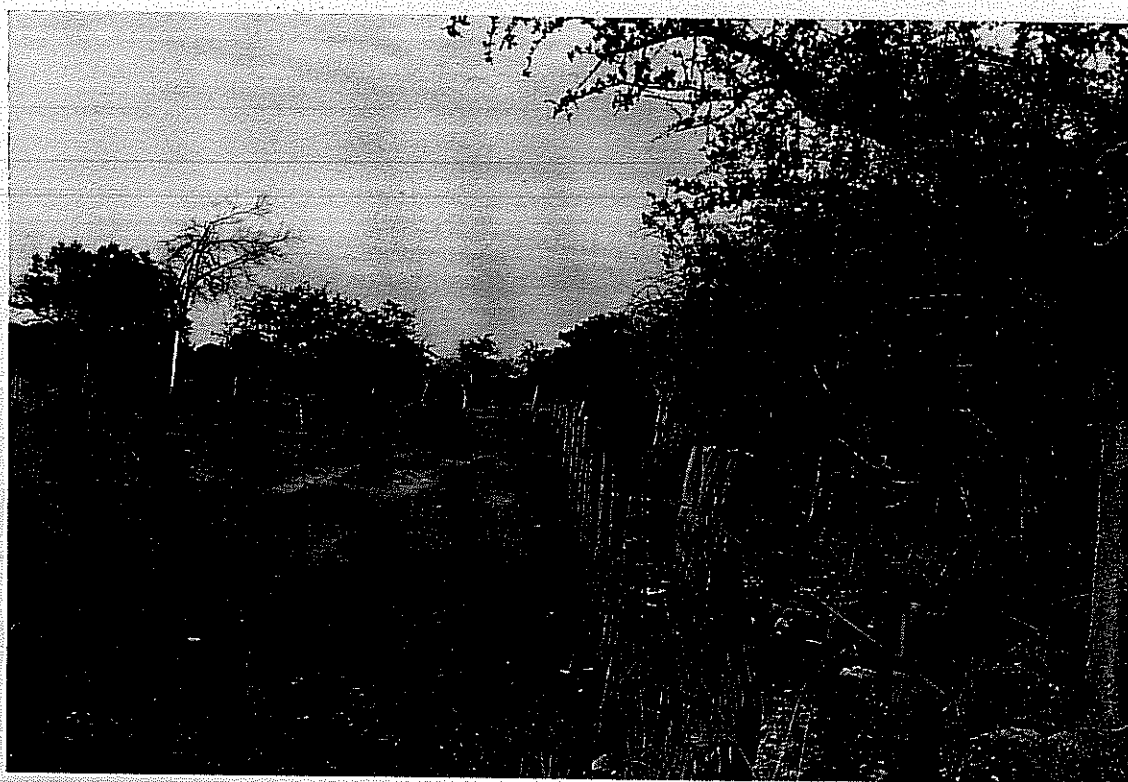


THE GOVERNMENT OF THE  
REPUBLIC OF NAMIBIA

THE NETHERLANDS GOVERNMENT  
THE MILIEV FACILITY

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# COMBATting DESERTIFICATION THROUGH SUSTAINABLE REHABILITATION OF BUSH ENCROACHED FARMLAND



OUTLINE PROPOSAL

January 1996

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DHV Consultants BV  
Amersfoort  
The Netherlands

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**ANNEX I Letter of Consent from the Permanent Secretary of the Ministry of Lands,  
Resettlement and Rehabilitation**

## 1 INTRODUCTION AND BACKGROUND

### 1.1 Bush Encroachment and its Effects on Agricultural Farmland and Production

Bush encroachment is one of the most serious forms of habitat degradation in Namibia and is taking on "alarming proportions". It is associated with the process of desertification and Namibia stands to lose a substantial proportion of productive land estimated to affect over 15 million Ha in the 300 - 500 mm rainfall belt (see map 1.). Woody species of trees and shrubs can average 10,000 plants per hectare. Dense concentrations of this bush are found in areas with the highest production potential for cattle. Heavily encroached bush occupies up to 60-80% of the surface and has reduced the ecologically carrying capacity considerably, in some areas from one large stock unit on 10 Ha to 40 Ha. It is estimated to have caused a loss in beef production over the last 30 years of at least N\$ 50 million/year.

The loss of some 15 million hectares to bush makes a significant dent in the amount of farmland which could, theoretically, be targeted for redistribution through resettlement of small scale commercial farmers.

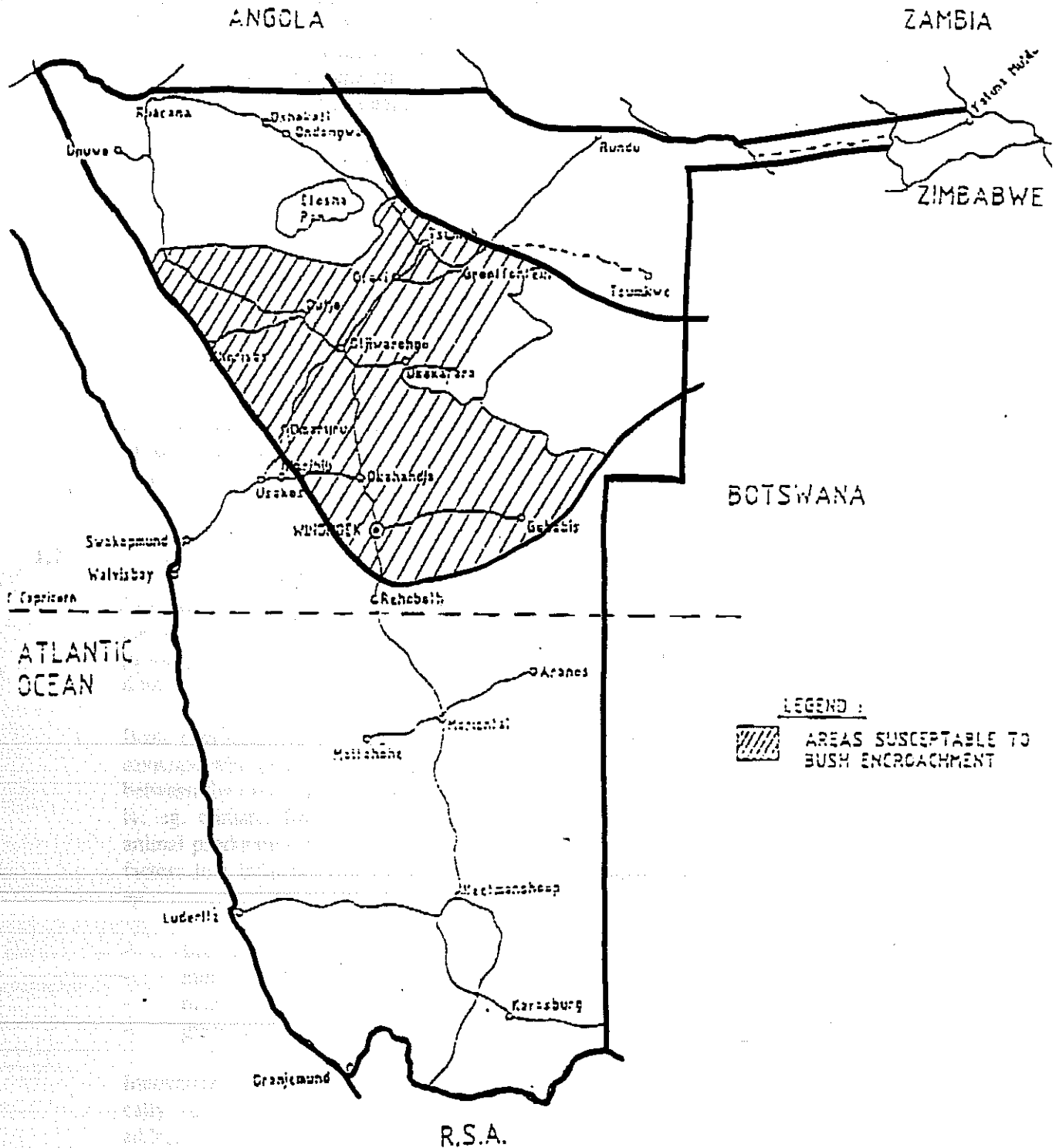
Little data exist on the causes and rate of bush encroachment, but studies of ground cover from aerial photographs taken at different periods indicate a rate from 15% in 1940 to 80% in 1979 in some areas.

The underlying causes of bush encroachment and the precise effect it has on agricultural production are at present not clearly understood. Bush encroachment is believed a result of a number of complex interacting factors such as (over) grazing and browsing patterns, lack of veldfires, climatic and soil moisture conditions caused by prolonged droughts. If the causes of bush encroachment are better understood it may arrest large areas of valuable farmland from further bush encroachment and facilitate the development of methods for its sustained rehabilitation.

Costs of restoration depend on the density, species composition and method of bush destruction, but usually far exceed the market value of land (N\$ 50 to 100 per ha). Estimated costs for a uniform stand of 2,000 stems per Ha range from N\$ 140 to 800, with the less expensive methods generally being less selective in plant species destroyed than the more expensive methods.

The region of the country susceptible to bush encroachment, mainly consisting of the semi-arid desert margin (300-500mm rainfall zone) must be carefully managed to avoid large scale desertification. This involves the judicious use of fires, the introduction of ecologically sustainable grazing systems and the training of small scale commercial farmers, as the prospective new land owners, in farm and pasture management, other relevant environmental matters and their control. It will also require the determination of the optimal extent of small scale farm units considering various types of farming in the semi-arid conditions in the targeted areas. Furthermore the modalities for rural financing and extension packages will have to be worked out.

Fig. 1.1: Map showing Regions of Namibia most susceptible to bush encroachment.



From a resettlement point of view, farms which have been badly encroached will hold little attraction and pose a threat of further ecological degradation unless skilfully managed. They may be costly to the Government if they were restored before allocation. Therefore, this programme seeks to rehabilitate farms that are already owned by Government to the benefit of the resettlement program. It is, however, important to realize that if the factors causing bush encroachment are not understood and appropriate management is not applied, the resettled areas are likely to become bush encroached again, making the resettled communities reliant on Government support once again.

The MILIEV programme is not only clearing bush encroached farm land but is amongst others also addressing the issue of bush encroachment through research into the underlying environmental, social and economic factors causing this phenomena. In doing so the programme will come a long way in assisting the Government of Namibia in the important task of resettling small scale commercial farmers under the Land Reform Programme.

The Miliev programme will form an integral part of the Namibia Programme to Combat Desertification (NAPCOD). The overall objective of this programme is *"to combat the processes of desertification by promoting the sustainable and equitable use of natural resources suited to Namibia's variable environment for the benefit of all Namibians both present and future"* (ref No 7). One of the main manifestations of desertification (= loss of productivity) in Namibia is bush encroachment. The MILIEV programme, therefore, endeavours to support and complement these initiatives.

## 1.2 Main issues and problems to be addressed

Bush encroachment occurs where the vegetation consists of an upper story of trees and shrubs and a lower story of herbs and grasses. Bush encroachment is currently understood to be the process whereby the density of a few specific woody species (trees and shrubs) increases and dominates in an area to the disadvantage of other, potential grass species.

Bush encroachment is caused by inappropriate resource use. The dynamic equilibrium of savannas with its competitive interaction between grasses and bushes is disturbed. This balance between the two components is controlled by factors which affect the grass and bush differently; eg. climate, fire, man and migration of animals. With the introduction of commercial animal production important changes were introduced to the bush/grass balance. In particular factors that influenced the relative competitive abilities of the two components were altered eg.:

- fires were withdrawn;
- multi species animal groups were replaced with grazers only;
- mega-herbivores (elephant) no longer remove trees; and
- grass was consumed and bushes were left unaffected.

Innovative ways will have to be developed to design bush control programs that are ecologically sustainable, economically viable and socially acceptable. The major issues to be addressed for future activities include:

- The need to improve the collection and analysis of data on bush encroachment, in order to establish its true extent, causes, impact and viability of methods of rehabilitation. Methods should include the use of remote sensing techniques to establish the true extent of bush encroachment and its rate of change.
- The need to compare the available farm management data so that the best management systems can be identified and the rate of bush encroachment assessed.
- The principal economic impacts and user costs of lower productivity and profitability by bush encroachment will require monitoring.
- The growing significance of bush encroachment and the importance of improving the ecological and economic understanding of the causes and possible alternative solutions esp. improved methods of grazing management.
- The importance of attention to stocking rates which are variable according to agro-ecological conditions, and types of livestock, both domestic and wildlife. Very careful management is required in order to maintain environments, and farmers' need to balance availability of buffer grazing resources, and supplementary feeds, with the needs to destock and develop alternative income sources.
- The effect of price factors which depress returns and profitability and may lead to farmers overstocking in the absence of alternative incomes.
- Resettlement policy development that will take cognisance of the tenure status, cultural, environmental and social characteristics of settlers to ensure sustainable land use practices.
- The impact of policy factors such as drought subsidies which may lead to overstocking, and bring net economic losses through pasture degradation, although delivering short-term financial benefits to farmers.

The mechanical (incl. labour intensive) and chemical treatments for bush control are currently too expensive to warrant their wide scale use. The returns to bush clearance will not cover the costs of treatment over a period of ten years.

Charcoal production as a profitable method of removing bush is constrained by limiting local markets for the product. Foreign export markets may provide an attractive alternative and this opportunity will have to be further explored. Initiatives have been developed by CHAREX, a Namibian charcoal export company, whose expertise could be a point of departure in this respect.

Intensive grazing management displays some potential as a means of controlling bush encroachment and increasing incomes. However, there is a shortage of available data to prove conclusively that this potential warrants the extension of this technique. There is concern amongst the farming community that the impact the recently approved and currently implemented land reform programme will have is that some farmers may seek short term gains at the expense of the environment.

The Sustainable Animal Range Development Programme (SARDEP) of the Ministry of Agriculture, Water and Rural Development has already developed valuable initiatives for use under the MILIEV programme.

### 1.3 The MILIEV Programme

The MILIEV programme concerns the provision of grants for (partial) payment of environmental improvements and measures in developing countries. Activities eligible for MILIEV support should be aimed at regional and national environmental issues, and should have a catalysing and/or innovative character.

The following conditions have been formulated for projects to be financed by the MILIEV programme:

- the objective of the activity must be to improve the environment in the recipient country;
- the objective should be supportive to policy development;
- the activity should contribute to institutional strengthening;
- the activity should also result in the development of policy instruments and tools;
- the activity should include technology development;
- and finally, the activity should have a regional or national scope or impact at the national level.

Financing under the MILIEV programme will be in the form of grants, up to a maximum of 60% of total project costs, depending on the national and environmental impact of the project, its relevance for development and the lack of commercial financing opportunities. The balance should be financed by the recipient organization.

### 1.4 Priority Sectors and Areas

Following discussions conducted at:

- The Ministry of Environment and Tourism;
- The Ministry of Lands, Resettlement and Rehabilitation;
- The Ministry of Agriculture, Water and Rural Development
- The Ministry of Trade and Industry;
- The Ministry for Development Cooperation (DGIS) in The Hague, The Netherlands
- The DGIS office in Windhoek, Namibia

and considering:

- Government's policy of addressing gross imbalances of its disadvantaged landless population in the commercial farming areas in an orderly manner and environmentally sustainable way;
- the land pressures in the communal farming areas and the need to alleviate land pressures in ecologically fragile regions by making more land available for increased agricultural production in environmentally sustainable manner;
- the high rate of unemployment and consequently the drift to urban areas as time bomb slowly ticking away;



- the need to develop policy formulation and enforce legislation regarding land reform and the utilization of both commercial and communal land;
- the environmental problems inherited by Namibia at the time of Independence, one of the most critical being that of desertification;
- the focus of MILIEV on the national and regional character of environmental issues;
- DHV Consultants BV's experience and technical knowledge in the field of natural resources management, agro-ecological zoning, farmer extension services and livestock development, including socio-economic issues;

the following three key priority sectors and areas have been identified and are presented as three project components:

- Component 1:           **COMPREHENSIVE ASSESSMENT ON THE MODALITIES OF BUSH ENCROACHMENT IN NAMIBIA**
- Component 2:       **SUSTAINABLE AND LABOUR INTENSIVE BUSH CLEARING TO REHABILITATE BUSH ENCROACHED LAND**
- Component 3:       **RESETTLEMENT OF SMALL SCALE COMMERCIAL FARMERS ON REHABILITATED LAND**

The three above mentioned project components will form an integral part. The Land Use and Environmental Board (LUEB), a newly established Inter-Ministerial Board to integrate and coordinate Rural and Urban Planning in Namibia, will have to ensure the overall coordination of the Miliev programme with the already approved and implemented NAPCOD programme. Effectively the integration of activities of component 1 and 2 and the environmental monitoring of component 3 of the Miliev programme will be integrated by the Ministry of Environment and Tourism/Desert Research Foundation of Namibia (DRFN). The Ministry of Lands, Resettlement and Rehabilitation will coordinate the actual resettling of small scale commercial farmers in component 3.

## **1.5 Structure of this proposal**

In the following sections an overview of the Consultant's approach and methodology for each project component is presented. This includes an introduction, description of objectives, planned activities and outputs. Specific attention is paid to the implementation of the components. The links between the project components are described separately.

The methodology is based on:

- Consultant's observation of the present situation as laid down in various reports describing the problems and opportunities regarding bush encroachment in Namibia;
- Field visits made to the Tsumeb Bush Clearing Project, government purchased farms, Grootfontein Bush Utilization Company
- discussions held with staff in the area

A summarized overview of the project is given on the next pages.

COMPONENT 1	COMPONENT 2	COMPONENT 3
<p>COMPREHENSIVE ASSESSMENT ON THE MODALITIES OF BUSH ENCROACHMENT IN NAMIBIA</p>	<p>SUSTAINABLE AND LABOUR INTENSIVE BUSH CLEARING TO REHABILITATE BUSH ENCROACHED LAND</p>	<p>RESETTLEMENT OF SMALL SCALE COMMERCIAL FARMERS ON REHABILITATED LAND</p>
<p>OBJECTIVES</p>	<p>OBJECTIVES</p>	<p>OBJECTIVES</p>
<p>Comprehensive research to be carried out:</p> <ul style="list-style-type: none"> <li>- To obtain an understanding into the fundamental causes of bush encroachment (physical/ socio-economic)</li> <li>- To characterise the various types of bush encroachment and their spatial extent</li> <li>- To develop appropriate control measures and determine environmental impact, for the prevention of bush encroachment for different species</li> <li>- Formulate policy on control of bush encroachment (fire control)</li> </ul>	<ul style="list-style-type: none"> <li>- The rehabilitation of degraded land to restore it to its original potential</li> <li>- Employing labour intensive methods of bush clearing to create employment opportunities</li> <li>- Increase food production</li> <li>- Improve livestock carrying capacity</li> <li>- Utilization of wood products for both domestic and export markets</li> </ul>	<ul style="list-style-type: none"> <li>- Assist the Land Reform Program with the resettlement of farmers</li> <li>- Increase agricultural production</li> <li>- Alleviate land pressure and degradation in the communal areas</li> <li>- Design appropriate resettlement models for the pilot areas, including tenure and administration</li> <li>- Formulate policy on Resettlement</li> <li>- Alleviate land pressure and degradation in the communal areas</li> <li>- Assist with the land administration in the pilot areas</li> </ul>

ACTIVITIES	ACTIVITIES	ACTIVITIES
<ol style="list-style-type: none"> <li>1. Inventory survey of the extent, types and density of bush encroached land with Remote Sensing and GIS technology</li> <li>2. Strengthening of the Remote Sensing Unit</li> <li>3. Data collection of factors affecting bush encroachment</li> <li>4. Methodology development various clearing techniques and effects on environment</li> <li>5. Select pilot areas</li> <li>6. Market research into bush wood utilization in Namibia and abroad</li> <li>7. Monitoring and impact assessment</li> <li>8. Training</li> <li>9. Institutional strengthening</li> </ol>	<ol style="list-style-type: none"> <li>1. Design labour intensive clearing methods, that are environmentally sustainable, economically viable and socially acceptable</li> <li>2. Organisational set-up of labour force for land clearing/utilisation</li> <li>3. After care of rehabilitated land</li> <li>4. Product development</li> <li>5. Marketing arrangements for wood products</li> <li>6. Training</li> </ol>	<ol style="list-style-type: none"> <li>1. Develop farm plans for the resettlement programme</li> <li>2. Design selection criteria for farmers to be resettled</li> <li>3. Develop farm planning manuals</li> <li>4. Provide manuals for extension staff and farmers</li> <li>5. Develop extension packages</li> <li>6. Design rural financing/credit support scheme</li> <li>7. Organisational strengthening of the Lands and Resettlement Departments</li> <li>8. Data collection for policy development</li> <li>9. Develop a rural cadastre and survey methods</li> </ol>

<b>OUTPUTS</b>	<b>OUTPUTS</b>	<b>OUTPUTS</b>
<ul style="list-style-type: none"> <li>- Biodiversity inventory</li> <li>- Bush encroachment map produced</li> <li>- Guidelines for control measures established</li> <li>- Early Warning System on bush encroachment developed</li> <li>- Development of a natural resource management plan for rehabilitated areas</li> <li>- Agro-ecological zones map for the pilot areas on (semi-)detailed scale developed</li> <li>- Policy on bush control</li> <li>- Training in remote sensing and GIS management</li> </ul>	<ul style="list-style-type: none"> <li>- Employment generation of 2000 unemployed labourers</li> <li>- 20,000 ha land cleared for improved productivity (crops and livestock)</li> <li>- Increased carrying capacity for livestock</li> <li>- Increased food production</li> <li>- Wood products for local and export markets</li> </ul>	<ul style="list-style-type: none"> <li>- Suitable farming units and systems determined</li> <li>- Implementation of pilot resettlement schemes in various agro-ecological zones</li> <li>- Farmplans produced</li> <li>- appropriate resettlement models for the pilot areas developed</li> <li>- Rural cadastre and survey methods for pilot areas designed</li> <li>- Policy on land tenure incl. administration (Cadastre/Deeds)</li> </ul>
<b>TECHNICAL ASSISTANCE</b>	<b>TECHNICAL ASSISTANCE</b>	<b>TECHNICAL ASSISTANCE</b>
<ul style="list-style-type: none"> <li>+ 96 mm longterm international experts</li> <li>+ 21 mm shortterm international experts</li> <li>+ 36 mm longterm national experts</li> <li>+ 6 mm shortterm national experts</li> </ul>	<ul style="list-style-type: none"> <li>+ 24 mm longterm international experts</li> <li>+ 12 mm longterm national experts</li> <li>+ 6 mm shortterm national experts</li> </ul>	<ul style="list-style-type: none"> <li>+ 120 mm longterm international experts</li> <li>+ 6 mm shortterm international experts</li> <li>+ 24 mm longterm national experts</li> </ul>
<b>INDICATIVE BUDGET</b>	<b>INDICATIVE BUDGET</b>	<b>INDICATIVE BUDGET</b>
DFL	DFL	DFL
8,800,000	2,500,000	8,500,000

## 2 COMPREHENSIVE ASSESSMENT OF BUSH ENCROACHMENT MODALITIES

### 2.1 Introduction (ref. 4)

Bush encroachment is considered to have mainly been caused by inappropriate resource use and as such a man induced problem. It occurs most severely in 300-500 mm rainfall parts of the commercial farmlands. It is highest in the districts of Tsumeb and Grootfontein where it reaches up to 80-90% of the surface area. These two districts are the most productive cattle farming districts if the grazing is managed properly. In addition, they are also suited to dry land farming to a certain extent.

Research studies carried out so far have determined possible biomass yield from dense bush in the districts of Otjiwarongo, Okahandja and Omaruru. Biomass ranges from 6 ton/ha in Omaruru to 24 ton/ha in the Otjiwarongo district according to rainfall pattern. This may be even higher for the Tsumeb and Grootfontein areas.

The processes that cause bush encroachment are considered complex, interlinked and as yet not clearly understood. If the underlying causes of bush encroachment were better understood it would enable combatting and controlling bush encroachment as well as determining measures to prevent its occurrence. This component now seeks to determine factors that have led to unwanted bush development by proposing a comprehensive research program.

### 2.2 Objectives

The main objective is to determine the fundamental and underlying causes and precise effects of bush encroachment so as to provide comprehensive reliable data to enable the combat and control of unwanted invading bush species. Research into the modalities of bush encroachment will be carried out. Development of sustainability indicators for resource managers will be established

### 2.3 Activities

*1) Research programmes will be designed that will address the following issues:*

- determine fundamental causes and conditions for unwanted species to invade certain areas
- the effect of cattle and game animals on bush encroachment
- the effect of veldfires or their absence on invading bush
- influence of commercial/communal farming activities
- factors and conditions ideal for bush encroachment
- the extent and composition of unwanted invading species
- measures for control that are environmentally sustainable
- identify the applicability of available appropriate technology in the utilisation process;
- monitoring of rehabilitated areas over time
- determine improved carrying capacity of rehabilitated areas

- appropriate bush clearing methodology
- design and establish an appropriate veld aftercare program including the appropriate use of veldfires;
- identify possible product ranges together with viability studies relating to such products;
- determine the marketability of these products through marketing research;
- investigate the economic harvesting, processing, industrial application of bush biomass to cover the cost of the reclamation of grazing. The possible recovery of the cost of veld aftercare is also to be included
- participate in the establishment of an economically viable wood industry for Namibia.
- chemical control versus mechanical and other bush control and impact on the socio-physical environment
- social-economic factors such as land tenure policies, promoting bush encroachment

The first phase will consist of stock taking of existing information, gap analysis and need assessment for detailed research investigations that will be carried out. This will lead to the design of research programs to study the fundamental issues leading to bush encroachment, their prevention and control.

The second phase will consist of selection of representative pilot areas depicting as many different environments as practicable to carry-out research for a full understanding of the bush encroachment problem.

#### *ii) Country wide survey of the extent and types of bush encroached land*

In phase 1 all data on vegetation surveys will be collected. Remote sensing techniques will be employed to determine sample areas for detailed surveys and ground truthing. The extent of bush encroached land both in commercial and communal areas will be assessed and evaluated. Types, density and distribution of unwanted species will be determined and related to management and environmental history of the area. All data collected will be stored and processed in a geographical information system (GIS).

During phase 2 an inventory survey will be carried out and maps produced to determine the extent of bush encroached land. Various stages of bush encroachment may thus be distinguished and the effect it has on present land use.

#### *iii) Strengthening of the Remote Sensing Unit in support of the survey.*

The existing National Remote Sensing Centre in the Ministry will be further strengthened by the provision of both technical staff and equipment in support of activities under 2. This will also include training of staff at all levels as described under activity 5. The various sector data bases may have to be made compatible and standardised as to allow for exchange of data.

#### *iv) Training and Awareness Creation*

This activity is closely linked to all above activities. Apart from on-the-job training (fieldwork, workshops, seminars), selected staff members will attend short and long courses mainly in the field of GIS, Remote Sensing and data base development.

For policy decision makers and other affected groups awareness seminars will be organised.

## 2.4 Outputs

The project will produce the following outputs:

- Inventory maps showing the extent and severity of bush encroached areas
- a Manual/Guidelines for the rehabilitation of bush encroached land
- An Early Warning System for bush encroachment as prevention measure developed
- A Resource Management Plan for rehabilitated land developed
- Policies on bush control, land tenure, resettlement developed
- Staff in Remote Sensing and GIS management trained

## 2.5 Implementation

The project will be implemented in three phases as follows:

Phase 1: Desk study phase and Status Quo report: 6 months

Phase 2: Pilot Phase: 2 years

Phase 3: Implementation Phase: 4 years from year 2.

The overall supervision of activities will be done by the Land Use and Environmental Board (LUEB). LUEB is a newly established statutory structure which will coordinate and integrate rural and urban planning and development activities. The Ministry of Environment and Tourism will be the main implementor of the Miliev Programme. Through LUEB close cooperation will be ensured with the Ministry of Lands, Resettlement and Rehabilitation (components 1,2 and 3), the Ministry of Agriculture, Water and Rural Development (component 3) and the Ministry of Labour (component 2). It will be fully integrated with and complementary to the Namibia Programme of Combatting Desertification (NAPCOD).

The Ministry of Environment and Tourism will provide the project co-manager on a full time basis also other counterparts will be seconded for specific tasks, who will work with the project and who will receive on site training and training abroad.

The Ministries of Lands, Resettlement and Rehabilitation and Agriculture, Water and Rural Development will also second counterpart staff for activities related to their fields of expertise and responsibilities.

The proposed technical assistance will consist of 3 longterm international experts totalling 96 manmonths e.g. Coordinator (24mm), a Remote Sensing and GIS specialist (36mm) and a surveyor/rural cadaster specialist (36mm), assisted by 21 manmonths of various short term international experts input (including project direction, coordination and backstopping support from headoffice).

Furthermore, a total of 36 manmonths of national experts is provided for. It is foreseen that one national expert in the field of range ecology will be assigned on a longterm basis to the project (36 manmonths), while 6 manmonths of national expertise will be provided in the form of short term experts in various disciplines.

## 2.6 Links with other project components

This component is setting the framework conditions for the implementation of component 2 "Sustainable and Labour Intensive Rehabilitation of Bush Encroached Land" and "the Resettlement of small scale commercial farmers" under component No 3.



### 3 SUSTAINABLE AND LABOUR INTENSIVE BUSH CLEARING TO REHABILITATE BUSH ENCROACHED LAND

#### 3.1 Introduction

High unemployment and overpopulation in the rural areas, combined with a shortage of farm land has created a drift of many young people to the urban areas in search of employment. This urban drift has created severe problems in urban areas with increasing crime. A heavy strain on infrastructure is increasingly experienced for provision of services such as water supply, sanitation, housing, schools and clinics.

Labour intensive bush clearing should assist in the arrest of this urban drift by creating employment in the rural areas and making land available for the settlement of the landless.

#### 3.2 Objectives

Major objective is to rehabilitate large areas of degraded and bush encroached land by employing labour intensive methods of bush clearing. It should serve as employment generating activity for the landless and unemployed ( e.g ex PLAN Combatants/ Development Brigades) thereby making valuable land available for increased agricultural production. It will increase carrying capacity of the land and should alleviate overpopulation and overgrazing in other communal areas susceptible to environmental degradation.

Marketing of wood products, that will become available in the process, will provide added value as income generating activity.

#### 3.3 Activities

##### *i) Organization of labour for bush clearing activities*

The efficient organisation of the labour force involved in bush clearing is essential for the success of the program. The composition of the plant communities is heterogeneous. This may affect the handling of bush and have an impact on the selection and organisation of bush clearing activities by labourers. On-the-job training of bush clearing, control and supervision will have to be organised. Motivation of harvesters, which can be low because of the degree of difficulty of harvesting with pangas and axes in the hot and unpleasant circumstances, will have to be anticipated and dealt with. Optimum numbers of labour gangs and rate of bush clearing will be determined to organise the workload accordingly.

##### *ii) Wood product development on or around farms*

Harvested products will need to be processed on farm. The following products can be utilized from unwanted bush: Sawn wood, pulp for paper and panel board production, veneer, matches, chipboard, charcoal, woodgas, woodfibre, poles, organic fertilizer, animal feed, wood/cement bricks and panels.

However, the production of charcoal is considered the most viable proposition for the time being. Appropriate kilns for charcoal production will be developed. Briquettes may have to be produced from charcoal dust. Product packaging will be developed.

### *iii) Marketing*

The relatively low value of the wood from densified bush will require that processing plants will have localised carefully in relation to the areas harvested and the available markets. Local and overseas markets will be organised as well as the timely availability of products organised.

## **3.4 Outputs**

This component will produce the following outputs:

- Rehabilitation of the various pilot areas as measure of control and design for the implementation process
- Employment of 2000 unemployed labourers in the rural areas
- Rehabilitation of 20 000 ha of land each year suitable for increased agricultural production
- Income from marketed products and foreign exchange from exported products (charcoal).

## **3.5 Implementation**

The project will be implemented in two phases as follows:

- Phase 1: Pilot Phase for 1 year 6 months after start of component 1.
- Phase 2: Implementation Phase: 4 years from year 2.

This project component will be implemented jointly by the Ministries of Labour and Environment, possibly together with the Regional Councils. LUEB will ensure the overall coordination. Depending on the implementation Council staff may be assigned as counterpart staff and be supervised by staff from the two Ministries.

The proposed technical assistance will consist of 2 longterm international experts totalling 24 mm e.g. a Project Coordinator (12 mm) and an Organizational Specialist (12mm). A Labour organisational expert (12mm) and a wood products marketing organiser(6 mm) will be provided as national experts.

## **3.6 Links with other project components**

This component is the implementation component of the findings under component 1 and "prepares the ground" for implementation of the resettlement activity for small scale commercial farmers under component No 3.

## 4 RESETTLEMENT OF SMALL SCALE COMMERCIAL FARMERS ON REHABILITATED LAND

### 4.1 Introduction

At Independence Namibia inherited structured inequality which manifested themselves in severely skewed land and income distribution. Unequal access to productive land and water is one of the central features of Namibia's legacy. In a context where both resources are absolutely scarce, private ownership of some 45% of the total land area and 74% of the potential arable land by some 4045 commercial farmers is a major factor in determining inequality of incomes and wealth. The dispossession of the indigenous population by successive colonial governments remains a matter of considerable political sensitivity.

The Ministry of Lands, Resettlement and Rehabilitation was created in September 1990 with the view to improve the standards of living of the landless and the poor to attain a certain stage of social and economic development where they can live on their own. This means the purchase and allocation of land where they can start a living by providing the settlers with the necessary means and tools to start such a living and cover their basic needs. These will include the provision of extension services, credit facilities for boreholes and land fencing materials, rural financing etc.

A number of issues will need to be addressed:

- Characterisation and number of small scale commercial farmers and the number of farmers in need of access to land
- Type of land needed (arable or pastoral) and supporting inputs will be required (extension, training, market, water etc)
- Optimal size of land needed in different ecological zones to support an average household at sustainable levels
- The extent of under-utilized land or vacant land and the way this should be defined
- Mechanisms available to encourage people to sell under-utilized land and the type of resources that will be utilized for compensation
- Legal implications of land reform programs

### 4.2 Objectives

The main objective is to assist the Land Reform Program with the resettling of small scale commercial farmers on rehabilitated and reclaimed bush encroached commercial farmland thereby alleviating poverty and pressures on over-utilised land mainly in the communal areas. These resettled farmers will now relieve the heavy pressures exerted upon environmentally fragile communal land where dense population concentrations cause already overgrazing and erosion problems. Under this component farmers, that operate "commercially" in the communal areas with a rather large number of livestock are afforded the opportunity to utilize commercial farmland normally not available to them.

Farmers already settled in resettlement schemes will be assisted with developing skills and improving farming practices in their respective areas, including grazing management.

In addition new farmers will also be selected for settlement under this program. This will involve farmers who are already operating in a commercial way in the communal farming areas, thereby alleviating land pressures in fragile communal areas.

The project will assist with the design of Farming Models for small scale commercial farmers for each of the different agro-ecological zones in an effort to achieve self-sufficiency in food and sustained agricultural production.

### 4.3 Activities

#### *i) Land Use and Settlement Plans Development*

Land purchased under the resettlement program that will have their agricultural production capacity restored under the bush clearing component will be available for increased livestock and crop production where appropriate.

Land Use plans will be developed based on the capability of the soils and the agro-ecological zone in which the farms are located.

Dryland farming systems, where appropriate, will be promoted incorporating improved water conservation techniques, primarily to ensure food self sufficiency. This will include the development of sustainable rotations which enable the community to protect their environment while gaining greater benefit on a sustainable basis.

Livestock management systems will be developed that are accepted by the farmers and which are sustainable in terms of grazing quality. Livestock development will include the design and construction of stock water dams, dip tanks, fencing and paddocking.

Optimal farm sizes will be determined to include crop models, range management practices, carrying capacities for livestock, marketing and credit etc.

Environmentally sustainable land use plans for rehabilitated land will be designed for implementation under the Land reform and Resettlement Program of the Government. This activity may also assist with assessing the degree of bush encroachment on commercial farms that have been earmarked for purchase by Government for the resettlement program.

This component will be complementary to existing SARDEP and NAPCOD programmes and coordinated by LUEB.

#### *ii) Training of small scale commercial farmers and extension staff*

Building-up of skills of farmers will entail training of extension staff and farmers by organizing both on-the-job training and in-service training programs. Gender issues will be addressed and the role women can play in the farming system with particular reference to the (in)ability to procure rural financing and land tenure aspects to obtain land for women.

Extension services of the department of resettlement will be strengthened both organizationally and technically. At Govt. HQ the Department of Resettlement will be strengthened to better equip the department with the implementation of an environmentally sound resettlement program.

A strong identification with the development effort will be fostered through an intensive training element. Training will be directed to farmers and extension workers. Farmers training will be both general at acquiring basic knowledge in dry land farming techniques and livestock management. Special attention will be paid to the training of extension staff, as the skills and motivation of extension officers will determine to a large degree the success of the scheme.

### *iii) Formulation of policies on land reform and land tenure and resettlement*

Land policy issues will be addressed with land tenure and ownership important aspects for the successful implementation of this program.

The necessary policy instruments for the implementation of this program such as legislation on bush fires and its control, considered one of the factors contributing to bush encroachment, will be reviewed in support. Proposals will be made for legislation and enforcement.

Policy formulation will also detail livestock numbers in the communal areas, fencing and grazing management towards grassfires in support. These issues will be assessed in as far as these impact on the operations of small scale commercial farmer settlements.

### *iv) Environmental Impact Assessment*

All activities undertaken will be scrutinised as to the impact these may have on the environment and modalities will be designed to offset their possible negative impact.

This activity also aims at safe guarding the fragile environment against degradation and ultimate destruction. Therefore, sound land use plans based on varied and sustainable exploitation of the area's resources within the limits imposed by the ecological constraints that prevail in the region followed by strict implementation will be required.

## **4.4 Outputs**

Under this project component the following outputs are foreseen:

- Land use plans and farm plans for the settling of farmers on 10 farms with the provision of adequate living in an environmentally sustainable manner. The number of farmers to be resettled will have to be determined by the size of the appropriate farming units.
- Guidelines and manual for settlement planning and settlement schemes.
- Policy on resettlement with respect to land tenure, grazing, rural credit and financing.
- Trained settlement extension officers
- Trained farmers in the settlements

## 4.5 Implementation

The project will be implemented in three phases as follows:

Phase 1: Deskstudy and Status Quo report for 6 months

Phase 2: Pilot Phase for 1 year after 6 months

Phase 3: Implementation Phase: 4 years from year 2.

This component will be implemented by the Ministry of Lands, Resettlement and Rehabilitation under the guidance of LUEB ensuring coordination with NAPCOD activities under the Ministry of Environment and Tourism. The Ministry of Lands, Resettlement and Rehabilitation will provide three counterparts to the Settlement Advisors. The counterparts will work in the project and will receive on site and abroad training.

The provision of technical assistance to develop a strengthened resettlement capability at the Ministry and in the Regions is strategically important for the implementation of this programme. A comprehensive technical support programme for a period of five years is, in view of the necessity of an integrated approach to the settlement and environmental issues considered to be most effective.

The technical assistance will consist of 6 longterm international experts (120 manmonths) assisted by 6 mm of shortterm internationalist specialists (including project direction and support from head office).

Furthermore, a total of 24 mm of national experts is provided. It is foreseen that three national experts as Settlement Advisors will be assigned on a longterm basis to the project (72 mm), while 24 mm of national expertise will be provided in the form of shortterm experts in various disciplines.

## 5 REFERENCES

1. Office of the Prime Minister, 1992. Report of the Technical Committee on Commercial Farmland.
2. Brown (ed) 1992, Ministry of Wildlife, Conservation and Tourism. The Green Plan
3. Ministry of Trade and Industry, 1992. Proposed Charcoal Manufacturing Plant Conceptual Feasibility Study by McClintock & Skinner Incorporated, Randburg, RSA
4. Ministry of Trade and Industry, 1993. Report on the Economic Utilization of Densifying Bush Species in Namibia
5. National Farmers Union et al. 1993. Bush encroachment and control perspective. Proceedings of Workshop held at Rietfontein, 21-22 April 1993
6. A Preliminary Assessment of the Economic Impact of Desertification, 1994. ed. Caroline Ashley. DEA, Ministry of Environment and Tourism
7. Proceedings of Namibia's National Workshop to Combat Desertification, July 1994 ed. S. Wolters. Executed by The Desert Ecological Research Unit of Namibia funded by GTZ.
8. Bush Encroachment in the Context of Desertification; the Namibian Position, July 1994 Jack Ratjindua Kambatuku, DERU

Appendix 1: Letter of Consent from the Director of Environmental Affairs in the Ministry of Environment and Tourism



REPUBLIC OF NAMIBIA

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MINISTRY OF ENVIRONMENT AND TOURISM *File B / pm*

DIRECTORATE OF ENVIRONMENTAL AFFAIRS  
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Windhoek, Namibia

Our Ref : N 24/5/1/5/1  
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3rd January, 1996

DHV Consultants BV  
P O Box 1399  
3800 BJ  
Amersfoort  
Netherlands

Attention: Pieter Minderhoud  
Director: Agriculture and Regional Development

Dear Sir,

**PROJECT PROPOSAL: REHABILITATION OF BUSH ENCROACHED FARMLAND**

Namibia is the driest country in Africa south of the Sahara. Our arid environment is unpredictable and fragile, and environmental damage usually takes a long time to recover.

Most of our environmental degradation relates to the land and living natural resources, and results in various manifestations of "desertification". We define desertification as "processes leading to a loss of productivity in our arid, semi-arid and dry subhumid lands", a definition in line with that used by the United Nations Convention on Desertification and one which includes the entire land surface of Namibia.

Bush encroachment is one of the most widespread and costly manifestations of desertification in Namibia. It is estimated to affect over 15 million hectares of semi-arid (300-500 mm) rangeland. A recent economics study has shown that bush encroachment costs Namibia about N\$ 100 million in lost production per year.

In 1992 Namibia started a process leading to the development of a national programme to combat desertification (NAPCOD). As part of a multi-disciplinary approach to a long-term and complex problem, we established an intersectoral Steering Committee, developed a set of eight broad objectives and created a conducive forum and mechanism for collaborative research and project implementation. We are currently implementing phase II of the programme, which has generated considerable national momentum and support.

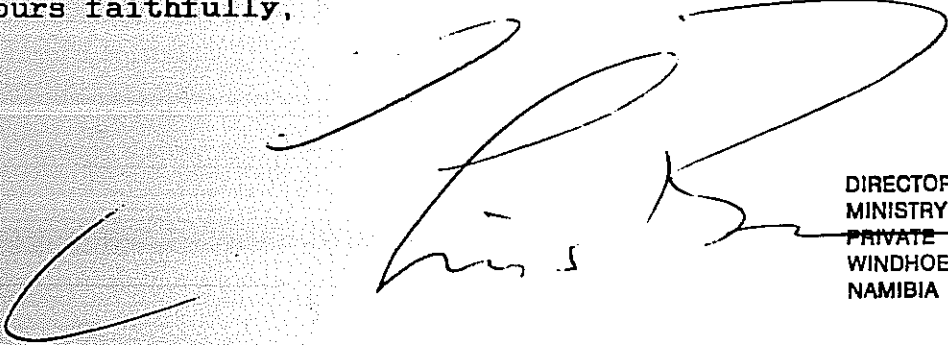


The project "Rehabilitation of bush encroached farmland" is an ideal candidate for inclusion within the overall goal and objectives of the NAPCOD programme. For this reason, the draft project document has my full support and backing.

There are a number of important components contained within the project proposal that make it particularly valuable. First, the proposal calls for a strong research and monitoring component, to evaluate and document work done to date, areas, impacts and causes of encroachment, and methods of clearing. Second, the proposal emphasises the need to identify future management practices that prevent bush encroachment and, third, to monitor the impacts of future land-use on cleared land to test and fine-tune land management practices and to feed information into training programmes, policy and, if necessary, legislation.

This is a challenging programme that will require considerable coordination with different government departments, regional and traditional authorities, the University of Namibia and non-governmental organisations. NAPCOD is ideally placed to facilitate this co-ordination. At the same time, this project will contribute significantly to our overall national objectives of sustainable development and wise environmental management.

Yours faithfully,



DIRECTORATE OF ENVIRONMENTAL AFFAIRS  
MINISTRY OF ENVIRONMENT AND TOURISM  
PRIVATE BAG 19308  
WINDHOEK  
NAMIBIA

Dr C J Brown  
Head: Environmental Affairs

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Client	: MILIEV Facility
Project	: Rehabilitation of Bush Encroached Farmland
File	: K4084.00.001
Length of report	: 23 pages
Author	: PC
Contributions	: NBE
Project leader	: PM
Project manager	: PM
Date	: 8 January 1996
Approved	:

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