV.4. *Regional Strategies*

- Water infrastructure is to be provided throughout the region and human resources are to be trained in order to provide maintenance
- Construction of earth dams and the provision of boreholes for a prolong supply of water.

IV.5. Given the importance of the region in the livestock sector of the country, it is quite clear that water provision to the region of Omaheke and especially to rural farming communities of national importance. Therefore, the project is important in the context of the government’s drive to reduce poverty.

V. PROJECT DESCRIPTION

V.1. This project is to have a life span of four years is to target rural communities, mostly composed of farmers. The primary focus of the project is on upgrading of water infrastructure in the project area. Such upgrade or rehabilitation would consist of the following components:

- Supply of pipes – This assumes that the community digs trenches and installs the pipes under professional supervision;
- Supply of diesel engines;
- Pump installation;
- Supply of windmills;
- Supply of elevated tanks;
- Fencing of water points;
- Repairs of leaking ground reservoirs;
- Repairs of leaking cattle troughs and replacement where necessary;
- Installation of standard DRWS taps. This is important for cost estimates, thus the construction of standtap has been included.

V.2. In the process of infrastructure upgrading, water points serving schools, clinics and large communities would be prioritised, followed by water points serving medium to large communities and with water points serving small number of communities to be the last priority.

VI. INDICATIVE COSTS

VI.1. The project is based on need to undertake major rehabilitation work for water points in the communal areas of Omaheke region. The rehabilitation needs show the actual number of individual infrastructure components at the respective water points requiring rehabilitation or full replacement where they are missing.

Table 4: Water point rehabilitation costs					
Components Requiring Rehabilitation	No. of WPs	Cost of components	Rehabilitation cost	Extrapolation on whole area	
				No. WPs	Total Costs
Piped supply	16	16,000	256,000	66	1,056,000
Diesel	53	9,000	477,000	220	1,980,000
Windmill and diesel	7	14,000	98,000	29	406,000
Elevated Tank	35	13,700	481,600	145	1,995,200
Ground reservoir	64	6,000	384,000	266	1,596,000
Cattle trough	93	11,200	1,041,600	382	4,278,400
Stand tap	116	2,500	290,000	481	1,202,200
Fence	75	6,000	450,000	311	1,866,000
Total (N\$)			3,478,200		14,379,800

Source: MAWF, *Regional Water Supply Development Plan*.

VII. PROPOSED SOURCES OF FINANCING

VII.1. It is proposed that the *Government of the Republic of Namibia* (GRN) will solicit financial support from multilateral and bilateral cooperating partners within the context of the *New Partnership for Africa’s Development* (NEPAD). It is hoped that a significant portion of the financial resources could be obtained from such sources.

VII.2. In addition, it is envisaged that the beneficiaries will also come, particularly through the supply of labour as a way to increase the capacity of the beneficiaries in construction, installation, repairs and maintenance of water point infrastructure and equipment.

VII.3. Moreover, the GRN, as well as the regional council are expected to commit financial and technical resources to the project through their annual allocations.

VIII. PROJECT BENEFITS

VIII.1. Expected benefits from the proposed project include the following:

- Schools and clinics and businesses situated at and near to water points to be rehabilitated would benefit by having predictable water availability;
- Livestock owners in the project area, who would now have secured water sources;
- Communities at and near to the water points to be rehabilitated would have reliable and predictable water as a result of the implementation of the project;
- Workers and farmers skills in repairs and maintenance of water infrastructure would increase as a result the implementation of the project;
- The project will contribute to the delivery of quality livestock to abattoirs as water would be now available at reasonable distances and in abundance;
- Delivery of quality meat products to export and domestic markets would be secured;
- Current crop production levels mainly for domestic consumption would increase.

IX. IMPLEMENTATION ARRANGEMENTS

IX.1. Given the overall policy of the GRN to facilitate community participation and ownership in development projects, it is vital that as per the CBM strategy, necessary institutional arrangements would be put in place as part of the process to provide the community in the project area with reliable and sustainable water resources.

IX.2. The process of creating conducive and supporting institutional environment has to be led by the *Regional Council*, which will guide the entire process. However, at the district level, it would be appropriate if the regional councillors of the respective constituencies would be involved to give guidance and support at the local level.

IX.3. At each of the sites at which the project is to be implemented, communities will be organised in the form of water point committees, which will be responsible for the implementation of the project and would take all necessary practical steps to ensure total community participation and subsequent ownership of the project and infrastructure.

X. TECHNICAL ASSISTANCE REQUIREMENTS

X.1. This project would require significant technical inputs from experts with relevant expertise in water infrastructure installation, repairs and maintenance. Such technical assistance shall also include training component. Namibia has sufficient technical expertise in water infrastructure installation, repairs and maintenance.

X.2. In addition, training in issues of management, book-keeping and communications shall be required. Such an expert might be recruited from Gobabis. A local NGO or consultant would provide this.

XI. ISSUES AND PROPOSED ACTIONS

XI.1. **Gender Consideration.** Although Otjiherero communities are strongly traditional and patriarchal in nature, attempts to have more women participate in water point communities must be encouraged from the top leaders of the region, especially the *Regional Council* and traditional leaders.

XI.2. **Participation.** Broad based community participation should be ensured. This will facilitate the process of transfer of water points to communities.

XI.3. **Capacity Building.** There should be rigorous implementation of the capacity building in such areas as installations, repairs and maintenance of water infrastructure and equipment. In addition, training in management and communications and book-keeping should be given appropriate attention.

XI.4. **Environment.** As the project is being implemented, issues related the maintenance of ecological balance will have to be ensured as the utilization of water points can lead to overgrazing of the immediate vicinity of water points.

XII. RISKS ANALYSIS

XII.1. The likely risks would include, *inter alia*;

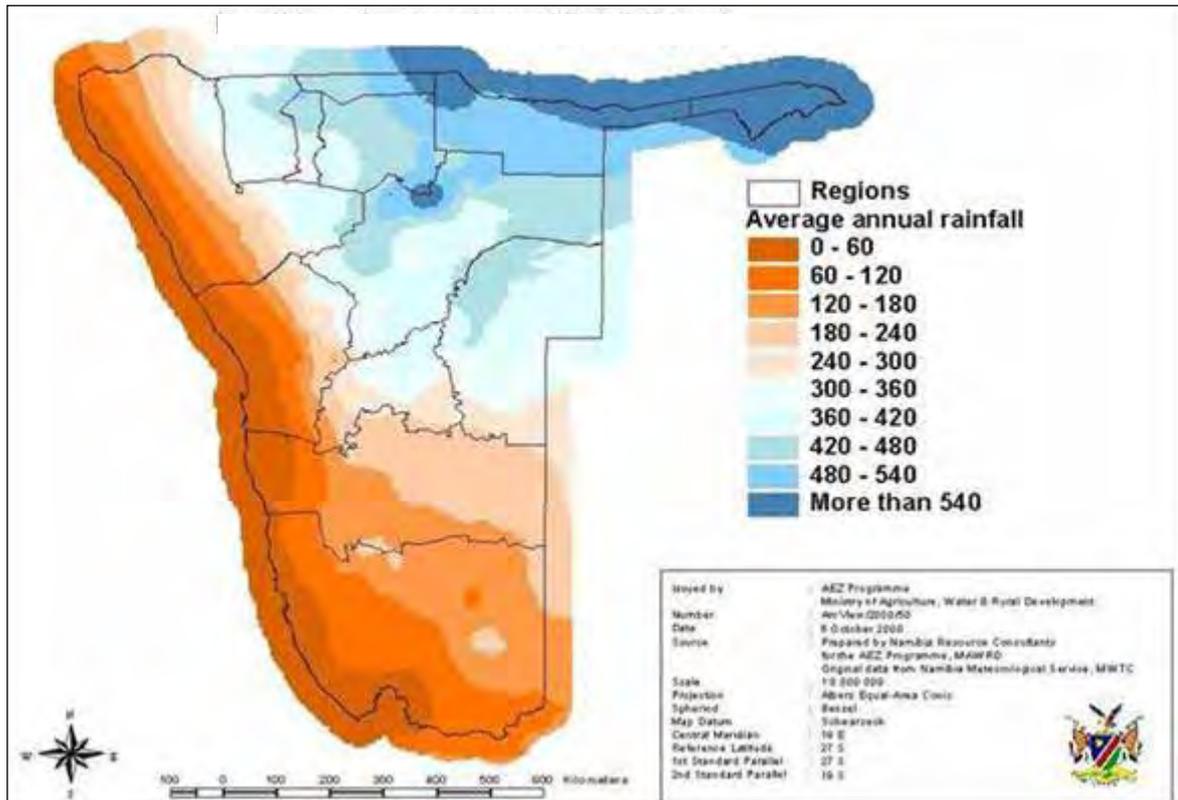
- **Migration to urban area.** With the high levels of migration to the urban areas both in the region and beyond, skills and capacities being built through this project and others might not be sustainable. Involvement of households in the project implementation should be encouraged as way to militate against potential migration by individual farmers to greener pastures.
- **Lack of functioning water point committees.** Lack of properly functioning water points committees may delay and subsequently disrupt the implementation of the project and its sustainability. Organisation of communities in the form of water point committees should be implemented right from the beginning, so that project planning should also involve communities.
- **Undue political interference.** Political authorities in the region should not politicize the project as this may alienate some community members, thus reducing the desirable level of participation and ownership of the project.
- **Disruption to funding by any of the proposed funding instances.** It is possible that any of the funding sources may experience budgetary problems, which may lead to reduction or cancellation of the institutions participation in the funding process, thus endangering the completion of the project.
- **Prolong drought.** This may result in migration and thus threatened successful implementation of the project.
- **Bureaucratic delays in disbursements.** This can make the project to fail, as funds are not disbursed in good time. Therefore, there should be a different mechanism to the existing government payment/disbursement system. More decentralized payment structure, say at the regional level could be more appropriate.

- ***Overgrazing.*** Some farms might be encourage increasing their livestock numbers as water has become abundant and secured as a result of the project. This can crowd out smaller farmers.
- ***Outbreak of animal diseases.*** There is indeed high risk that outbreak of animal disease could be experienced during project implementation. This would have negative impact on marketing as much as it will adversely impact on operations of abattoirs in Windhoek and Gobabis as well as export of livestock to RSA. Therefore, one of the important steps to be taken would be to ensure that the cross–frontier movement of livestock is prevented.
- ***Staff turnover.*** Staff turnover in the MAWF and other stakeholder ministries and agencies could easily impact negatively on the implementation of the project. In government service recruitment of staff takes often too long. It would therefore be necessary to employ key personnel of the project outside the government service.
- ***Lack of coordination with traditional authorities.*** This can cause lots of delays in implementing the project. It would therefore be necessary for local traditional authorities to be involved from the conception, planning and implementation of the project.

ANNEXES

- Annex 1: Administrative Regions of Namibia**
- Annex 2: Agro–Ecological Zones on Namibia**
- Annex 3: Average Rainfall**
- Annex 4: List of References**

Annex 3: Average Rainfall



Annex 4: List of References

1. **Government of the Republic of Namibia.** 2001a. *Regional Development Plan (2001/2002–2005/2006)*. Windhoek.
2. **Government of the Republic of Namibia.** 2001b. *Second National Development Plan (2001/2002–2005/2006)*. Windhoek.
3. **Government of the Republic of Namibia, MAWRD.** 2003. *Regional Rural water Supply Development Plan*. Windhoek.