



View of bush controlled rangeland in Namibia, Otjozondjupa Region (photo credit: P. Laubscher, Otjiwa Lodge)

## Bush Control and Biomass Utilisation (Namibia)

### Bush Control and Biomass Utilisation

#### DESCRIPTION

Public and private stakeholders in Namibia are cooperating in the national Bush Control and Biomass Utilisation programme. There are three components: (1) Creation of an enabling framework, (2) Advisory Services and (3) Value Chain Development.

Namibia is affected by bush encroachment on a massive scale: it affects some 45 million hectares in 9 of the 14 regions. Bush encroachment has lowered the carrying capacity of rangeland by up to two thirds. It further severely reduces biodiversity and limits the recharge of groundwater.

Various factors contribute to the acceleration of bush encroachment. A primary cause is overgrazing: the grass layer loses its competitive advantage and greater infiltration of water and nutrients into the sub-soil results, benefiting bush and tree species. Other factors are the reduction in the frequency of wildfires, and the exclusion of wildlife browsers through fencing for livestock.

The “state-and-transition model” describes how savannah ecosystems are event-driven, where rainfall variation impacts on vegetation growth and its composition. Woody plants establish themselves after dry periods followed by a few wet years, and then maintain themselves by utilizing most of the water. But a savannah can be changed back to its grass-dominated state by management or favorable environmental conditions.

Bush encroachment is accompanied by the loss of perennial grasses, which are replaced by annuals of inferior quality and productivity – thus livestock production becomes precarious and less sustainable.

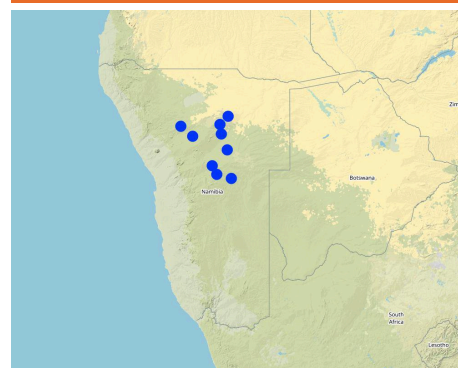
Despite its negative impacts, the encroaching bush has developed into a huge surplus biomass resource, estimated at about 200 to 300 million tonnes. Measures used to combat bush encroachment create positive opportunities for the Namibian economy, such as the use of the resource for power generation and value chain development in other sectors. Bush harvesting therefore offers the potential to increase economic growth, employment and energy security, while benefiting agriculture and food production.

In line with national development plans, which promote domestic value addition for local resources, the approach strengthens the restoration of productive rangeland. It triggers and drives large-scale bush thinning activities.

The programme will foster institutional development in the biomass sector and provide support to improve the legal and regulatory framework for the upscaling of bush control. It has three components:

- (1) Creation of an enabling framework: harmonization of sector policies and improvement of relevant regulations; strengthening of institutional capacities.
- (2) Advisory Services: strengthening of existing farmer outreach services and knowledge dissemination to farmers, businesses and public sector decision makers.
- (3) Value Chain Development: identification and piloting of relevant value chains for encroacher bush as a trigger for bush control.

#### LOCATION



**Location:** Pointers indicate hotspots (e.g. urban centres) around which activities are concentrated. It is not possible to depict each site where bush control is implemented due to the high number of individual activities and because no GIS based mapping has been conducted., Bush control is applied across Namibia on many privately owned farms. Activities are most concentrated in the regions of Khomas, Omaheke, Otjozondjupa and Oshikoto., Namibia

#### Geo-reference of selected sites

- 17.60832, -19.94841
- 18.00383, -19.5762
- 15.71867, -20.03101
- 16.28996, -20.48451
- 17.95989, -21.10075
- 17.65776, -20.37126
- 18.14116, -22.3865
- 17.21831, -21.81648
- 17.44902, -22.20353

**Initiation date:** 2014

**Year of termination:** 2021



It is implemented through a collaboration of public and private stakeholders. Coordination is ensured through a cross-sector steering committee, which includes the Ministries of National Planning (chair), Agriculture, Environment, Energy, and Industrialisation.

Key outputs of the programme include:

Enabling Environment:

- Strategic Environmental Assessment (SEA)
- Introduction of Harvesting Authorisations Guidelines
- Development of dedicated financial products (loan subsidy schemes).

Institutions:

- Introduction of the De-bushing Advisory Service (DAS)
- Introduction of the Namibia Biomass Industry Group (N-BiG)
- Re-organisation of the Namibia Charcoal Association (NCA).

Knowledge:

- Compilation of baseline data on bush encroachment and bush control
- Technical know-how on value chain technologies and concepts
- Compilation of relevant regulations and environmental principles.

Value Chain Development:

- Piloting of various value chains, including modernized charcoal production, bush based animal feed and household cooking fuel.

#### Type of Approach

- traditional/ indigenous
- recent local initiative/ innovative
- project/ programme based



Charcoal production technology (GIZ Support to De-bushing Project)



Namibian Minister of Agriculture, Hon. Mutorwa at the National Conference on Bush Encroachment. (GIZ Support to De-bushing Project)

## APPROACH AIMS AND ENABLING ENVIRONMENT

### Main aims / objectives of the approach

Develop, test and upscale the implementation of bush control technologies in Namibia.

### Conditions enabling the implementation of the Technology/ ies applied under the Approach

- **Social/ cultural/ religious norms and values:** Awareness of the need to implement bush control across all stakeholder groups.
- **Legal framework (land tenure, land and water use rights):** Clear land tenure in commercial areas and suitable concepts in communal areas (e.g. conservancies and community forests).
- **Land governance (decision-making, implementation and enforcement):** Clear governance and management in commercial areas.
- **Markets (to purchase inputs, sell products) and prices:** High national and international demand for woody products.

### Conditions hindering the implementation of the Technology/ ies applied under the Approach

- **Social/ cultural/ religious norms and values:** Low level of cooperation and information exchange.
- **Availability/ access to financial resources and services:** Limited variety of dedicated/customized financial products available; cost of finance high.
- **Institutional setting:** Low level of cross-sector coordination and limited funding sources for sector representative bodies (e.g. associations).
- **Collaboration/ coordination of actors:** Low level of interaction and knowledge sharing.
- **Policies:** Low level of policy harmonization across sectors; need to resolve conflicting mandates of relevant authorities (e.g. industrialization vs. resource protection).
- **Land governance (decision-making, implementation and enforcement):** Unclear decision-making processes for income generating projects in communal areas.
- **Knowledge about SLM, access to technical support:** Low level of bush control know how among land owners.
- **Workload, availability of manpower:** Low level of skills among workers.

## PARTICIPATION AND ROLES OF STAKEHOLDERS INVOLVED

### Stakeholders involved in the Approach and their roles

What stakeholders / implementing bodies were involved in the Approach?	Specify stakeholders	Describe roles of stakeholders
local land users/ local communities	Commercial farmers, communal farmers, conservancies	Implementation of bush control and/or availing land for bush control and biomass utilisation activities
community-based organizations	conservancies, community forests	Implementation of bush control and/or availing land for bush control and biomass utilisation activities
SLM specialists/ agricultural advisers	Farmer outreach services and independent experts	Dissemination of information and skills development
researchers	Namibia University of Science (NUST), University of Namibia (UNAM)	Complementary research projects
private sector	Namibia Biomass Industry Group (N-BiG), Namibia Charcoal Association (NCA)	Representation of corporates involved in bush harvesting and biomass value addition.
national government (planners, decision-makers)	National Planning Commission (NPC) Ministry of Agriculture, Water and Forestry (MAWF) Ministry of Environment and Tourism (MET) Ministry of Mines and Energy (MME) Ministry of Industrialisation and SME Development (MITSMED)	Policy and strategy development; sector steering; law enforcement, monitoring and evaluation.
international organization	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), KfW, EIB, UNDP	Implementation of bilateral cooperation projects

## Involvement of local land users/ local communities in the different phases of the Approach

	none	passive	external support	interactive	self-mobilization
initiation/ motivation					✓
planning				✓	
implementation				✓	
monitoring/ evaluation	✓				

High awareness and mobilisation within the farming community.  
Good participation in public workshops and conferences.  
Implementation of bush control by individual farmers.  
Very limited monitoring and evaluation through individual land owners.

## Flow chart

Legal and regulatory framework for large scale bush control: the flow chart explains the three levels of categories for the Environmental Clearance process. The categories are as follows:

- Small bush harvesting operations covering less than 150 ha: no environmental clearance required
- Medium bush harvesting operations covering between 150 and 5 000 ha: environmental clearance based on a generic Environmental Management Plan (EMP) is needed
- Large bush harvesting operations of more than 5 000 ha, Environmental Clearance based on Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP)

Abbreviations:

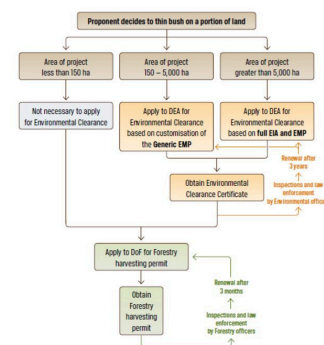
DEA - Directorate of Environmental Affairs, Ministry of Environment and Tourism

DoF - Directorate of Forestry, Ministry of Agriculture, Water and Forestry

EIA - Environmental Impact Assessment

EMP - Environmental Management Plan

ha - hectares



FORESTRY AND ENVIRONMENTAL AUTHORIZATION PROCESSES FOR BUSH HARVESTING PROJECTS

Author: GIZ Support to De-bushing Project (2016)

## Decision-making on the selection of SLM Technology

Decisions were taken by

- land users alone (self-initiative)
- mainly land users, supported by SLM specialists
- all relevant actors, as part of a participatory approach
- mainly SLM specialists, following consultation with land users
- SLM specialists alone
- politicians/ leaders

Decisions were made based on

- evaluation of well-documented SLM knowledge (evidence-based decision-making)
- research findings
- personal experience and opinions (undocumented)

## TECHNICAL SUPPORT, CAPACITY BUILDING, AND KNOWLEDGE MANAGEMENT

The following activities or services have been part of the approach

- Capacity building/ training
- Advisory service
- Institution strengthening (organizational development)
- Monitoring and evaluation
- Research

## Capacity building/ training

### Training was provided to the following stakeholders

- ☐ land users
- ☒ field staff/ advisers

### Form of training

- ☒ on-the-job
- ☐ farmer-to-farmer
- ☒ demonstration areas
- ☒ public meetings
- ☐ courses

### Subjects covered

- Environmental and forestry policy and policy implementation (training for government officials from regional offices)
- Implementation of bush control and biomass processing (training for farmers and SMEs)

## Advisory service

### Advisory service was provided

- ☐ on land users' fields
- ☒ at permanent centres

Advisory services through the De-bushing Advisory Service (DAS, [www.dasnamibia.org](http://www.dasnamibia.org))

## Institution strengthening

### Institutions have been strengthened / established

- ☐ no
- ☐ yes, a little
- ☐ yes, moderately
- ☒ yes, greatly

### at the following level

- ☐ local
- ☐ regional
- ☒ national

### Describe institution, roles and responsibilities, members, etc.

#### Launch of

- De-bushing Advisory Service (DAS)
- Namibia Biomass Industry Group (N-BiG)

#### Re-organisation of

- Namibia Charcoal Association (NCA)

### Type of support

- ☒ financial
- ☒ capacity building/ training
- ☒ equipment
- ☒ Institutional Development

### Further details

Three sector institutions have been supported in order to achieve increased coordination of efforts. The Namibia Biomass Industry Group (N-BiG) is a non-profit association, representing the interest of bush harvesting and processing companies. The De-bushing Advisory Service (DAS) is a national platform for the dissemination of knowledge on the topics of bush encroachment, bush control and biomass utilisation.

The Namibia Charcoal Association (NCA) represents the already well established charcoal production sector. Through a re-organisation process, the association has been strengthened and turned into a fully functioning sector representation.

The three organisations are planned to consolidate their efforts in the near future in order to achieve a better alignment of their mandates and synergies of activities.

## Monitoring and evaluation

National Bush Information System - Scope of bush encroachment - Scope of bush control activities - Success rate of bush control methodologies, incl. secondary impacts (employment)

## Research

Research treated the following topics

- ☐ sociology
- ☒ economics / marketing
- ☒ ecology
- ☒ technology

Collaboration with scientific institutions and networks on:

- Identification and development of suitable technology
- Correlation with ecosystem services, e.g. groundwater recharge and biodiversity
- Identification of market for bush based products.

## FINANCING AND EXTERNAL MATERIAL SUPPORT

### Annual budget in USD for the SLM component

- ☐ < 2,000
  - ☐ 2,000-10,000
  - ☐ 10,000-100,000
  - ☐ 100,000-1,000,000
  - ☒ > 1,000,000
- Precise annual budget: n.a.

Pooling of resources between national government, international donors and private sector.

### The following services or incentives have been provided to land users

- ☐ Financial/ material support provided to land users
- ☐ Subsidies for specific inputs
- ☒ Credit
- ☒ Other incentives or instruments

## Credit

Conditions: Commercial loans with grace period of up to 3 years and interest rate of 7-8%.

Credit providers: Commercial banks: First National Bank (FNB), Agribank Development Bank of Namibia (DBN) Environmental Investment Fund (EIF).

Credit receivers: - Individual households/farmers - Service providers/business

## Other incentives or instruments

Development of authorisations guidelines and review of regulations with regard to Environmental Management Plans (EMPs) and Environmental Impact Assessments (EIAs).



## IMPACT ANALYSIS AND CONCLUDING STATEMENTS

### Impacts of the Approach

	No	Yes, little	Yes, moderately	Yes, greatly
Did the Approach empower local land users, improve stakeholder participation? Increased dissemination of information and exchange between land users on experiences with technologies; stakeholder representation through associations and participation in high level national conferences.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Did the Approach enable evidence-based decision-making? Various publications to capture best practices in bush control and biomass utilisation, including farmers manuals.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Did the Approach help land users to implement and maintain SLM Technologies? Development of various guidelines	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Did the Approach improve coordination and cost-effective implementation of SLM? Improvement of cross-sector collaboration through steering committee.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Did the Approach mobilize/ improve access to financial resources for SLM implementation? Involvement of financial institutions with the aim to develop customised financial products.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did the Approach improve knowledge and capacities of land users to implement SLM? Various publications to capture best practices in bush control and biomass utilisation, including farmers manuals.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Did the Approach improve knowledge and capacities of other stakeholders? Increase awareness of the opportunity of the biomass resource among public sector stakeholders as well as within the business community.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Did the Approach build/ strengthen institutions, collaboration between stakeholders? Through introduction of steering committee, working groups as well as through the strengthening of sector representative bodies/associations.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Did the Approach empower socially and economically disadvantaged groups? Employment creation in bush control and biomass utilisation, e.g. in charcoal production.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Did the Approach improve gender equality and empower women and girls? Promotion of dedicated employment opportunities for women, e.g. in charcoal packaging.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Did the Approach lead to improved access to water and sanitation? Improved groundwater recharge in bush controlled areas. Research is ongoing and first results indicate a significantly improved infiltration of rainwater into the groundwater. The reduced number of bushes leads to reduced evapotranspiration.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did the Approach lead to more sustainable use/ sources of energy? First biomass energy projects launched (industrial heating) and in preparation (national grid electricity production).	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Did the Approach lead to employment, income opportunities? Employment in bush harvesting and processing, especially in charcoal production.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

#### Main motivation of land users to implement SLM

- ☒ increased production
- ☐ increased profit(ability), improved cost-benefit-ratio
- ☒ reduced land degradation
- ☐ reduced risk of disasters
- ☐ reduced workload
- ☐ payments/ subsidies
- ☐ rules and regulations (fines)/ enforcement
- ☐ prestige, social pressure/ social cohesion
- ☐ affiliation to movement/ project/ group/ networks
- ☐ environmental consciousness
- ☐ customs and beliefs, morals
- ☐ enhanced SLM knowledge and skills
- ☐ aesthetic improvement
- ☐ conflict mitigation

#### Sustainability of Approach activities

Can the land users sustain what has been implemented through the Approach (without external support)?

- ☐ no
- ☒ yes
- ☐ uncertain

Land users have the capacity to implement bush control, either with own means (mainly manual and semi-mechanised bush harvesting) or through the involvement of service providers (mainly fully mechanised bush harvesting for the supply of large-scale off-takers).

## CONCLUSIONS AND LESSONS LEARNT

#### Strengths: land user's view

- Financial viability of bush control through the introduction of value chains (as compared to mere removal of the biomass).
- Improved access to information and know how.
- Improved advocacy/ communication with government authorities.

#### Strengths: compiler's or other key resource person's view

- Mindshift among public and decision makers from focus on the challenge (bush encroachment) to the opportunities (value addition).
- Cross-sector cooperation through steering committee.
- Involvement of private sector as driving force for implementation.

#### Weaknesses/ disadvantages/ risks: land user's view how to overcome

- Limited direct (financial) support. Introduction of incentive schemes.
- Limited opportunities in remote areas, i.e. when distance to biomass off-takers is too large. Further development of on-farm solutions (e.g. bush-to-feed).

#### Weaknesses/ disadvantages/ risks: compiler's or other key resource person's view how to overcome

- Complex programme steering requirements, due to multi-sector relevance. The national programme for Bush control and Biomass Utilisation is currently anchored in the Directorate of Forestry (DoF) of the Ministry of Agriculture. This adequately accounts for the fact that the bush resource is part of the national forestry/biomass resource and its utilisation must be regulated as such. However, this anchoring does not allow for an effective promotion of biomass utilisation (e.g. SME promotion, industrialisation concepts, development of logistics hubs) and innovative end-uses (e.g. development of biomass power plants). For this purpose other line ministries, such as Ministry of Mines and Energy (MME) as well as Ministry of Industrialisation and SME Development (MITSMED) are part of the programme's steering committee. Establishment of national coordinating body to formalise the current steering committee.

## REFERENCES

### Compiler

Johannes Laufs

### Editors

Asellah David

### Reviewer

Rima Mekdaschi Studer  
Joana Eichenberger

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### Resource persons

Johannes Laufs (johannes.laufs@giz.de) - SLM specialist  
Frank Gschwender (frank.gschwender@giz.de) - SLM specialist

### Full description in the WOCAT database

[https://qcat.wocat.net/en/wocat/approaches/view/approaches\\_2809/](https://qcat.wocat.net/en/wocat/approaches/view/approaches_2809/)

### Linked SLM data

n.a.

### Documentation was facilitated by

#### Institution

- Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)

#### Project

- Book project: Guidelines to Rangeland Management in Sub-Saharan Africa (Rangeland Management)
- GIZ Support to De-bushing Project

### Key references

- Baseline Assessment for the De-bushing Programme in Namibia (2014): GIZ Support to De-bushing Project, [www.dasnamibia.org/downloads](http://www.dasnamibia.org/downloads)
- GIZ Support to De-bushing Project (2016): Strategic Environmental Assessment of Large-Scale Bush Thinning and Value Addition Activities in Namibia, [www.dasnamibia.org/downloads](http://www.dasnamibia.org/downloads)

### Links to relevant information which is available online

- De-bushing Advisory Service (DAS) Namibia, Resource Section: [www.dasnamibia.org/downloads](http://www.dasnamibia.org/downloads)
- Namibia Biomass Industry Group (N-BiG): [www.n-big.org](http://www.n-big.org)
- Namibia Charcoal Association (NCA): [www.ncanamibia.com](http://www.ncanamibia.com)

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