



Ministry of Environment,
Tourism and Forestry

Diversifying nature-based enterprises for Community Based Organizations in Namibia:

a step-by-step guide for different enterprises



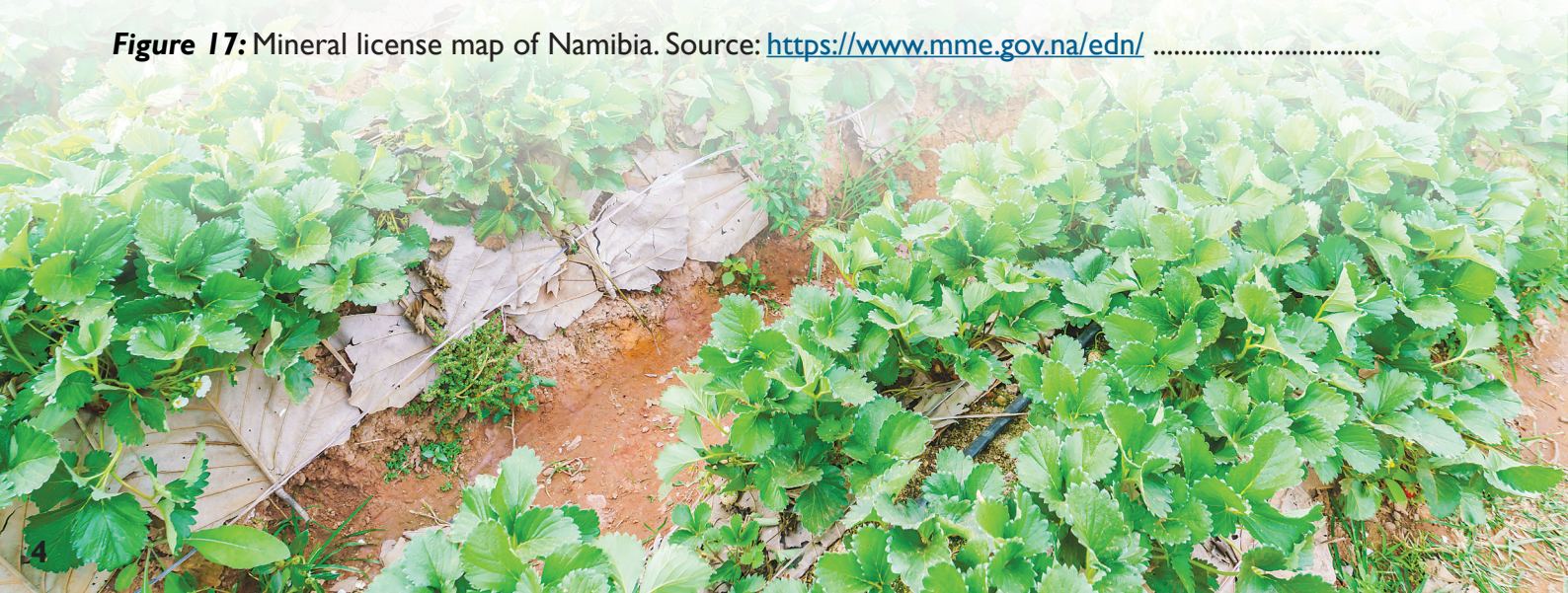
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ACRONYMS

CBOsCommunity Based Organizations	Programme
INPIndigenous Natural Products	GMUPGame Management and Utilisation Plan
NAPHA Namibia Professional Hunters Association	EIF Environmental Investment Fund
MEFTMinistry of Environment, Forestry and Tourism	JV Joint venture
PH Professional Hunters	MAWLR Ministry of Agriculture, Water and Land Reform
CGGs Conservancy Game Guards	CLBsCommunal Land Boards
MoSS Ministry of Safety and Security	TA Traditional Authority
NAMPOL Namibia Police Force	WC Wildlife Credit
NAM RANamibia Revenue Agency	FENATA Federation of Namibian Tourism Association
NTB Namibia Tourism Board	BOTBuilt, Operate and Transfer
DVS Directorate ofVeterinary Services	PESPayment for Ecosystem Services
CMC Conservancy Management Committee	LCALocal Conservation Area
NACSO Namibia Association of CBNRM support Organisation	HWCHuman-wildlife conflict
NCENamibia Chamber of Environment	IRLUPsIntegrated Regional Land Use Plans
IRDNC Integrated Rural Development for Nature Conservation	JMCJoint Management Committee
CCFN Community Conservation Fund of Namibia	DWNPDirectorate ofWildlife and National Parks
SRT Save Rhino Trust	DSSDirectorate of Scientific Services
NDTNamibia Development Trust	BELWG Business Enterprise & Livelihood Working Group
NNFNamibia Nature Foundation	CRIAA- The Centre for Research, SADC Information,
NRWG Natural Resource Working Group	Action in Africa Southern Africa: Namibia Devil's Claw Export Association
WWFWorld Wildlife e Fund	NANCi Namibia Network of Cosmetic Industries Trust
GIZDeutsche Gesellschaft fur Zummaenalbet	NDEAT Namibia Devil's Claw Export Association
UNDPUnited Nation Development	



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FOREWORD

The Government of the Republic of Namibia, through MEFT, is constitutionally mandated to maintain ecosystems, ecological processes, and biodiversity, while ensuring the sustainable use of natural resources for current and future generations. To fulfill this mandate, MEFT has enacted key legislation, including the Nature Conservation Amendment Act (1996) and the Forest Act (2007), which facilitate the establishment of Community-Based Organizations (CBOs) such as communal conservancies and community forests. These CBOs are self-governing entities granted conditional rights to manage and benefit from natural resources, including wildlife, tourism, and forest products. They are also encouraged to explore business and livelihood diversification opportunities to maximize

benefits for their members. Good governance and equitable benefit-sharing are emphasized in the sustainable management of these resources. Namibia currently hosts 86 conservancies, two community associations, and 43 community forests, which collectively contribute to social and economic development as well as biodiversity conservation. However, many CBOs face challenges due to limited technical capacity and lack of information on legal and procedural requirements for establishing nature-based enterprises. To address these challenges, MEFT in partnership with the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH - CCIU 2 project developed the CBO Business Advisory Handbook.



I. INTRODUCTION

CBOs such as conservancies and community forests in Namibia have been legally recognized with conditional rights to manage and benefit from natural resources. Over the years, they have engaged in various income-generating activities including conservation hunting, tourism, crafts, and forest product sales. These enterprises not only generate income but also create jobs and build capacity within rural communities. At the national scale, these activities contribute towards sustainable development goals, National Development Plans, and Vision 2030.

However, many enterprises remain vulnerable to external shocks such as drought, climate change, and the COVID-19 pandemic, exposing the risks of relying on limited income sources.

There is a growing need for livelihood diversification that is climate adaptive and resilient. Recent initiatives promote alternative income sources such as horticulture, aquaculture, renewable energy, and small-scale mining, which can also contribute to food security, climate mitigation, and socio-economic development. To empower communities, the handbook emphasizes not only technical production knowledge but also cross-cutting skills including enterprise development, financial management, administration, governance, and conflict resolution. The handbook is structured into ten sections covering nine key nature-based enterprises and one section on cross-cutting support services. It targets MEFT staff, CBO personnel, NGOs, and other advisors to support community enterprise development.

Structure of the handbook

The handbook consists of ten sections, whereby nine sections cover different key income generation activities that are currently taking place in Namibia and one section focuses specifically on selected cross cutting skills that are relevant to each business enterprise.

The business enterprises covered in this handbook include wildlife-based enterprises; tourism-based enterprises; horticulture; aquaculture; indigenous natural products; bush control and bush utilization for livestock feed; craft and handicraft production; renewable energy and small-scale mining. The handbook focuses on enterprise activities which are relevant for small-scale operation.

The selected cross cutting services, which are covered in the handbook include business and enterprise development; negotiation on investments/projects; community liaison; facilitation of legal advice, access to market, administration and record keeping as well as conflict resolution. Some critical cross cutting services such as good governance, financial management and steps on registering a CBO are not included in this handbook as they are available in the guidelines for management of conservancies and Standards of Operations Procedures, which was published by METF in 2014.



2. CONSUMPTIVE WILDLIFE-BASED ENTERPRISES

Namibia has made remarkable achievement in community conservation in Africa. Particularly, the development of community-centered conservation policies such as the Nature Conservation Amendment Act, 1996 (Act 5 of 1996) and the Forest Act, 2001 (Act 12 of 2001) have transformed the conservation sector. These policies recognized the establishment of CBOs as legal entities with devolution of user rights to local communities to manage and benefit from wildlife and other natural resources. Consequently, both private land owners and CBOs have now integrated the management and sustainable utilization of wildlife into their land uses (Weaver & Petersen, 2008). Once CBOs are established, they are mandated to explore business and livelihood diversification opportunities which maximize members benefits. CBOs have recognized the importance and benefits of engaging in wildlife-based enterprises (WBEs) towards the improvement of community livelihood. Thus, wildlife-based business enterprises are central to the success of CBOs.

In Namibia, wildlife-based enterprises primarily focus on the management of wildlife populations by local communities through the consumptive and non-consumptive utilization of wildlife to earn an income (Wenborn et. al., 2022). This includes conservation hunting, in-situ wildlife breeding, wildlife credit, tanneries and tourism activities like wildlife viewing, game hunting, and lodge operations, often in partnership with private companies.

2.1 Conservation hunting

2.1.1 Overview of conservation hunting enterprise

Conservation hunting is a form of consumptive use of wildlife whereby the hunter pays a premium to hunt an animal e.g. elephant, lion, kudu, eland etc. and keep certain parts of an animal hunted (e.g. hoofs, horns, skin, tusks etc.). In Namibia, conservation hunting is regulated by MEFT and can take place both on freehold land and communal areas. CBOs such as conservancies and community associations are authorized to engage in conservation hunting of wildlife to generate revenue. To engage in conservation hunting, CBO are required to have an approved trophy hunting quota from the MEFT.

This enterprise involves the hiring of a professional hunter (PH) who will shoot an animal and pay a certain fee to the CBO. In conservation hunting, the CBO sells “trophy hunting rights” to a “hunting operator” who will have exclusive hunting rights of animals in a CBO approved quota. The hunting operator will then hire a registered and qualified professional hunter certified by the MEFT to hunt the animals. In return, the professional hunter pays the hunting operator a certain fee for hunted animals, who will eventually pay the CBO hunting fees.



Figure 1 below summarizes the conservation hunting process that needs to be followed by CBOs. CBOs that derive an income from trophy hunting contract professional hunters as partners, who then bring clients to hunt. Normally, a professional hunter will be contracted to hunt a fixed quota of animals which must be paid for, whether they are hunted or not. Payments are made for specific hunts of high value species (NACSO, 2024).

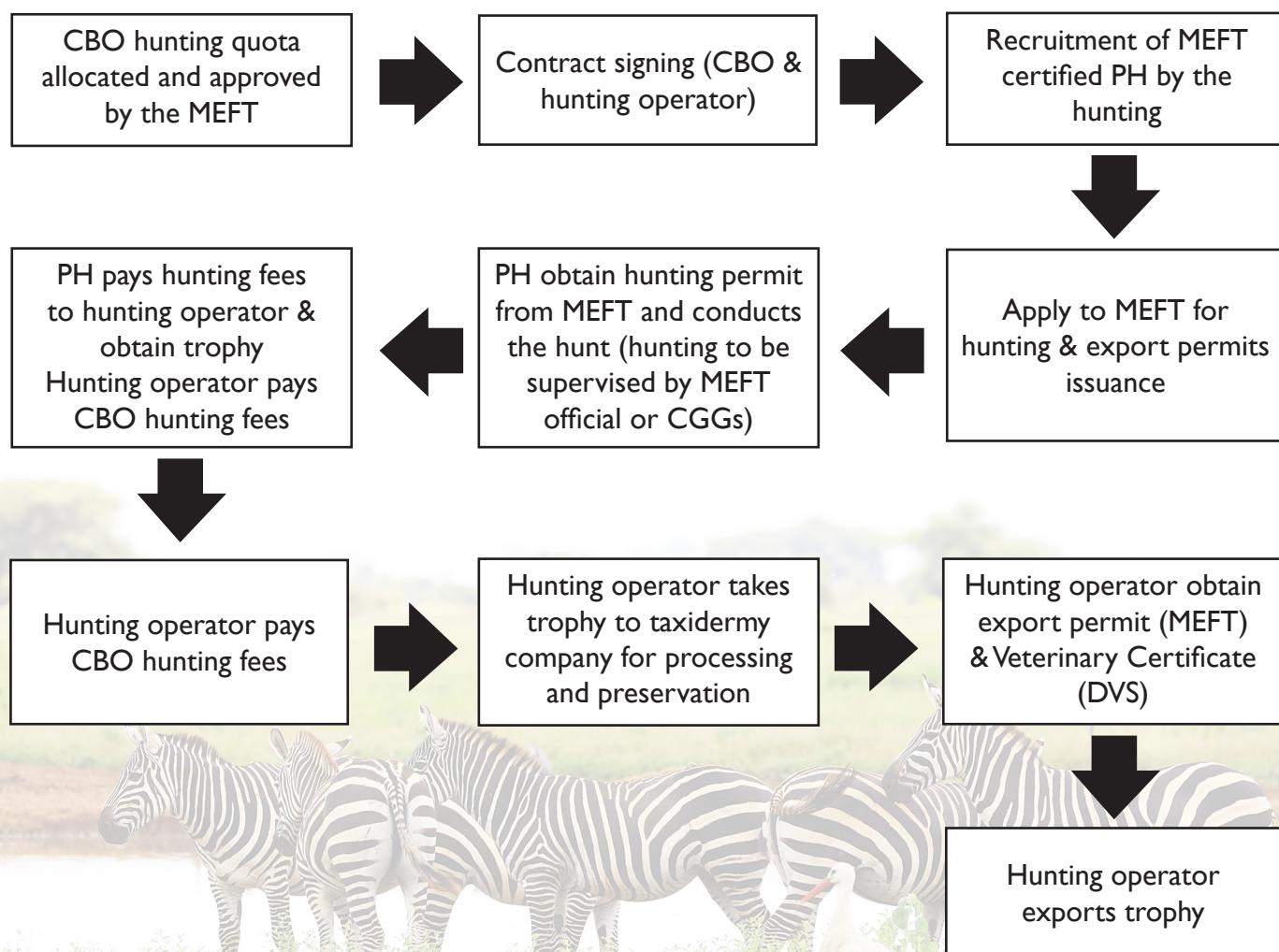


Figure 1: Overview of conservation hunting process in Namibian conservancies

2.1.2 Stakeholders in conservation hunting enterprise and their roles:

As described in section 3.1.1 above, the conservation hunting enterprise is characterized by several stakeholders who depend on each other to achieve their respective objectives either of income generation or obtaining trophies for export. The table below gives highlight of key stakeholders in this enterprise.

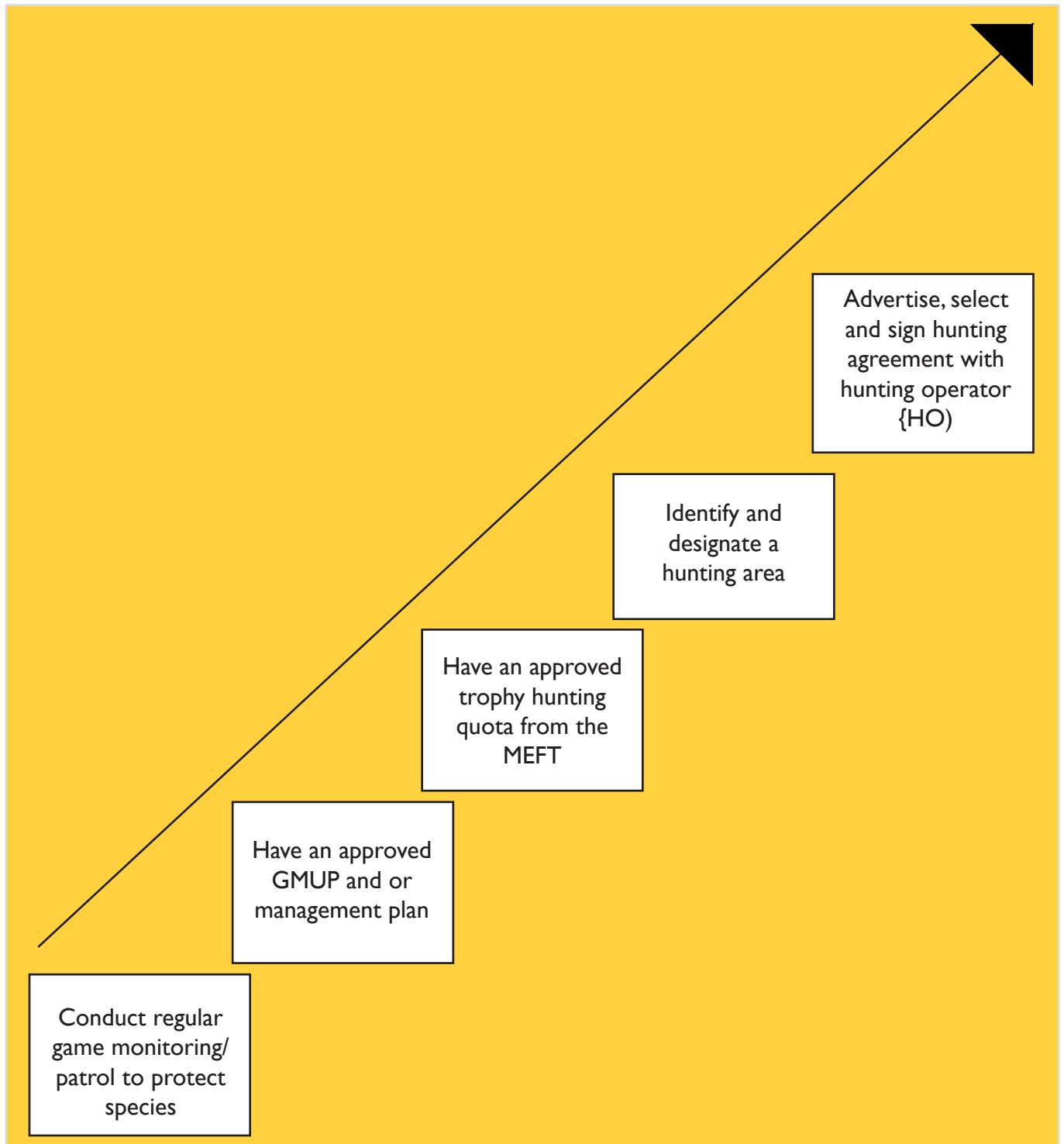
2.1.3 How CBOs can get involved in conservation hunting enterprises

In Namibia, CBOs such as conservancies play a critical role in the hunting industry. Figure 2 below summaries how CBOs can be involved in conservation hunting enterprises.

Table 1: Stakeholders in conservation hunting enterprise and their roles

Stakeholders	Roles
Ministry of Environment, Forestry and Tourism (MEFT) – DWNP	<ul style="list-style-type: none"> • Issuance of permits (hunting/export) to trophy hunters • Approves hunting quotas for CBOs to ensure sustainable off-takes/harvesting • Regulates conservation hunting in Namibia by declaring hunting season • Monitors the utilization of games in accordance with Game Management and Utilization Plan (GMUP)
Ministry of Safety and Security (NAM POL)	<ul style="list-style-type: none"> • Issuance of weapon importation permits (ammunition & rifles) to trophy hunters • Participates in joint patrol with MEFT & conservancies to curb illegal hunting
MAW LR: Directorate of Veterinary Services (DVS)	<ul style="list-style-type: none"> • Issuance of veterinary certificate to trophy hunters
Namibia Revenue Agency (NAM RA)	<ul style="list-style-type: none"> • Collects payment of VAT and taxes by trophy hunters
Namibia Tourism Board (NTB)	<ul style="list-style-type: none"> • Advertising and promotion of hunting tourism in Namibia to overseas clients
Namibia Professional Hunters Association (NAPHA)	<ul style="list-style-type: none"> • Accredits and registers all hunting operators in Namibia • Promotes ethical hunting and adherence to ethical code of conduct of its members
Taxidermy companies	<ul style="list-style-type: none"> • Preservation and processing of trophies
Hunting operator/guide	<ul style="list-style-type: none"> • Seeks for clients (professional hunters) to hunt animals as per allocated quota in conservancies • Signs hunting contract agreement with conservancies • Apply for permits (hunting & export) from MEFT on behalf of the PH • Pay hunting fees to conservancies
Trophy hunter	<ul style="list-style-type: none"> • Hunting animals approved in a conservancy quota • Paying hunting fees to hunting operator
Conservancy Game Guards (CGGs)	<ul style="list-style-type: none"> • Accompanying professional hunters during hunting operations • Monitoring of wildlife in accordance with the GMUP
Conservancy Game Guards (CGGs)	<ul style="list-style-type: none"> • Accompanying professional hunters during hunting operations • Monitoring of wildlife in accordance with the GMUP
Conservancy Management Committee (CMC)	<ul style="list-style-type: none"> • Signing hunting contracts with hunting operator on behalf of the conservancy
Natural Resource Working Groups (NRWG)	<ul style="list-style-type: none"> • Assists conservancies with technical skills on negotiations of hunting contracts
NGOs: Integrated Rural Development for Nature Conservation (IRDNC), Namibia Development Trust (NDT), Namibia Nature Foundation (NNF), World Wildlife Fund (WWF), Community Conservation Fund of Namibia (CCFN), Save Rhino Trust (SRT), Namibia Association of CBN RM Support Organisation (NACSO), Namibia Chamber of Environment (NCE)	<ul style="list-style-type: none"> • Provide technical and financial assistance to conservancies
Development partners Deutsche Gesellschaft für Zusammenarbeit (GIZ), United Nations Development Programme (UNDP), Kreditanstalt für Wiederaufbau (KfW)	<ul style="list-style-type: none"> • Provide technical and financial assistance

Figure 2: Summary of how CBO can be involved in conservation hunting enterprise



2.1.4 Required investments to establish a conservation hunting business enterprise

The viability of the conservation hunting enterprise is dependent on the preservation and maintenance of natural capital, which can sustain wildlife in the conservancy. CBOs should invest heavily in habitat and species conservation to maintain a table healthy game population of “trophy quality animals” as well as an approved trophy hunting quota and hunting permit from MEFT. In addition, conservancies need to request game translocation of high valued species with good quality trophy from MEFT, which are in demand for trophy hunting. Furthermore, CBOs are required to manage their wildlife in accordance with GMUPs or Species Management Plan, where applicable and conduct regular game monitoring using event book, fixed patrol, or SMART devices and conduct annual game censuses to determine population trends and status of wildlife in their area. To ensure sustainability, the MEFT issue hunting quotas to conservancies based on monitoring data.

2.1.5 Requirements for a successfully managed conservation hunting business enterprise?

For CBOs to successfully manage the conservation hunting enterprises, it should meet the following conditions, which are summarized in figure 3 below:

Figure 3: Required attributes/conditions for successful management of hunting enterprise

Functional and skilled management committee	Responsible to sign the hunting contract with a hunting operator on behalf of the CBOs. The committee should have the necessary skills and familiar with MEFTs SOPs with a key focus on the roles and responsibilities of each party.
Prudent financial management	CMC to adhere to good governance principles as outlined in the MEFT SOPs to ensure proper management and accountability of CMC members.
Approved and endorsed conservancy compliance documents	CBOs should have compliance documents (e.g constitution, zonation plan, benefit distribution plan, GMUP, Forest Management Plan, BDP etc) to ensure sustainable management of natural resources.
Provision of labour	CBOs should provide labour by recruiting sufficient, dedicated, trained and well equipped resource monitors e.g CCGs who will monitor NRs.
Sufficient financial capital	CBOs should have enough financial capital to purchase necessary equipments, cover operational costs & offset for HWC to promote peaceful co-existence with wildlife, ensure equitable benefit distribution to its members (Kavelage, 2023).
Abide to good ethical conduct	CBOs should adhere to good ethical conduct to maintain integrity. NAPHA has established code of conduct which all PH in Namibia should comply to.
Invest in infrastructure	CBOs in collaboration with the hunting operators should invest in infrastructure (e.g hunting camp & accommodation facilities) to cater for clients during hunting. These investments are crucial to ensure the success of the hunting enterprise.



2.1.6 Legal and institutional requirement for conservation hunting enterprise

Conservation hunting in Namibia is governed by a series of international and national legal frameworks to ensure compliance. Table 3 below gives an overview of the key relevant international and national legal frameworks and their relevance to conservation hunting in Namibia.

Table 3: Legal framework for conservation hunting enterprise in Namibia

Legal framework	Relevance to conservation hunting
International treaties	
Convention of International Trade in Endangered Species (CITES)	Most of the wildlife species which are hunted for trophies in conservancies (e.g . rhinos, elephants, lions) or plant species harvested in community forests are listed under CITES appendices, and any trade of these species or their derivatives should comply with CITES permit requirements. Therefore, CBOs and their clients should abide by CITES
National policies and legislations	
<ul style="list-style-type: none">• Nature Conservation Ordinance No. 4 of 1975• Nature Conservation Amendment Act of 1996• Nature Conservation Amendment Act of 2017)	CBOs: obtain hunting & export permits from the MEFT; ensure that they engage MEFT certified hunting guide, and that PH are accompanied/ supervised by CGGs & MEFT officials in accordance with Nature Conservation Ordinance.
National Policy on CBNRM of 2013	
National Policy on CBNRM of 2013	Provides for CBOs, once registered to acquire user rights to consumptive and non-consumptive use and management of wildlife. Provides for conservancies to enter into JV agreements with investors.
Labour Act No.11 of 2007	
Labour Act No.11 of 2007	PH are required to comply with the Labour Act of 2007 with regards to employment contracts and working conditions such as minimum wage for conservancy members during trophy hunting activities

2.1.7 Sustainability Plan for conservation hunting enterprise

For sustainability of conservation hunting enterprises, CBOs are required to conduct an annual resource assessment such as game census, trophy quality assessment, regular species monitoring using an event book and other monitoring techniques. Additionally, off-takes of species should be based on species-specific scientifically accepted annual quotas (Kalvelage, 2023). Selected animals for conservation hunting should be non-breeding and older males that are no longer contributing to the gene pool and may bully younger males from mating.

2.2 Game breeding enterprises

2.2.1 Activities of game breeding enterprise

Game breeding enterprises involve the captive breeding and rearing of wild animals for live sale or harvesting animals for their skins e.g. crocodiles. Currently, the Nature Conservation Ordinance No.4 of 1975 and the Regulation for Large Carnivores in Captivity (2072) prohibits the breeding of captive large carnivores (e.g. lions, cheetahs, spotted and brown hyenas and wild dogs). As a result, the only known game breeding enterprises in Namibia is crocodile farming. This enterprise involves the establishment of crocodile farming to harvest the animals for their skin, eggs or live sale and eco-tourism purposes to earn an income. For the success of the crocodile farming enterprise, CBOs should have:

- A species management plan
- Sufficient quality nutritious food and
- Strong bio-security measures, i.e. disease control, to breed healthy animals which will eventually yield quality skins for the market.

2.2.2 Stakeholders in wildlife breeding enterprise

There are various stakeholders that are involved in wildlife breeding enterprises in Namibia. The MEFT is responsible to issue permits and regulate captive breeding animals. There are various tanneries e.g. Okapuka that buy and process crocodile skins. In some instances, there are middlemen, who sell crocodile skins to tanneries. The Ministry of Trade, Industrialization and SME Development plays a crucial role by regulating the exportation of crocodile skins and meat. To ensure that the crocodile farms are disease free, and vaccinated, the MAWLR, particularly the Division of Veterinary Science is involved. Commercial banks such as FNB provide loans to CBOs as start-up capital for crocodile farming.

2.2.3 CBOs involvement in wildlife breeding enterprise

- The identification and provision of land for wildlife breeding.
- Contribute local knowledge, manpower and where possible financial capital.
- Participate in the selection of the joint venture partners if they choose to outsource the service to an investor.

2.2.4 Procedures to be followed by CBOs when setting up a wildlife breeding enterprise

Figure 4: Procedures for establishing wildlife breeding enterprises

Step 1: Conduct Feasibility study	CBOs should conduct a feasibility study to determine the viability of the wildlife breeding enterprise
Step 2: Site identification, assessment & obtain authorisation and permits	CBOs should identify suitable site with sufficient water for crocodile farming. Where possible, obtain permits and authorisation from relevant Ministries e.g from MEFT, Ministry of Lands-CLBs etc
Step 3: Develop business plan	Develop business plan for the enterprise. CBOs may get technical assistance from MEFT or support from NGOs
Step 4: Secure funding	CBOs may approach financial institutions (e.g FNB) and submit their business plan to secure funding. Alternatively, CBOs may write business proposals to support NGOs or use own funds if available
Step 5: Build infrastructure	Once funding is secured, CBOs may design and hire a contractor to build necessary infrastructures.
Step 6: Select the best business models, sign contract and began operation	CBOs may advertise and select the most suitable business model e.g BOT model, sign contract and implement the project.

2.2.5 What needs to be in place to successfully manage wildlife breeding business enterprise

- Species Management Plan
- Substantial financial capital: To purchase building materials for crocodile pens, incubator, labour for construction, designing of the housing, heating equipment's etc.
- Representative & competent management committee: To manage the enterprise on behalf of the members.
- Prudent financial management system: To ensure that there is no mismanagement of funds.
- Necessary infrastructure e.g. crocodile pens
- Sufficient fresh water of good quality: Identify areas with enough water sources.

2.2.6 Legal and institutional requirements for wildlife breeding enterprise

- Regulations for Large Carnivores in Captivity: Nature Conservation Ordinance No. 4 of 1975: Provides for keeping large carnivores in captivity subject to a permit from the MEFT. However, such animals should not be captured from the wild or be allowed to breed and fed while in captivity.
- Nature Conservation Amendment Act of 1996: Gives the right to CBOs over huntable games, capture, sale, hunting and culling and right to apply for permits for protected and specially protected games.
- Environmental Management Act of 2007 and EIA regulation of 2012: Provides for Environmental Impact Assessment (EIA) to be done on activities that may have a negative impact on the environment. The establishment of crocodile farming is one of the listed activities under EIA regulations in Namibia therefore it cannot be undertaken without an EIA and Environmental Clearance Certificate (ECC) from the Office of the Environmental Commissioner.

2.2.7 Sustainability Plan for wildlife breeding enterprise

- Implement a conservative harvest based on game census data and population monitoring.
- Harvest ceilings for eggs & live animals should be based on adaptive management.

2.3 Tannery

2.3.1 Overview of the tannery enterprise

A tannery is a place where the skins are processed while tanning is the process of treating animal skins & hides and transforms them into leather. This enterprise involves the establishment of a tannery to process animal skin into leather. Namibia tannery industry is not well developed with only a few commercial tanneries such as MEATCO (Okapuka) & NAKARA in Windhoek, Bruckaros in Keetmanshoop, Northern tannery in Ondangwa. Currently, there is only one community-based tannery (the Dune tannery) situated in Karkland, Hardap region and various micro-small and medium enterprises (MSME). The tanning process involves the transformation of fresh and salter hides into wet-blue leather. Normally, wet-blue leather is produced by curing hides in chromium salts, a method that results in durable, flexible and long-lasting leather products. Depending on the capacity of the tannery, once processed, these hides are supplied to local markets and or exported to international markets such as China and Italy.

Table 5: Stakeholders in the tannery industry and their roles

Legal framework	Roles
MEFT	Issuance of the ECC
Ministry of Health and Social Services/Town Councils	Issuance of Fitness Certificate
Ministry of Industrialization, Trade and SME Development (MITSED)	Offers support to conservancy through the equipment scheme
Livestock producers (farmers)	Sell animal skin to the abattoir for slaughtering
Abattoir	Slaughter livestock and sell raw skin to tannery
NAKARA & other tanneries	Buy skins from conservancy and process it into finished leather products

2.3.2 What needs to be in place to successfully manage the tannery enterprise

In Namibia, most tanneries are privately or government owned. Currently, CBOs are not engaged in tannery business. However, there is potential to explore this enterprise in future. Due to lack of expertise and starting capital, CBOs are advised to adopt the joint venture model used in tourism enterprises. For instance, CBOs may opt for Built, Operate and Transfer (BOT) model, where an independent private investor enters into a partnership with the CBO. The investor will build, operate the tannery on behalf of the CBO and in return pay a fixed amount of money to the CBO. After a certain period, the tannery can then be transferred to the CBO in its operational state. Other possible models are 100% community owned tannery or joint shareholding.

2.3.3 Legal requirements for setting up a tannery enterprise

There are several legal requirements that need to be fulfilled before the establishment of the tannery:

- **Apply for land rights:** Apply for a leasehold certificate from the MAWLR and get approval from the Communal Land Boards (CLBs).
- **Business registration with relevant authorities:** Register the business enterprise with Business Intellectual Property Agency (BIPA); and with Social Security Commission (SSC) ; as well as with Namibia Revenue Agency (NAM RA).
- **Obtain compliance certificates:** If the tannery is north of the cordon fence (red line), it must comply with veterinary requirements; Compliance with Occupational Health and Safety regulations with regards to health and safety of employees at workplace, as well as provision of protective clothing. The business enterprise must also comply with the Labour Act requirements on minimum wage and conditions of service such as overtime payment, and required working hours.
- **Apply for ECC from MEFT:** Conduct EIA and apply for ECC to the MEFT before the construction of the tannery.





2.3.4 Sustainability of the tannery enterprise

To ensure economic sustainability of the tannery, it must diversify the sources of skins to include livestock skins to ensure continuous supply from local market. Moreover, there must be contingency plans in place to cater for years with drought, since drought affects the number of cattle and games ultimately resulting in the low supply of skins. In addition, availability of skins from wild animals depends on the hunting quota, which fluctuates from year to year. To ensure environmental sustainability, the tanneries should engage in sustainable practices, such as using modern automation and efficient processing techniques to reduce waste and minimize environmental impact. This commitment to sustainability aligns with global trends in the leather industry, where there is an increasing focus on eco-friendly and socially responsible production methods.

2.4 Wildlife credits

2.4.1 What is wildlife credit?

Wildlife credit (WC) is an incentive-driven conservation initiative which adopts the Payment for Ecosystem Services (PES) scheme approach, whereby communities are rewarded monetary payments for their efforts in wildlife and habitat conservation. These conservation payments are made based on verified conservation results (e.g. maintenance of elephant corridors, sightings of rare, protected species e.g. rhino, elephants, lions). The WC concept has gained widespread recognition and acceptance at both national and international levels, as an effective strategy for providing conservation performance payments to environmental stewards, particularly conservancies.

This approach ensures that those who safeguard ecosystems and manage wildlife, which are considered global assets, receive direct benefits. In Namibia, WC has now been incorporated in national processes such as Corridor Strategies, Elephant Management Plans etc. At the international level, WC has been incorporated in international initiatives e.g. (WWF Network on Wildlife Credits and Biodiversity Credits Working Groups). and in various webinars and stakeholder presentations (NACSO, 2024).



2.4.2 How does wildlife credit work?

- CBOs enter in a joint venture with tour operators, conservation groups and the international community.
- JV partners raise funds for wildlife and wildlife habitat from conservation performance payments based on monitoring sightings of iconic wildlife species at tourist lodges.
- The Local Conservation Areas (LCA) establish individual specified wildlife species account to which funds generated are paid into.

2.4.3 How are the funds for wildlife credit generated?

Wildlife credit generates funds from local, national, and international sources based on independently verified conservation performance by communal conservancies. Figure 4 illustrated the sources of funds for WC.

International level: International sponsors and grant funders - provide finances for WC (invited and encouraged to add to the national payment).

National: WC leverages secured contractual payment to match each sighting/ Interested private funders who are willing to pay for conservation performance that goes directly to the wildlife and conservation stewards.

Local level: Lodges participating in WC pay a fixed amount of money for each sighting of an iconic species (e.g elephants, rhino and lions) on game drive.

Figure 5: Sources of funds for Wildlife Credits in CBOs.

2.4.4 Stakeholders in wildlife credit enterprise

Table 6: Stakeholders in wildlife credit and their role

Stakeholders	Roles
MEFT	Regulation and issuance of permits
CBOs (e.g. conservancies)	Manages and monitor wildlife in conservancies
Joint Venture Partners (Lodges)	Participating in wildlife credit
Tour Guides	Partners in wildlife credit and record wildlife encountered during game drives
Community Game Guards (CGGs)	Actively involved in patrolling, monitoring wildlife and other resources, anti-poaching and law enforcement.
NGOs (WWF, CCFN, NACSO)	Providing funding for wildlife credit scheme
Conservation Trust Fund	Provide funds for wildlife credit
Donors/sponsors	Providing funding for wildlife credit scheme

2.4.5 How are wildlife credit funds used?

Wildlife credit funds are used by CBOs to support wildlife management and protection activities, payments to local communities to mitigate human-wildlife conflicts, wildlife research and monitoring. Funds are allocated by trustees, based on local level priorities for the specified wildlife species.

2.4.6 How is conservation performance measured?

For wildlife credits to be successful, there are several criteria which are used as yardsticks against which conservation payment is based on. Payment is contingent on the verification and extent to which these criteria are met. These criteria are as follows:

- Monitoring wildlife sightings of iconic species.
- The increase in population of wildlife.
- The breeding success of iconic species.
- Protection of wildlife corridors and dispersal areas.
- Community's efforts in combating wildlife crime.

3.4.7 How CBOs are involved in WC enterprise

CBOs are involved in WC directly or indirectly. Direct involvement for CBOs is in the form of being participants in game monitoring of iconic species, provision of labour, jointly managing the accounts for WC as local trustees of the CBO and private sector JV partners or support NGOs, decision-making on how funds will be used, voting for members and being signatories to the WC accounts. CBOs may be involved indirectly as recipients or beneficiaries of WC funds. CBOs interested in WC should enter into an agreement with funding agencies that are willing to fund wildlife credit. In Namibia, CCFN manages the funds for wildlife credit with conservancies.

2.4.8 Required investments to establish a wildlife credit enterprise

- CBOs should have wildlife species supported by WC, mainly those that cause problems or costs to conservancies, iconic or endangered.
- Manage wildlife according to the GMUP and or Species Management Plan and
- Have sufficient financial resources to purchase equipment's such as camera traps, smart phones, tents for CGGs and pay game guards.

2.4.9 Required skills and competence to successfully manage WC enterprise

- Recruit enough dedicated CGGs to monitor wildlife as per the WC guidelines.
- Training and skills development for CGGs.
- Invest in regular game monitoring using event books, fixed route patrols, SMART devices.
- Conduct annual game counts to determine population trends and status of iconic and rare species.

2.4.10 Legal and institutional requirements for WC business enterprise

- Nature Conservation Ordinance No.4 of 1975: Provides for special protection by designating certain species as “protected game” and “specially protected game” species. Most of the species that are eligible for wildlife credit falls in this category.
- Nature Conservation Amendment Act of 1996: Mandates the Minister to declare and gazette certain areas as communal conservancies, on condition that they meet certain legal requirements. This legislation devolves user rights over wildlife and other natural resources within the boundaries of conservancies. One of the requirements for participation in WC is that an area must be registered as a conservancy.
- CBNRM Policy of 2003: Gives communities the right to benefit from NRs such as wildlife and provides for incentives to communities to manage wildlife in conservancy. The WC approach incentivizes communities to manage and benefit from wildlife.

2.4.11 Sustainability Plan for WC enterprise

The sustainability of WC solely depends on the availability of funds from interested funding agencies participating in WC.



3. TOURISM-BASED ENTERPRISES

3.1 Accommodation enterprises

3.1.1 Description of the enterprise

Generally, tourism plays a significant role to the Namibian economy. Therefore, community-based tourism enterprises present an opportunity for enhancing local livelihoods and fostering long-term resilience. Accommodation enterprises include the establishments of lodges and campsites in registered CBOs for the provision of affordable accommodation to local and international tourists. These accommodation facilities could either be community-owned or managed through a joint venture (JV) partnership with the private sector.

3.1.2 Stakeholders in the accommodation enterprise

Table 7: Stakeholders in the accommodation enterprises and their roles

Stakeholders	Roles
JV partners and investors	Funding and development of accommodation establishment in conservancies
EIF	Providing funds to conservancy for lodge establishment
Federation of Namibia Tourism Associations (FENATA)	Advocacy and lobbying government support for tourism related issues in Namibia Advertise and promote Namibia as the best tour destination
Traditional Authorities (TA)	Give consent for leasehold applications for accommodation establishment and ensure that it does not contradict the conservancy zonation plan
Professional tour guide/Tour operators	Provide tour guiding services
Namibia Academy for Tourism and Hospitality (NATH)	Provide training in tourism and hospitality related courses
Business enterprise livelihood working group (BELWG) at NACSO	Support business and enterprise development in community-based organizations (CBOs)
MEFT: • Directorate of Tourism (DOT)	DOT: Regulates tourism development in Namibia & ensure compliance with all tourism regulatory requirements
• Directorate of Scientific Services (DSS)	DSS: Provide scientific services on wildlife and habitats in concession area e.g. research and monitoring
• Directorate of Wildlife and National Parks (DWNP)	DWNP: Regulates and awards tourism concessions, ensure compliance and facilitate community involvement and benefits thereof
Namibia Tourism Board (NTB)	Regulates all accommodation establishments through a registration process
MAWLR	Custodian of lands and administer land allocation in Namibia Facilitate the development of Integrated Regional Land
	Use Plans (IRLUPs)
Communal Land Boards (CLBs)	Grant leasehold rights in communal lands
CBOs (Conservancies, Community Forests, Community Associations)	Oversee the implementation of GMUPs & enforcement of Zonation plans & share it with all stakeholders

3.1.3 How CBOs can get involved in accommodation enterprises

CBOs could be involved in accommodation enterprises in various ways:

- **Application for leasehold:** CBOs to apply for leasehold from the MAWLR, Division of Lands via the CLBs of the respective region.
- **Obtain the leasehold and share with the JV partner** (if applicable) to use it for their proposed tourism business.
- **Provide labour**
- **Seeking technical assistance from MEFT** or the BELWG JV with contract negotiation with JV partners

3.1.4 Required investments for accommodation establishment

Prior to establishing accommodation facilities, CBOs should consider the following:

- **Avail land and labour:** The CBOs should avail land and labour whereas the private sector will provide finances and skills.
- **Obtain leasehold certificate:** Apply for a leasehold certificate from the MAWLR via CLBs.
- **Advertise tender for conducting tourism feasibility study:** Advertise a tender through newspapers, shortlist, select and appoint a consultant to conduct a tourism feasibility study or direct award depending on the threshold.
- **Feasibility study:** Conduct feasibility to determine the current tourism activities taking place, market and project future potential tourism activities, which the CBO can explore.
- **Develop a tourism plan:** CBOs should develop a tourism plan which will highlight existing tourist attractions, activities and infrastructure and identify future key tourism development opportunities in the area.
- **Appoint an Environmental Assessment Practitioner to conduct an EIA:** obtain an ECC from the MEFT, (DEA) (see details on 4.7.7).
- **Secure funding:** obtain finances either from CBO own sources or write proposals to donors for funding or approach the financial institutions to get a loan. For financial institutions, CBOs may be required to develop a business plan.
- **Select the joint venture model:** Depending on the CBO, select the most suitable JV model (i) 700% community investment, (ii) Built, Operate and Transfer model, and (iii) joint shareholding
- **Enter into a partnership agreement:** CBOs can enter into a partnership agreement with the investor by signing contract (CMC & and the investor).



3.1.5 What needs to be in place to successfully manage accommodation establishment

Community-based tourism is relatively new, as a result communities are confronted with many challenges such as lack of capital, infrastructure, and expertise, which limits the success in this industry. CBOs should consider the following for successful management of accommodation establishments:

- **Conservancy Management Committee:** CBO should have active and MC members with capacity to make informed decisions.
- **Skilled personnel:** CBO needs to have skilled personnel to assist with management of accommodation facilities.
- **Financial management system:** CBO should abide by the MEFT SOPs and adhere to prudent financial management principles.

3.1.6 Legal and institutional frameworks for accommodation business enterprises

- **The Environmental Management Act 4 of 2007 and EIA regulations of 2012:** Provides for a list of activities with significant environmental impacts which cannot be undertaken without an EIA. The establishment of accommodation facilities such as lodges and campsites in CBOs fall under listed activities which cannot be undertaken without an ECC issued from the Office of the Environmental Commissioner.
- **Communal Land Reform Act No. 5 of 2002:** Governs the allocation and issuance of leasehold rights and encompasses various land tenure systems, including customary land rights, leasehold land rights, and occupational land rights. For CBOs to operate a tourism-based enterprise, they need to apply for tourism leasehold to the MAWLR through CLBs.
- **Nature Conservation Amendment Act of 1996:** Grants conditional user rights over wildlife and other natural resources upon registration as a CBO. The Act recognize a conservancy as a legal entity which can negotiate and enter into JV tourism agreement with private sector on behalf of conservancy members. This Act also sets the establishment of conservancy as the condition upon which ownership of wildlife and user rights over other game species will be given to communal area residents.
- **National CBNRM Policy of 2013:** recognized communities that have a legal entity such as “conservancy” with rights to negotiate and enter contracts on behalf of other communities to ensure that they participate in tourism business and nature-based enterprises.
- **MEFT Guidelines for Management of Conservancies and Standard Operating Procedures:** Provides a framework and guidelines for conservancies to ensure that they are well managed based on good governance principles of transparency, participation and accountability.
- **National Policy on Tourism and Wildlife Concessions on State Land (2007):** Grants rights to non-state actors {CBOs and private sector} to conduct exclusive tourism activities on state land, through the awarding of concession to communities.



3.1.7 Sustainability Plan for accommodation enterprises

To ensure sustainability of accommodation enterprises, conservancies need to:

- Devise a sustainability plan.
- Incorporate eco-friendly measures in lodge operations.
- Invest money in other business ventures to earn more money.

3.2 Other Tourism Establishments

3.2.1 Description of other tourism enterprises

Besides accommodation, there are other tourist establishments which play a critical role in the tourism sector. This includes traditional villages, living museums, San trackers, tour guiding, cultural dancing groups, community boats or canoeing, mountain hiking, star gazing etc. These activities are multifaced and can be implemented simultaneously depending on the potential of the CBO. For instance, a CBO may establish a cultural village, cultural museums to show tourists about culture and how people live based on their tradition and at the same time do guided tours, group tours, wildlife safaris, lodge guide, ballooning, hiking tours etc. For CBOs to get involved in these tourism enterprises they need to identify villages for cultural tourism, community organization and mobilization. Most of the stakeholders listed in section 4.7.2 also applies to these other tourism-based enterprises.

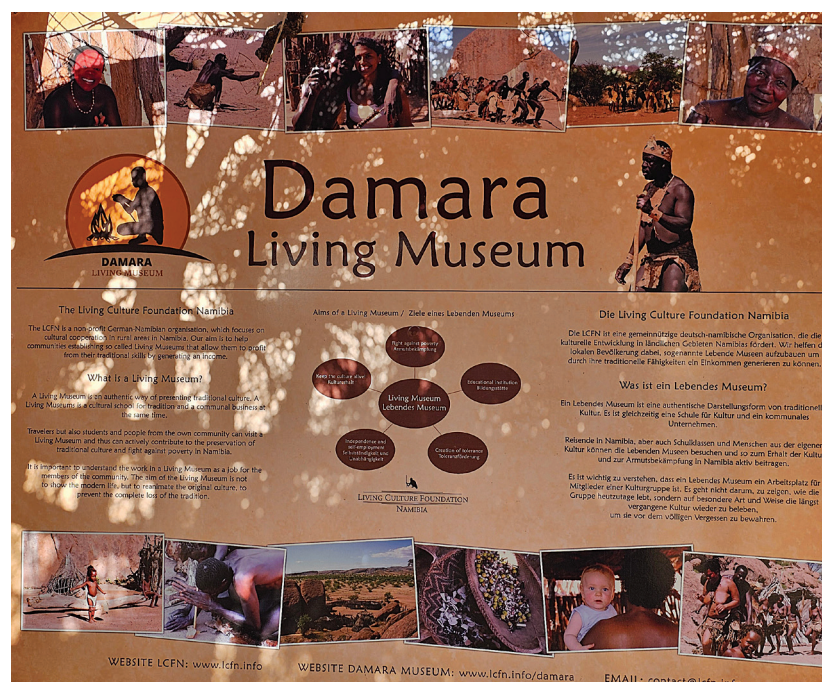
3.2.2 How CBOs can get involved in other tourism enterprises

Identify villages for cultural tourism, community organization and mobilization.

3.2.3 Requirements for other tourism enterprises in CBOs

Refer to section 4.7.4, and 4.7.5 the requirements are similar

3.2.4 Legal and institutional requirement for other tourism enterprises



Besides the legal frameworks provided in section 4.7.6, tourism-based enterprises such as cultural villages, museums and San trackers should comply with the National Heritage Act No 27 of 2004, which provides for the protection and conservation of places and objects of heritage significance and the registration of such places and objects. This Act establishes a system of registration of heritage sites in Namibia. CBOs with heritage sites should therefore comply with this Act.

4. HORTICULTURE



(COMMUNITY GARDENING)

4.1 Background on horticulture and community gardening in Namibia

Horticulture is a branch of agriculture which focuses on the cultivation of vegetables and fruits. The horticultural enterprise encompasses all stages of the value chain including sowing and transplanting, harvesting, grading, packaging and marketing. In Namibia, vegetables such as tomatoes, onions, spinach, butternuts, carrots, cabbage, sweet potatoes, watermelons, green peppers and maize are commonly planted (see also table 6 below). In the context of community gardening for CBOs, horticulture plays a vital role in promoting sustainable food production, job creation, and economic empowerment. In CBOs, community gardening offers a pathway for rural communities to share knowledge and skills, employing environmentally friendly methods of farming for ensuring soil health, integrated pest management, planting cycle etc. In addition, community gardening also fosters social cohesion as the people work together for mutual purposes. There are many community gardening projects in Namibia, some of which are established with donor funding for example from the Green Climate Fund through the Environmental Investment Fund and GIZ e.g. Farming for Resilience. These projects provide good lessons in terms of challenges

and opportunities they provided (Parliament of Namibia, Standing Committee on natural Resources 2022). The Namibian Agronomic Board highlights that the country's horticulture industry faces challenges such as drought, high input costs, and pest and disease management. Despite the challenges, CBOs can succeed by leveraging proven strategies. For instance, communities can obtain proper training and secure reliable water sources e.g. rehabilitation of boreholes, providing bulk water supply lines and adopting efficient irrigation methods. To address the lack of access to markets, communities can also create a network of consistent buyers such as local markets and tourism ventures. With effective training in crop management, financial planning, and marketing, conservancies can establish resilient horticultural enterprises that enhance food security and create lasting economic benefits. Organizations like the Namibian Organic Association and the Namibia Nature Foundation provides horticulture training for small-scale farmers, emphasizing sustainable practices. Additionally, strategies such as establishing cooperatives and forming strategic alliances among commercial producers have been recommended to boost horticulture development.

4.2 Description of horticulture activities

Setting up a sustainable horticulture garden for a CBO requires careful planning, resource management, and consideration of the local environment. The subsections below describe the key activities involved in horticulture.

4.2.1. Selection of a suitable site for the horticulture garden

Choosing the right site is critical to the success of the community garden:

- **Topography:** Select relatively flat land to optimize irrigation and reduce soil erosion.
- **Proximity:** Ensure the site is near community members to reduce travel time for workers and facilitate protection.
- **Fencing:** Protect the site from wildlife. For large animals like elephants, there is need to use electrified fencing. For smaller animals such as rabbits, use a wire mesh. Use durable materials to avoid costly repairs.
- **Soil characteristic:** it is important to choose a site that has the most fertile soil as this will lead to less cost on fertilizer and irrigation water. Moreover, if the soil is not fertile enough, choose the site where the soil can easily be reclaimed or amended.

4.2.2. Water requirements and water infrastructure

Water availability is essential for horticultural success therefore before setting up a community garden the following need to be done:

- Estimating the **water needs** for the garden based on its size and crop type.
- Assessing whether the **available water source** (e.g. borehole, river, canal etc.) can sustain the garden and what size.
- Plan to use **sustainable infrastructure** solutions like solar-powered pumps for boreholes and elevated water tanks. Elevated tanks help minimize the cost of water pumping and improve water flow for irrigation.
- Plan to adopt the most appropriate **irrigation method** that perfectly balances water conservation, infrastructure maintenance and repairs, soil type and crop type. For example. Drip irrigation may be the best method to conserve water on sandy soil. However salty/alkaline water easily clogs drip emitters making sprinkler more desirable. Namibia's arid climate necessitates efficient water management. A practical solution is using solar-powered pumps to fill elevated reservoirs, from which water can flow to the garden without additional energy costs to boost the water pressure.

4.2.3. Soil Preparation and Fertilization

Namibian soils are generally poor with low levels of essential plant nutrients. Improving soil fertility is therefore essential. Soil fertility can be improved and maintained by doing the following:

- **Use Compost and Animal Manures:** Use livestock or wild animal manure mixed with plant waste to create nutrient-rich compost. Alternatively, aged or well decomposed animal manures can be applied directly and worked in to improve soil fertility.

- **Add soil amendments such as biochar:** Introduce biochar made from weeds or encroaching bushes to improve soil structure and fertility. Biochar helps the soil to hold more water and prevents nutrients from being washed away.
- **Use inorganic fertilizers:** Consult and carefully use inorganic fertilizers as instructed by professional or according to your training. Always conduct soil tests before using inorganic fertilizers to determine the quantity and type of fertilizer to apply. This will help to save money and maintain long-term soil fertility.

4.2.4. Crop establishment

Once the garden infrastructures such as water, irrigation, fencing and electricity sources are in place, it's time to grow the type of crops/vegetable as preferred. It is important to choose the crop or vegetable variety that is suited to the local climate and market demand. Drought tolerant crops such as Sorghum, Pearl millet, Cowpeas, and Cassava can be cultivated under rainfed in most regions with no additional irrigation. These crops are also more pest and disease resistant. CBO production managers should engage local seed suppliers and extensions service providers to get updates on the latest drought, heat, pest and disease tolerant varieties before every production season.

Table 8: Common vegetable varieties in Namibia and their Characteristics.

Vegatable	Varities	Chaaceristics
Tomatoes	Roma VF', 'Moneymaker', 'San Marzano'	Resilient to heat an drought conditions, suitable for local climates
Cabbage	'Early Ball', 'Omero', 'Megaton'	Early Ball' matures early, 'Omero' has great head quality, 'Megaton' produces large heads, best for cooler seasons.
Carrots	'Dordogne', 'Champion'	Dordogne' is uniform and slender, 'Champion' is a medium-early hybrid, best in sandy loam soils.
Butternuts (Squash)	'Canesi'	Vigorous, productive early squash variety, gaining popularity.
Onions	'Mars'	Short-day variety with medium to large bulbs, suitable for winter cultivation.
Swiss Chard	'Ford hook Giant', 'Bright Lights'	Known for heat tolerance and continuous harvest potential.
Eggplant	'Black Beauty', 'Casper', 'Gretel'	Casper' offers elongated, tear-drop shaped fruit, 'Gretel' produces clusters of white elongated fruit.
Watermelon	'Crimson Sweet', 'Sugar Baby'	Crimson Sweet' is drought-tolerant, 'Sugar Baby' is small and early-maturing, suitable

4.2.5. Sowing vegetables to produce seedlings

To raise vegetable seedlings, one can use either direct sowing or sowing in nursery beds or trays. It is very important to follow sowing guidelines in terms of sowing time and sowing depth. These specifications for each vegetable is available in the vegetable production guide of Namibia available at the Namibia Agronomic board website.

Direct sowing: Vegetable with larger seeds can be sown directly into a well-prepared soil. A well-prepared soil should be loose and have good drainage and air circulation to promote healthy root development. Planting should be done during the correct season for the type of vegetable.

Nursery seedbed and sowing trays: Alternatively, seeds can also be planted in the nursery either on seedbeds or seedling trays. There are advantages associated with starting seedlings in trays or seedbeds.

- **Cost Savings on Seeds:** Each seed counts, and starting seedlings ensures better seed utilization.
- **Optimized Land Use:** The land intended for transplanting can be used for other crops up to one week before transplanting, improving land use efficiency.
- **Uniform Growth and Yields:** Transplanting uniform seedlings ensures even growth and ultimately leads to uniform yields.

4.2.6. Planting and transplanting

Transplanting seedlings to the field is an important step in vegetable growing in the garden.

- Seedlings should be transplanted at the right age not too young and not too overgrown.
- Transplant when the climatic conditions are favorable, e.g. cloudy days, frost free period, refer to planting season for the vegetable.
- Use the correct planting spacing
- Few days before transplanting, expose the seedlings to the outdoor temperature to avoid transplant shock
- Water the seedlings properly after transplanting

4.2.7. Management of vegetables in a garden

Effective crop management ensures healthy plants and high yields. Common crop management practices include:

Irrigation: Use appropriate irrigation methods that best suit the crop and conserves water. In Namibia, drip irrigation and sprinkler irrigation system is commonly used.

Table 9: Common irrigation methods at Community gardens in Namibia

Irrigation Method	Advantages	Disadvantages	Crops Best
Drip Irrigation	Efficient water use Reduces water wastage Reduces weed growth Provides consistent moisture directly to roots	High initial setup cost Requires regular maintenance Can clog if not properly maintained	Tomatoes, Cabbages, Carrots, Lettuce, Pepper, Cucumbers
Sprinkler Irrigation	Covers a large area Suitable for uneven terrain Can be Automated	Water wastage due to evaporation and wind drift Not ideal for crops with shallow roots	Corn, Butternuts, Watermelons
Furrow Irrigation	Low cost setup Simple and easy to manage Suitable for large areas	Can lead to waterlogging in heavy soils Less efficient in water use compared to drip	Potatoes, Onion, Beans, Carrots
Manual Watering	Low cost Simple to use Easy to adjust for specific needs	labour-intensive Inefficient for large areas Time-consuming	Small gardens and beds for vegetables like herbs, tomatoes,



**Drip
Irrigation**

**Sprinkler
Irrigation**



**DIFFERENT
TYPES OF
IRRIGATION
TECHNIQUES**



**Surface
Irrigation**

**Sub-Surface
Irrigation**

Figure 6: Irrigation Techniques that CBO can employ in their Horticulture

4.2.8. Pest and disease management:

Sustainable agriculture encourages the use of Integrated Pest Management (IPM) strategies. IPM is an environmentally sensitive approach to managing pests that combines various strategies to minimize the use of synthetic chemicals. IPM strategies consists of the following practices:

- **Use disease-resistant varieties:** Check with your local seed supplier.
- **Cultural Controls:** Maintaining garden hygiene by removing weeds and decaying plants to reduce pest habitats.
- **Biological Controls:** Encouraging natural predators and using biological agents to control pest populations. Biopesticides sprays such as neem seeds, chili, garlic, tobacco, etc. Have been used frequently and found to be effective. and use synthetic chemicals only as a last resort.
- **Mechanical Controls:** Employing physical barriers or manual removal of pests.
- **Chemical Controls:** Applying synthetic pesticides only as a last resort, and in a targeted manner to minimize environmental impact.

4.2.9. Other practices

Protect sensitive crops from Environmental Stress:

- Use windbreaks to shield crops from damaging winds.
- Plant frost-resistant crops or adjust planting schedules to avoid frost damage.
- Mulch to retain soil moisture and regulate temperature.

Utilize Special Practices:

- **Earthing Up:** For crops like sweet potatoes, mound soil around plants to boost yields.
- **Trellising:** Use stakes or trellises to support crops like tomatoes and cucumbers, improving air circulation and reducing pest risks.
- **Pruning:** Remove excess leaves to improve fruit quality and prevent disease.

4.2.10. Post-Harvest Handling

Proper post-harvest practices maintain produce quality and extend shelf life:

- **Cleaning:** Remove dirt and damaged produce.
- **Cooling:** Use solar powered cool rooms or low-cost cooling methods such as charcoal coolers, evaporative cooling devices or claypot coolers to preserve freshness.
- **Packaging:** Use durable, eco-friendly packaging to protect produce and improve marketability.
- **Storage:** Store produces facilities that regulate temperature and humidity.
- **Value Addition:** Process surplus produce into value-added products like jams or dried fruits to increase income and create jobs.

4.2.11. Marketing of produce

Developing a strong marketing strategy as part of the business plan is essential for ensuring that community-based horticulture projects have a good market excess which will help to generate sustainable income. Collaborating with local businesses and forming cooperatives can significantly enhance market access and profitability.

Table 10: Alternative marketing Strategies for Community-Based Horticulture Enterprises

Marketing Method and Description	Advantages	Challenges
Local Markets & Informal Vendors Selling directly at local markets or through street vendors.	Quick sales, direct consumer feedback, minimal transportation costs.	Price fluctuations, competition from larger suppliers.
Contracts with Restaurants & Hotels Supplying fresh produce to local businesses.	Reliable income, higher prices for premium produce.	Requires consistent supply, meeting quality standards.
Retail Partnerships (Supermarkets & Shops) Supplying fresh produce to retail stores.	Stable demand, potential for bulk sales.	Stringent quality control, potential delays in payments.
Farmers' Cooperatives & Associations Joining cooperatives for bulk marketing and better bargaining power.	Shared resources, increased market access, better pricing.	Requires organization, co-operation, and management skills.
Farmers' Markets & Agri-Fairs Selling produce directly to consumers at dedicated agricultural events.	Higher prices, direct customer engagement, marketing exposure.	Seasonal availability, competition with larger farmers.
Community-Supported Agriculture (CSA) & Subscription Models Households subscribe to receive regular produce deliveries. Particularly in urban areas	Guaranteed income, strong customer relationships	Requires reliable production and efficient delivery logistics.
Online & Social Media Marketing Promoting produce via WhatsApp, Facebook, or local e-commerce platforms.	Wide reach, low marketing costs, direct buyers.	Requires digital literacy, potential logistical challenges
Agro-Processing & Value Addition Processing produce into dried, frozen, or packaged goods (e.g., dried fruits, pickles, sauces).	Higher profit margins, extended shelf life, access to niche markets.	Requires investment in processing equipment and compliance with food safety standards.
Government & Institutional Buyers Selling to schools, hospitals, prisons, and government programs.	Bulk sales, reliable demand, potential for long-term contracts.	Bureaucratic procurement processes, possible delays in payments.
Export Markets & Regional Trade Selling produce to neighbouring countries through established trade routes.	High revenue potential, access to larger markets.	Requires adherence to export regulations, logistics, and quality control.

There are number of organizations that can support farmers in improving their access to the market for their produces. Engaging with these organizations can provide the necessary support and guidance to establish successful marketing channels structures, thereby sustainability and community-based enterprises.

4.3 The role of different stakeholders in horticulture business

There is a fast network of Stakeholder that support horticultural enterprises. The table below summarizes the roles of common stakeholders:

Table 9: Organizations that Support Farmers in Market Access

Organization	Role in Market Access	Contact/Website
Agro-Marketing and Trade Agency (AMTA)	Facilitates local and export market access, manages fresh produce hubs.	www.amta.na
Namibian Agronomic Board (NAB)	Regulates and promotes the production and marketing of horticultural crops.	www.nab.com.na
Namibia Farmers' Union (NFU)	Supports small-scale farmers with training, funding, and market access.	www.nfu.org.na
Namibia Organic Association (NOA)	Assists organic farmers with certification and market entry.	www.noa.org.na
Namibia Trade Forum (NTF)	Supports farmers in accessing regional and export markets.	www.ntf.org.na
Ministry of Agriculture, Water, and Land Reform (MAWLR)	Provides extension services, market links, and farming guidance.	www.mawlr.gov.na

4.4 How CBOs can get involved in the horticulture enterprise

There are several ways in which CBOs can participate in horticulture enterprise:

4.4.1 Adopt Sustainable and climate-resilient Agriculture Practices:

CBOs can adopt sustainable and climate resilient farming methods to grow vegetables. Products can be sold to lodges, hotels, and restaurants, ensuring a reliable income for the community. By using sustainable practices such as crop rotation, composting, and cultural pest control, conservancies can produce high-quality, eco-friendly vegetables that attract both local markets and eco-conscious tourists.



4.4.2 Contract Farming with Local Lodges and Businesses:

One-way CBOs can engage in what is called contract farming with local lodges, restaurants, or retailers. In this setup, the conservancy agrees to grow a certain quantity of vegetables and sell them to selected businesses at an agreed price. This provides a stable market for the produce and reduces the financial risks for the farmers in the conservancy. It's a way to start a horticulture business with clear expectations and financial support from local buyers. This form of farming, the CBOs are expected to have a continuous supply of vegetable as per agreement.

4.4.3 Join Local Value Chains through AMTA:

Conservancies can work with the Agro-Marketing and Trade Agency (AMTA), which supports small-scale farmers by helping them access larger markets. AMTA can help link conservancies to a wide range of buyers, from wholesalers to supermarkets, ensuring that the produce grown in the conservancies reaches more consumers. By being part of this larger network, CBO can benefit from marketing, distribution, and potential economies of scale.

4.4.4 Develop Community Gardens and Individual SME Gardens:

CBOs can encourage community gardens or individual backyard gardens where families grow their own vegetables. These small gardens not only improve food security within the community but also create an opportunity for people to generate extra income by selling surplus produce. Additionally, CBOs can support the formation of Small and Medium-sized Enterprises (SMEs) where individuals or groups start their own small-scale vegetable businesses. These SMEs can be linked to a cooperative producer that allows them to pool their resources, share knowledge, and market their produce more effectively.

4.4.5 Provide Ongoing Capacity Building and Training:

To ensure the long-term success of horticultural activities, CBOs should ensure proper training and capacity building. This can include providing training in the best agricultural practices, sustainable farming techniques, financial management, and marketing skills. Training can be done through workshops, field visits, or collaboration with experts from NGOs, government agencies, and universities. By continually building the skills of community members, conservancies can ensure that everyone is equipped with the knowledge and tools needed to succeed in the horticulture business.

4.5 How to set up a horticulture business in CBOs:

Setting up a horticulture business in a CBO requires careful planning to ensure feasibility and long-term sustainability. Given Namibia's environmental challenges, such as water shortages, extreme temperatures, and long distances to markets, horticulture demands a strategic approach. CBOs must assess their strengths, weaknesses, opportunities, and threats to develop a resilient business plan.



4.5.1. Key Steps to Establish a Community-Based Horticulture Enterprise:

Step 1 Make sure there is secure water supply source

A reliable water source is the foundation of any horticulture enterprise. Depending on the location of the proposed horticultural enterprise, the following need to be done:

- Assess water availability, quantity and sources e.g. boreholes, piped water, existence of river or canal etc.
- Testing the quality of water making use of professional experts and accredited laboratory facilities. Water quality testing can be done at NamWater laboratories or other private labs e.g. Analytical Laboratory Services (AnaLab), which specializes in both water soil chemistry, feed nutrient and geochemistry.
- Determine borehole capacity and test water suitability for irrigation through institutions like the Ministry of Agriculture, Water, and Land Reform (MAWLR) and

Step 2 Conduct Soil Analysis to establish soil fertility requirements

Soil quality significantly influences crop success. CBOs should:

- Collect and send soil samples to laboratories such as MAWLR Soil Laboratory or the GIZ-supported mobile laboratory in Rundu or AnaLab
- Follow recommended soil amendments and fertilization plans to enhance productivity.
- Choose crops that suit the soil conditions and available irrigation strategies.

Step 3 Developing a Business Plan and Budget

To secure funding, CBOs must develop a well-structured business plan, highlighting sustainability, market access, and financial viability. A comprehensive business plan helps CBOs manage resources efficiently. The Namibia Agronomic Board (NAB) have developed very useful crop budget guides for most vegetables and crops grown in Namibia (NAB, 2024). The budget guide should be done for each crop and it should outline the following:

- Budgeting for essential inputs like seeds, fertilizers, pesticides, and infrastructure (storage sheds, fencing, and irrigation systems).
- Labour requirements and cost
- Irrigation system and water cost
- Packaging, transport, telephone and marketing strategies.
- Special considerations, such as elephant-proof fencing in conservancies with wildlife challenges.

Step 4 Look for available donor funding and subsidies

Community-Based Organizations (CBOs) looking to establish a horticultural enterprise have several options for securing funding. To secure funding, CBOs must develop a well-structured business plan, highlighting sustainability, market access, and financial viability. The table below list /highlights options for securing funding for a horticultural business enterprise.

Table 10: Financial support and opportunities for community gardening in Namibia.

Environmental Investment Fund (EIF)	Provides grants and financial support for sustainable agricultural projects, particularly those promoting conservation and climate resilience. CBOs can apply through EIF's funding programs, ensuring their projects align with environmental sustainability goals. CBOs can apply for these grants by submitting proposals during EIF's call for proposals.
AgriBank of Namibia	Offers loans for agricultural development, including horticulture. CBOs can access tailored financial products, such as the Emerging Farmers Loan, to invest in infrastructure, equipment, and inputs. They offer financing options for the entire agricultural value chain, with specific products designed for emerging farmers, women, and youth.
Government Grants and Subsidies	Through the Ministry of Agriculture, Water, and Forestry (MAWF), CBOs may qualify for government-supported programs that provide financial assistance, training, and subsidized inputs such as the Horticulture Support and Value Chain Development Scheme. This program provides subsidies to registered and approved farmers for horticultural production. The subsidies are issued through vouchers against quotations obtained by the farmer.
Non-Governmental Organizations (NGOs)	Organizations like GIZ, NACSO, and NNF offer funding and technical assistance for CBOs engaging in community-driven agriculture. These NGOs focus on capacity-building and linking CBOs to markets.
Private Sector Partnerships	CBOs can form savings groups or access microloans through local cooperative banks and financial institutions, making it easier to finance startup costs incrementally.

Step 5 Implement the project and ensure sustainability

- Once plans and resources are in place, CBOs should develop an implementation strategy that divides the project into manageable phases:
- Use efficient irrigation methods and sustainable farming practices to optimize yields. Seeking training and technical support from government extension officers or other agricultural experts.
- Explore affordable or free training opportunities to equip local community members with the necessary skills. This approach not only minimizes costs but also fosters community involvement and job creation.

Training providers	Types of training provided
Ministry of Agriculture, Water, and Land Reform (MAWLR)	The MAWLR offers farmer training programs through its Agricultural Development Centers (ADCs). These centers provide advice on soil fertility, fertilizer requirements, and other essential farming practices. Conservancies can consult the MAWLR for guidance and access to training resources.
Agribank of Namibia	Agribank provides training on various agricultural topics, including fruits and vegetable production, soil and water management, and infrastructure maintenance. These training sessions are designed to enhance the skills of farmers and can be beneficial for conservancies aiming to develop horticultural projects.
Organic Association (NOA) and Namibia Nature Foundation (NNF)	These organizations have conducted horticulture training for small-scale farmers, focusing on organic farming practices. Such training programs can equip community members with sustainable farming techniques suitable for conservancy-based horticulture enterprises.
Agra Agricultural Academy	Offers training and mentoring programs aimed at farm workers, supervisors, and managers at both introductory and advanced levels. While some courses may have fees, they also provide tailored support services that could be beneficial for conservancies.
Other Private Entities e.g. Suncrest Farming Solutions	Provides a wide range of agricultural services including training, advisory and extension services

Once plans and resources are in place, CBOs should develop an implementation strategy that divides the project into manageable Phases:

Infrastructure development

Infrastructure plays a big role in any farming operation. Having a well-established and easy to manage infrastructure for a horticulture enterprise enhances success and minimizes losses. Infrastructure such as Water pumps/ tanks, water pipelines, irrigation system and seedling nurseries and produce handling facilities such as packing areas and cool rooms are essential. Prominent service providers such as Suncrest farming solution and Skydrip irrigation are among those that can offer consultations and services on infrastructure development.

Training for technical staff

It is essential that the technical team receive training in crop production and handling to ensure that they are equipped with the necessary skills and knowledge on basic crop production practices. This will ensure the efficient use of resources and safety of the workers, the environment and the consumer of vegetables.

Table 13: Horticulture trainers in Namibia

Horticulture Training Provider	Types of training provided
Ministry of Agriculture, Water, and Land Reform (MAWLR)	The MAWLR offers farmer training programs through its Agricultural Development Centers (ADCs). These centers provide advice on soil fertility, fertilizer requirements, and other essential farming practices. Conservancies can consult the MAWLR for guidance and access to training resources.
AgriBank of Namibia	Agribank provides training on various agricultural topics, including fruits and vegetable production, soil and water management, and infrastructure maintenance. These training sessions are designed to enhance the skills of farmers and can be beneficial for conservancies aiming to develop horticultural projects.
Namibian Organic Association (NOA) and Namibia Nature Foundation (NNF)	These organizations have conducted horticulture training for small-scale farmers, focusing on organic farming practices. Such training programs can equip community members with sustainable farming techniques suitable for conservancy-based horticulture enterprises.
Agra Agricultural Academy	Agra offers training and mentoring programs aimed at farm workers, supervisors, and managers at both introductory and advanced levels. While some courses may have fees, they also provide tailored support services that could be beneficial for conservancies.
Private entities (For example: Suncrest farming solution and Skydrip Irrigation)	Private entities such as Suncrest farming solution: Suncrest farming solutions provides a wide range of agricultural services including training, advisory and extension services.

Procurement of production inputs

Production inputs such as seed, fertilizers, need to be obtained in time to avoid unnecessary delays. It is also important to acquire production inputs that are easy to handle and safe for the user, and consumer.

Table 14: Production inputs for a horticulture enterprise

Category	Inputs Needed	Purpose
Seeds & Planting Material	Certified seeds, grafted seedlings, cuttings, tubers	Ensures high yield, disease resistance, and quality produce
Soil & Water Management	Organic & synthetic fertilizers (NPK, compost, manure, lime, biochar), mulching materials,	Improves soil fertility, moisture retention, and nutrient balance
Irrigation	Drip irrigation, sprinklers, water pumps, storage tanks	Ensures consistent water supply and efficient water use
Crop Protection	Pesticides, fungicides, herbicides, insect-proof nets, biological pest control (predatory insects, microbial solutions)	Prevents pests, diseases, and weeds from affecting production
Farm Equipment & Tools	Hand tools (hoes, rakes, pruners, knives), sprayers (manual/motorized), wheelbarrows, small tractors	Facilitates planting, maintenance, and harvesting
Infrastructure	Shade nets, tunnels, storage sheds, cold rooms, packing areas, fencing	Provides controlled growing conditions and secure storage
Energy & Power	Solar panels, generators, backup batteries	Ensures power supply for irrigation, cold storage, and lighting
Labour & Logistics	Skilled workers, record-keeping systems (manual/digital), farm management software	Ensures efficiency, monitoring, and long-term planning
Market & Logistics	Transport (trucks, motorbikes), crates, packaging materials	Ensures produce reaches markets fresh and in good condition

Production and management of resources

This is the phase for actual agricultural practices including land preparation, crop establishment and crop management. It is essential to monitor and manage resources at every stage of production to minimize risks and challenges and ensure sustainability. Have a trained team with an understanding of the long-term impact of the project on the communities and the environment is crucial.

Production and management of resources: Marketing and distribution

This phase includes reaching out to potential customer and consumers, this can be done via social media marketing and other advertising outlets. This phase also includes the delivery of farm produce to the consumer, ensuring that the produce reaches the consumer in its highest possible quality and on time.

Monitoring and evaluation

Ideally, monitoring needs to be part of every major phase to ensure that appropriate methods and practices are followed and that challenges and risks are identified and mitigated. However, it is important to conduct an internal evaluation of the enterprise at least once a year. This is an opportunity to engage all stakeholders, identify challenges and plan the course ahead. The evaluation process should include the assessment of capital and funds, Assessment of infrastructure and resources and the evaluation of worker moral and performance.

Maintain detailed financial records and monitor expenses

Implementing an effective financial system and maintaining accurate records are crucial for the success of CBO's horticulture business. Utilizing accounting applications on smartphones can simplify this process, making it more accessible and efficient. Some recommended free accounting apps suitable for CBOs include:

Table 15: Financial management record tools that can be used by CBOs

Application	Features
Wave Accounting	A free, user-friendly accounting app that offers features such as income and expense tracking, invoicing, and receipt scanning.
Zoho Books	Provides comprehensive accounting solutions, including expense tracking, invoicing, and financial reporting. The app offers a free plan for businesses with annual revenue below N\$700,000, making it suitable for CBOs with limited income.
Manager.io	A free accounting software that includes features such as invoicing, expense tracking, and financial reporting. It's available for desktop and has a cloud-based version accessible via smartphones

4.6 Legal and Institutional Requirements for horticulture enterprise

It's important to ensure that the horticulture business complies with legal and institutional regulations. This includes registering the business with relevant authorities, such as the Namibia Agronomic Board (NAB), which oversees agricultural activities in Namibia. CBOs should also familiarize themselves with Good Agricultural Practices (GAP) to ensure their produce meets local and international standards for those aiming to export their products. Adhering to these standards will help the CBO maintain a good reputation and access broader markets. Additionally, the CBO should stay informed about regulations concerning water usage, land ownership, and labor laws to ensure the business operates legally and sustainably.

Table 16: Legal and institutional framework for horticultural enterprises in Namibia

Category	Requirement	Regulating Authority
Business Registration & Compliance	NAB registration for controlled crops	Namibia Agronomic Board (NAB)
	Legal entity registration (company, trust, or cooperative)	Business and Intellectual Property Authority (BIPA)
	Trading license for processed/value-added products	Ministry of Industrialization and Trade (MIT)
Agriculture Standards & Certifications	Compliance with good Agricultural Practices (GAP)	NAB & Namibia Standards Institution (NSI)
	Certification for produce meeting market standards	Namibia Standards Institution (NSI)
	Pest control & Phytosanitary compliance	Ministry of Agriculture, Water and Land Reform (MAWLR)
Environmental & Land Use Regulations	Water use permits for boreholes & irrigation	Ministry of Agriculture, Water and Land Reform (MAWLR)
	Land lease/ownership approvals for communal land	Traditional Authorities & Land Boards
Labour Laws & Employment Compliance	Compliance with fair wages & Labour Wages & Labour Conditions	Namibia Labour Act
	Worker registration for Social Security benefits	Social Security Commission (SSC)
Market & Export Compliance	Tax registration for VAT & Income Tax	Namibia Revenue Agency (NamRA)
	Export permits for international trade	Ministry of Agriculture, Water and Land Reform (MAWLR)

4.7 Stakeholders in the horticulture business

There is a fast network of stakeholders that support horticultural enterprises. The table below lists key stakeholders and their roles:

Table 17: Stakeholder for supporting horticulture business enterprise

Stakeholder	Features
Ministry of Agriculture, Water and Forestry (MAWF)	Provides agricultural extension services, training, and awareness on improved farming techniques. It also offers access to subsidized ploughing services and water management/testing.
NGOs (NACSO, NNFU, NOA, Suncrest Farming Solutions, Skydrip Irrigation)	Offer training in sustainable farming and help improve farming skills. Namibia Organic Association (NOA) Helps farmers meet organic farming standards and provides guidance. Suncrest farming solutions and Skydrip irrigation Namibia provides a wide range of agricultural services including training, advisory and extension services. They also provide production inputs such as seed, fertilizer and Farm infrastructure such as irrigation and shading infrastructures.
Environmental Investment Fund (EIF)	EIF provides grants to support CBOs in implementing sustainable projects, including horticultural enterprises. Funding is available through grant facilities targeting climate resilience, biodiversity conservation, and land restoration. These grants are designed to empower local communities, including CBOs, women's groups, youth groups, non-profit organizations, and people living with disabilities, to implement environmentally sustainable projects. To access EIF funding, CBOs must submit proposals when calls for applications are announced. Successful proposals should outline clear objectives, sustainable farming methods (e.g., water-efficient irrigation, organic production), and expected community benefits. EIF has previously funded Initiatives under programs like Empower to Adapt, which directly supported community-led agricultural and conservation efforts.
Namibia Agronomic Board (NAB)	Advises on market trends, helps farmers register their businesses, and ensures compliance with market regulations to facilitate successful produce sales. They also regulate the import of fresh produce and grains, ensuring that local producers have access to fair markets.
Private Sector and Agribusinesses e.g. Agri corporation	Supply farming tools, seeds, and fertilizers, and may buy produce.
Commercial Banks and Financial Institutions (Agri Bank, FNB, Social Security commission)	Offer loans and financial products and services to fund the enterprises.
Farmers' Cooperatives	Help farmers sell their produce together for better prices.
Research Institutions and Universities (UNAM, NUST, and Various VTCs)	Provide research-based knowledge on crop improvement, sustainable farming methods, and climate adaptation strategies.

Table 18: Key contacts for stakeholders in the horticulture enterprise in Namibia

Organization Institution	Telephone	Email	Website/ Social Media
Analytical Laboratory Services 77 Newcastle Street, Northern Industrial Area, Windhoek, Namibia.	061 210 132 081 144 3063	info@analab.com.na	analabnam.com
Ministry of Agriculture, Water & Land Reform (MAWRL) Soil Laboratory Private Bag 73784, Windhoek, Namibia	061 208 7111	Not available	Not available
GIZ Farming for Resilience (F4R) Project Laboratory (Rundu) MAWLR, Rundu, Eugene Kakukuru Street, Office 32.	081 855 6916	Not available	Not available
Namibia National Farmers Union (NNFU) Windhoek, Khomas Region, Namibia	061 271 117	info@nnfu.org.na	nnfu.org.na
Namibian Organic Association (NOA) Windhoek, Khomas Region, Namibia	061 248 345	info@noa.org.na	noa.org.na
Namibia Agronomic Board (NAB) 30 David Hosea Meroro Road, Windhoek	061 379 500	nab.queries@nab.co m.na	nab.com.na
Food and Agriculture Organization (FAO) Namibia 38-44 Stein Street, UN House 2nd Floor, Klein Windhoek	061 224 094	FAO-NA@fao.org	FAO Namibia
NAMWATER, Scientific Services 776 Iscor Street, Northern Industrial Area, Windhoek	061 290 3777		



5. SMALL SCALE FISHERIES/AQUACULTURE

5.1 Introduction to inland aquaculture with emphasis on small scale aquaculture

5.1. What is aquaculture?

Aquaculture is fish farming in ponds, tanks, or cages, offering food security, income, and employment. Suitable warm-water species in Namibia include Three-spotted tilapia, African catfish, Redbreast tilapia, and Common carp. Systems include earthen or concrete ponds, cages, aquaponics, and integrated recycling systems. Extensive and semi-intensive culture systems are common among small-scale farmers.

5.1.2. Advantages of starting a small-scale fish farming business.

- Aquaculture has great potential for food production, a great source of income and employment creation for the people involved in this industry (Shava & Gunhidzirai, 2017).
- Primary source of protein, also rich in vitamins and minerals - Omega-3 fatty acids.
- Fish are healthier compared to red meat.
- Tolerates high densities.
- Commercial fish farming business allows for large supplies of fish in the market. This helps preserve natural ecosystems and reduce the pressure on natural fish population due to overharvesting in the river systems.
- Easy to manage. Require small pieces of land and still produce very high yields.

5.1.3. Species selection

The fish species with the greatest potential and the most suitable to culture, well-suited to the local climate based on the distribution indicators, particularly to the northern part of Namibia's warm tropical like environment are (Fig.7):

- Three-spotted tilapia (*Oreochromis andersonii*)
- African catfish (*Clarias gariepinus*)
- Redbreast tilapia (*Coptodon rendalli*)
- Common carp (*Cyprinus carpio*)

Fish farming in Namibia presents a promising opportunity for agribusiness due to increasing local demand driven by declining natural fish populations. The cultivation of species such as three-spotted tilapia and catfish is predominantly found in the northern regions, including Oshana, Oshikoto, Omusati, Oshana, Otjozondjupa, and Kunene. In the northeastern regions like Zambezi and Kavango (West and East), redbreast tilapia is the preferred species for aquaculture. Nile tilapia (*Oreochromis niloticus*), known for its rapid growth rate, is identified as a potential candidate for freshwater aquaculture; however, it is an exotic, invasive species and requires a valid import permit to be farmed legally in Namibia. Overall, the aquaculture sector in Namibia holds significant potential for growth and profitability when managed at an appropriate scale.

5.1.4. Types of aquaculture systems

I. Pond system or land-based system

- Earthen ponds or dug out
- Concrete ponds
- Tanks
- Cement raceways
- Tarpaulin ponds
- Irrigated or flow-through systems



a) Earthen pond



a) Earthen pond



a) Earthen pond



a) Earthen pond

Figure 3: Different types of fishponds

The earthen ponds, concrete ponds, plastic tanks including rainfed ponds and surface depressions are most common in Oshana, Ohangwena, Oshikoto, Omusati, Zambezi, Kunene, Kavango East and Kavango West regions. This is because they are cheaper, and carry the least risk, making them appropriate for resource poor farmers. In the Oshikoto region {Oshivelo, Tsintsabis and Tsumeb areas), Otjozondjupa, Khomas, Omaheke, Hardap, Karas and Erongo regions, fish farmers prefer livestock reservoirs and concrete ponds.

ii. Cage system

Cages are submerged into water that contains fish. This includes cages, pens and enclosures, and inshore/offshore cultivation.

iii. Aquaponics

Aquaponics involve the integration of fish farming with hydroponics, where fish waste is used as a fertilizer for plant growth. The business model is to sell both fish and produce, targeting environmentally conscious customers.

iv. Integrated recycling system

This approach uses large plastic tanks containing fish that are placed inside a high tunnel greenhouse. The water in the plastic tanks is circulated. It is a technology of farming aquatic organisms by reusing the water in production based on the use of mechanical and biological filters. Beside the tanks, lie the hydroponic beds which use the water from the fish tanks. And farmers always cultivate several herbs and other vegetables like basil, parsley, spinach, peppers etc.

5.1.5. Stakeholders in the enterprise

The Ministry of Fisheries and Marine Resources (MFMR) regulates aquaculture, provides extension services, fingerlings, and disease control. NGOs provide capacity building and technical support. Commercial banks and financial institutions offer credit. Private sector suppliers provide feed and inputs.

NGOs

Such as Food and Agriculture Organisation (FAO), Namibia Nature Foundation (NNF), World Wildlife Fund for Nature (WWF), Environmental Investment Fund of Namibia (EIF), Integrated Rural Development and Nature Conservation (IRDNC), Namibia Development Trust (NDT).

- Provide technical assistance and support across the value chain.
- Provide capacity building on aquaculture and inland fisheries.
- Provide inputs to policies related to agriculture sectors and inland fisheries.

Commercial Banks and other possible funders

Provide credit facilities/financial assistance to both small-scale and commercial fish farmers.

- Commercial banks (Bank Windhoek, FNB etc.)
- Agricultural Bank of Namibia (Agribank)
- Development Bank of Namibia (DBN)
- Regional councils
- Social Security Commission (SSC)

Private Sector

Supply agro-inputs to farmers and services across the industry value chain e.g., Feed Master, Namib Mills, Fishing industries/companies in terms of fish meal for fish feed production / formulation.

5.1.6. Fishery reserves or inland fisheries reserves

Namibia has eight gazetted fisheries reserves where fishing is regulated to protect aquatic biodiversity and ecosystems. Communities manage these areas for sustainable use and benefit through spillover effects, recreational fishing, and eco-tourism.

5.1.7. Fish farming system

Fish farming may range from 'backyard' subsistence ponds to large scale industrial enterprises based on farming systems which are expressed in terms of input and management levels.

5.1.8. Extensive culture

Fish production system relies on natural food. Economic and labour inputs are usually low. The system's productivity is relatively low. It has a stocking density of 3-5 fish/m³.

5.1.9. Semi-intensive culture

Aquaculture farming methods depend on a combination of natural and supplemental feeds. It requires moderate levels of input, and fish production is increased using fertiliser and/or supplementary feeding. It has a density of 5-70 fish/m³.

5.1.10. Intensive culture

Intensive fish farming involves a high level of input and high fish stocking densities by stocking the ponds with as many fish as possible. It has a density of 70-75 fish/m³ or more and uses high-capacity tanks, plus an aeration system. It requires a 70% water change. Small-scale fish farmers in Namibia are mostly practicing extensive and semi-intensive farming systems due to lack of input levels and proper facilities.

5.1.11. Types of pisciculture/fish farming

Monoculture

This system allows farming a single species of fish in one pond e.g., only tilapia. It offers high production and quality.

Polyculture or mixed fish farming

Polyculture is the rearing of different species of compatible fishes in a shared pond e.g., polyculture of tilapia and common carp together or tilapia and catfish. However, in the event of polyculture involving catfish, tilapia should either be stocked first or should be of bigger size than catfish to avoid serious cannibalism. The stocking ratio should be 3-5 tilapia: 7 catfish.



Polyculture of carps (Carballo et al., 2008)

This culture allows growing of fish in either all female or male species. Examples are all male catfish or sex reversed fish.

5.1.12. Site selection

Selecting an appropriate site is crucial for the success of any new aquaculture project. Key natural factors to consider include land, water, soil type, topography, and climatic conditions.

I. Physical location

When selecting a location for a fishpond, it is crucial to position it near the owner's residence for effective management and to mitigate risks of theft and predation. The site should be free from flooding and pollution.

to prevent business disruption, ideally slightly lower than the main water source to utilize gravity for filling the ponds at minimal cost. Additionally, the area must have a reliable transportation system.

II. Land Uses

Explore neighbouring land uses, structures and spaces. Avoid areas that are near the crop fields or polluted areas. Some farmers usually use a lot of fertilizers and pesticides in their crop fields for better production. If these chemicals get mixed with water, they pollute the water which may affect the fish farm.

III. Water supply

Water is obviously important because it is the growing medium for the cultured fish. No aquaculture venture can expect to succeed without a plentiful and constant supply of good quality clean water.

Water sources for aquaculture systems

- Rainfall
- Surface runoff
- Tap water (should be exposed to sunlight for 24 hours before stocking)
- Springs
- Boreholes (water has low oxygen and should be aerated or splashed while filling pond)
- Wells
- Water bodies such as streams, rivers, lakes, reservoirs or canals.

IV. Water quality

Chemical testing of water is essential due to the specific requirements of cultured aquatic organisms. On-site measurements must be conducted for key water quality parameters, including dissolved oxygen, temperature, salinity, pH, ammonia, nitrate, and nitrite.

V. In accordance with the location, sensitivity of the area, and land usage patterns, it is essential to conduct a chemical analysis of both major and minor elements, as well as heavy metals, in all potential water sources submitted for assessment. The results of these analyses will be evaluated against the optimal criteria established for fish farming.

VII. Soil quality

To construct an earthen pond, it is essential to have at least 20% clay content to ensure effective water retention and minimize seepage. Mixing clay with gravel or sand is recommended for optimal soil texture, while sandy soils should be avoided due to their tendency to allow high seepage rates. An adequate pH range for the soil is between 6.5 and 9; if the soil is acidic, it is advisable to incorporate lime or wood ashes into the pond bottom prior to filling (Carballo et al., 2008; Murnyak, 2010).

VIII. Climate

Tilapia and catfish grow well in warm water temperatures of 25-30 °c, typically found in northern regions of the country, including the Zambezi region, Kavango East and West, and the Central Northern regions (Oshana, Omusati, Oshikoto, Ohangwena), as well as the Kunene region.

5.1.13 How CBOs can get involved in the enterprise

Aquaculture can enhance income in conservancies through individual or community projects, utilizing existing frameworks. Harvest distribution follows an approved benefit plan.



5.2 How to set up an aquaculture enterprise

5.2.1 How to start a fish farming business?

I. Site assessment and pond inspection

The assessment of suitable land for pond construction takes into account topography, land use, water source and quality, soil type, and flood risks. This evaluation is conducted by the MFMR's regional technical teams upon request to determine the viability of fish farming. Farmers receive a site assessment report detailing the findings. Once approved, the MFMR grants permission to proceed with the construction and setup of a fish farm or to receive fingerlings.

II. Pond design and construction

Once a site is surveyed, the CBO must decide on pond details and consult an inland aquaculture office for expert guidance.

During the process of designing ponds, decisions on various pond dimensions should be made:

- Total area of the pond's water surface or actual size.
- Length and width of the pond's water surface.
- Water depth and total depth at the deep end.
- Slope of the embankments (dykes) and pond bottom.
- Width of the embankments.

The ideal depth for fishponds is between 7.5 meters and 2 meters. The bottom should be either level or sloped for complete drainage. Additionally, other dimensions such as area, volume, and carrying capacity should be calculated as demonstrated in the examples provided.



Cross-section of a rectangular pond

Calculating surface area and volume of a pond

Suppose a rectangular earth pond has a length of 30 meters and a width of 20 meters with the depth/height of 1.5 meters. And if the desired stocking density is 5 fish per cubic meter, the calculation would be as follows:

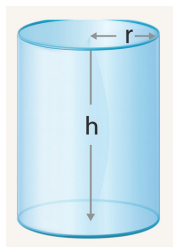
Area=	Carrying capacity =	Volume=
Length x Width	Length x Width x Height	Surface area x Stocking density
30m x 20m	30m x 20m x 1.5m	900 m ³ x 5 fish/m ³
600 m ²	900 m³ (cubic metres)	4500 fish
(square metres)		

This means that the pond can effectively accommodate 4500 fish with the specified dimensions and desired stocking density.

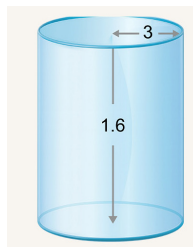
Circular pond

Determine the surface area of the circular pond by multiplying the radius by itself and then by Pi (πr^2). The area is then multiplied by the pond depth to give the volume in m³.

Example:



$$\begin{aligned}\text{Area} &= \pi r^2 \\ &= 3.14 \times (3 \text{ m})^2 \\ &= 3.14 \times 9 \text{ m}^2 \\ &= 28.26 \text{ m}^2\end{aligned}$$



$$\begin{aligned}\text{Volume} &= \text{Area of base} \times \text{Height} \\ &= \pi r^2 \times h \\ &= 3.14 \times 3 \times 3 \times 1.6 \\ &= 45.22 \text{ m}^3\end{aligned}$$

The recommended stocking density for fish is between 5 to 10 fish per cubic meter of pond surface area, depending on the species or farming system used. Exceeding this density can lead to overcrowding, causing stress among the fish, deteriorating water quality, increased disease risk, and stunted growth.

III. Suitable fish species

The most important considerations for species selections are Demand and market price, growth rate, adaptability to the environment, easy to manage, availability of seeds/fingerlings.

IV. Stocking

CBOs should request fingerlings from MFMR after pond completion. Maintain ponds with regular water quality checks. Stock tilapia at 5-70 fingerlings per cubic meter and catfish at 70-75 per cubic meter, ensuring good water quality. Select quality, uniform-sized fingerlings weighing 5-72 grams to avoid dominance and cannibalism.



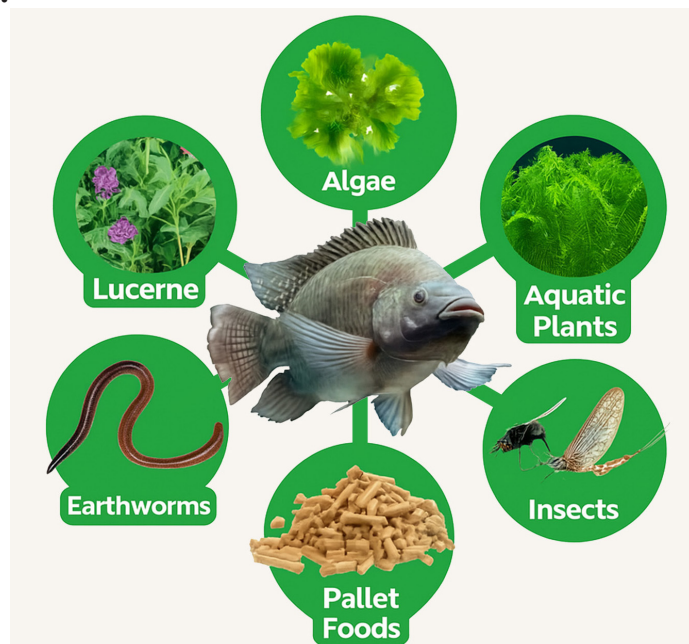
Figure 4: Catfish fingerlings (Source: Carballo et al. 2008)

V. Feed and feeding

Feeding is crucial in commercial fish farming, requiring high-quality food and the promotion of natural plankton through fertilization. Care must be taken to avoid overabundance of plankton, which can lead to green water, while clear water signifies low fertility.

Fish have a diverse diet that includes commercially available pellets made from cereals, fish meal, and greens, or these can be homemade to ensure a balanced intake of essential nutrients.

What does Tilapia eat?



Food for tilapia and catfish species

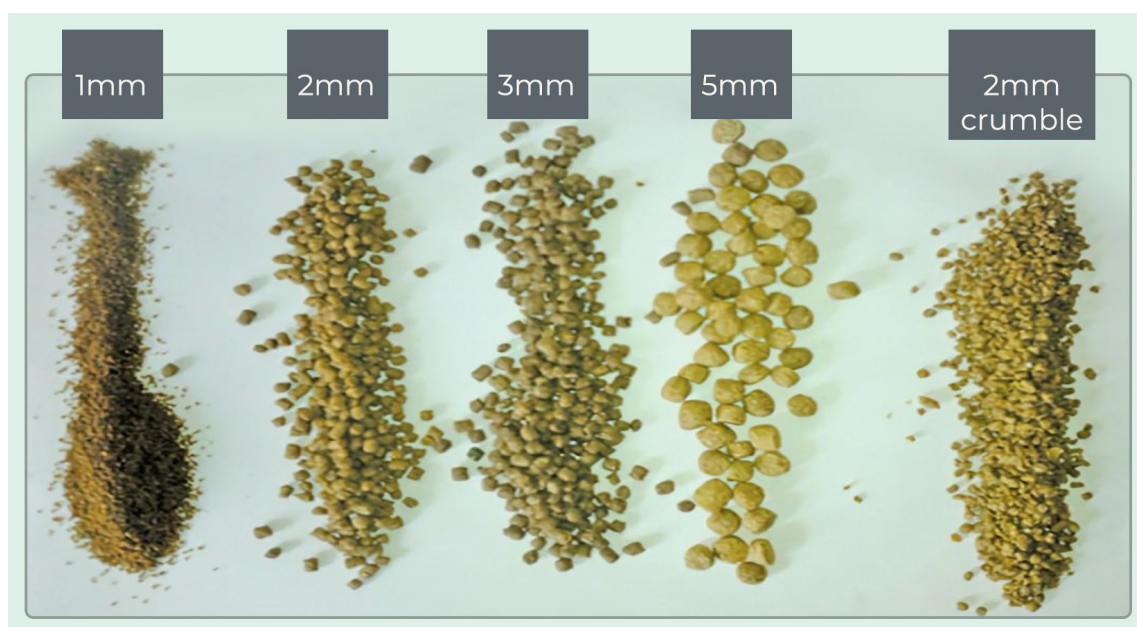


Figure 5: Commercial feed for tilapia and catfish species

Feeding the correct amounts

To avoid overfeeding or underfeeding, the right amount of feed must be given each time including the right size feed. The amount of feed to be provided depends on the fish's body weight. The right amount of feed is calculated by using feeding rate.

Life Stage	Fish Size	Feed Type	Feed Size (mm)	Feeding rate (% body weight)	Fedding Frequency
Fry	1-2	Powder/mash	0.5-1.5	10-6	4-8
Fingerling	3-20	Powder/crumble	1.5-2	6-4	3-4
Juvenile	20-100	Crumble/pellets	2	4-3	2-3
Grower	100-250	Floating/sinking pellets	3-6	3-2	2-3
Broodstock	150-300	Floating/sinking pellets	3-6	2	2-3

Feeding chart for tilapia

Feeding at the right time each day

- The feeding frequency refers to how many times fish in the pond are fed each day.
- This frequency depends on various factors, including feed availability, labor costs, pond size, the farm manager's preferences, and the feeding behavior of the cultured species.

VI. Care, maintenance and monitoring:

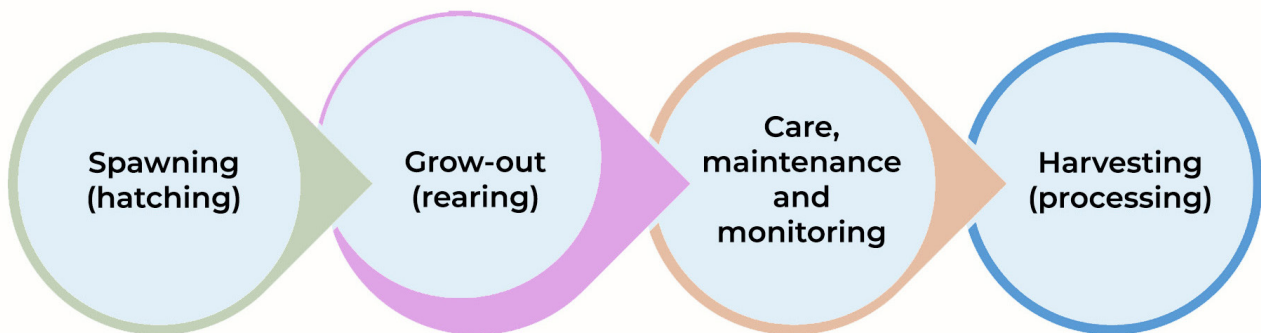
Daily management of fish include:

- Feed regularly and appropriately.
- Check water quality.
- Inspect for leaks and replenish water to maintain the desired level.
- Grade and adjust the feeding rate.
- Monitor fish health regularly.
- Add manure or compost to stimulate natural food.
- Watch for predators (frogs, birds, snakes, etc.) and maintain a clean pond environment.

NB: Chemicals are highly discouraged in their use.

Production and life cycle

The key main events or phases in aquaculture production or fish farming timeline include (Fig. 77):



The fish farming cycle involves acquiring 5-729 fingerlings, raising them in ponds or tanks with feed until harvest, and then selling them in the market.

VII. Harvesting

The life cycle from stocking to maturity for fish takes approximately 6 to 72 months. During this time, a significant number of tilapia reach a market size of 200-500 grams, while catfish can grow to between 200 grams and 3 kilograms, given proper feeding and environmental conditions. Farmers can start harvesting after this period, aiming to grow the fish quickly and economically. It is recommended to harvest in the morning when temperatures are lower.

VIII. Post-harvesting activities

After harvesting, the fish could be sold at the local market or kept in the refrigerator to avoid spoilage. Customers who buy the fish should be informed in advance.

Methods of preservation of harvested fish.

- Cooling and freezing
- Canning
- Salting
- Drying
- Smoking

IX. Marketing

After harvesting, you can sell the fish to:

- Individuals, households or open markets
- Hotels and restaurants
- Fast food eateries
- Fisheries merchants

5.2.2 Integrated fish farming

Aquaculture diversification improves food security and income while promoting efficient water use. Integrating it with other farming practices encourages resource cycling.

5.2.3 Record Keeping

- This helps maintain the production cycle, decision making, future planning, past performances, financial management and some records related to biosecurity and safety.

Important set of records

- Fish stocking record or introduction
- Feed records
- Water quality records
- Growth performance
- Harvesting and processing
- Financial records or transactions
- Fish disease and parasites, and hormones/chemical applications

5.2.4 Start-up costs for fish farming business

Setting up a fish farming business is capital intensive, requires more careful planning and much capital input. Variable cost estimate in fish farming may vary depending on the size but may include but not limited to the following:

- Pond construction
- Procurement of fingerlings
- Cost of feed and supplements
- Equipment and supplies
- Utilities (fuel, electricity and water)
- Labour and administrative expenses
- Miscellaneous

5.2.5 A list of equipment and supplies to consider for a fish farming business

Please note that the specific equipment and tools needed vary based on the system of production, aquaculture system and scale of fish farming operation.

Table 19: List of potential equipment required for fish farming

1. Pond construction	Earth works, excavation, ponds, tanks, pond liners, bird netting, lime, fencing, plumbing fixtures and pipes.
2. Water supplies	Water towers and stands, water quality testing kit, pumps, filters, aerators, water circulation system, thermometer, pipes, heater.
3. Maintenance and monitoring	Weighing scales, dry suits or waders, scoop nets, gloves, fishing nets, buckets, fish grader, wheelbarrows, happas, face masks.
4. Feeding and management	Fish feeders (automatic or manual). feed storage bins, scoops etc
5. Infrastructure and tools	Workstations, storage facilities, tools (pliers, cutters, wrenches, etc.), cleaning equipment e.g., lasher, spades, rakes etc
6. Harvesting and processing	Seines, harvesting bins, freezer
7. Safety and security	First aid kit, safety signage, fire extinguishers, security cameras
8. Record keeping	Stationeries e.g., logbooks and records, pens, calculator

5.2.6 What is an aquaculture licence?

An aquaculture licence is a permit issued under the Aquaculture Act that outlines designated farming sites, permitted species, proposed methods, and other relevant details.

How to apply for an aquaculture licence?

- CBOs may apply for an aquaculture licence at the MFMR offices using the prescribed application.
- Before issuing the licence, the Minister must be satisfied that the applicant has obtained any authorization, permit or approval required under the laws relating to land or water use and an environmental clearance certificate if so required.
- The Minister, under section 45 of the Aquaculture Act, 2002, may exempt persons or small-scale fish farmers engaging in aquaculture activities producing less than 70 tons of local fish per annum from applying for aquaculture licence.

5.3 Sustainability/financing and credit facilities for aquaculture businesses

Establishing a fish farm entails high costs and risks, necessitating financial support for aquaculture development in Namibia. Institutions offer funding with specific requirements, including a business plan and necessary licenses:

- Agricultural Bank of Namibia (Agribank)
- Development Bank of Namibia (DBN)
- Commercial banks
- Regional councils
- Social Security Commission (SSC)
- NGOs

5.3.1 Writing a business plan

A business plan is a vital document for obtaining financing or attracting investors. It outlines the business's roadmap and includes key components such as an executive summary, company overview, market analysis, products and services, marketing strategies, operational plan, management structure, and financial plan.



Table 20: Contact details for key stakeholders in the aquaculture business enterprise

Ministry of Fisheries and Marine Resources

Directorate of Aquaculture and Inland Fisheries
Private Bag 13355, Windhoek
Brendan Simbwaye Square
Website: www.mfmr.gov.na
Tel: +264 61 205 3027
Tel: +264 61 205 3084

Onavivi Inland Aquaculture Centre

Epalela Fish Farm Ruacana Main Road
P.O. Box 796, Outapi
Tel: +264 259 005/9

Zambezi Aquaculture Inland Centre

Private bag 1004, Ngw eze Katima Mulilo
Tel: +264 66 262 201

Kamutjonga Inland Fisheries Institute (KIFI)

P.O. Box 5147, Divundu, +264 66 259 931

Ongwediva Inland Aquaculture Centre

P.O. Box 5568, Oshakati
Tel: +264 65 230 846
Ongwediva

Ministry of Fisheries and Marine Resources

Rundu Regional Office Private Bag 2084, Rundu
Tel: +264 66 256 813

Fonteitjie Fish Farm

Keetmanshoop
Tel: +264 63 223359

Hardap Inland Aquaculture Centre

Private bag 2116, Hardap Dam Mariental
+ 264 63 240 361

6. INDIGENOUS NATURAL PRODUCTS (INPS)

Indegenous Natural Products (INPs) are non-timber forest products derived from plants, animals, or fungi used in cosmetics, medicine, and food. Key INPs include devil's claw, wild sour plum, marula oil, manketti oil, Namibian myrrh, Kalahari melon oil, honey, and mopane worms.

Table 21: The diversity of INPs in Namibia Communal Conservancies

INP business enterprises and the species involved	Scientific name of the species
Devil's claw slices for medicinal purpose	"Elyata" (Harpogonytum spp)
Wild sour plum nuts for cosmetic oil	Ximenia americana
Marula kernels for food and cosmetic oil	Sclerocarya birrea
Manketti food oil	Schinziophytum rautanenii
Namibian Myrrh (Omumbiri) for essential oils	Commiphora wild ii & Commiphora tenuipetiolata
Bushman candles used for fragrance	Sarcocaulon patersonii
Kalahari melon for food and cosmetic oil	Citrullus lanatus
Mopane seeds for essential oils	Colophospermum mopane;
Thatch grass	Hyperthelia dissolute; Eragrostis pallens
Wild edible fruits derived from different indigenous species:	Ximenia caffra; Sclerocarya birrea; Hyphaene petersiana (makalani palm); Grewia spp.; Baobab trees (Adansonia digitata). Strychnos cocculoides (monkey orange). and Strychnos americana; Diospiros mesipilisiformis (Jackal berry); Berchemia discolor (bird plum)
Honey/ bee farming	Apis mellifera
Edible worms such as mopane worms	Gonimbrasia belina
Hoodia extract	Hoodia gordonii
!Nara for food and cosmetic oil	Acanthocicyos horridus

The different INPs highlighted in Table 21 above are traded in different value chains, which are also at different levels of development and upgrading.

6.1 Description and key activities of INP business enterprises

INP enterprises involve sustainable harvesting, processing, and trading. Harvesting protocols vary per species to avoid destructive practices. Processing includes drying, slicing, oil extraction, and packaging following best practices and quality control standards. Trading is usually organized via cooperatives, trusts, or producer associations linked to private exporters.

6.1.1 Sustainable harvesting/collection of INPs

INPs have varying sustainability requirements. For instance, devil's claw slices require careful harvesting to avoid damaging the plant, while fruits from trees such as *Marula*, *Ximenia* spp. (sour plum), and manketti can be harvested without harm since the trees naturally shed ripe fruits. It is crucial to maintain a healthy population of these fruit trees to ensure a continuous supply for market demand. When a Community-Based Organization chooses a specific INP as its main business, a tailored harvesting protocol should be established.

Table 22: Harvesting methods for key INPs in Namibia

Species	Harvesting time (season)	Harvested plant parts	Harvesting method
Devil's claw (Harpagophytum)	March-October	Side tubers	Sustainable harvesting method developed by (Strobach and Cole, 2007). Method involves: • Digging and removal of side tubers at 30 cm away from taproot
Marula	January-April	Fruits	• Collect ripe fruits
Ximenia	January-April	Fruits	• Collect ripe fruits
Commiphora wildii	October- December	Resin	• Resin oozes out of the tree stem in response to heat, • Resin can be collected, or an incision can be made on the tree stem to induce resin secretion but rarely practiced.

Harvesting Protocols:

Devil's claw

- Harvest only older plants
- Do not harvest flowering plants
- Obtain harvesting permits from MEFT, landowner permission or local authority
- Fill back hole after harvesting to enable regeneration

Marula and Ximenia oil

Other aspects to consider:

- Maintain balanced sex and age ratios.
- Ensure availability of both fruit-bearing and non-fruit-bearing marula trees to prevent self-pollination.
- Include seedlings, young trees, and mature trees for sustainable marula kernel supply.
- Monitor and control pests and diseases, as Ximenia shrubs are frost-sensitive.

Commiphora resin

Harvesting protocols for *C. wildii*

The CBOs, particularly in Kunene Region, where *C. wildii* resin collection take place have developed by-laws for harvesting resin. These bylaws emphasize the following :

- Harvesters need to be registered as members of the conservancy by acquiring a harvesting card.
- No incision should be made to the tree stem
- Both men and women should participate in resin harvesting
- Resin harvesting by children is prohibited.

6.1.2. Best practices for processing INPs in Namibia

The processing and semi-processing of INPs in Namibia follows established best practices to ensure sustainable sourcing, safety, quality, and traceability. Most INPs are sold as raw or semi-processed materials, so this handbook focuses on semi-processing best practices rather than manufacturing, which involves product quality testing and development.

To establish an INP business, CBOs must create straightforward processing guidelines to meet necessary safety and quality standards. Typically, these guidelines are developed with expert support, and training for collectors and processors is essential for compliance. Phytotrade Africa has been instrumental in providing best practices to the Eudafano Women Cooperative for processing marula kernels and Ximenia nuts.

Table 23: Best Practice for processing of INPs in Namibia

Product	Best practices for processing INPs in Namibia
Devil's claw	• Cut tubers into thin slices with a stainless-steel knife.
	• Wash hands, knife, and cutting board frequently.
	• Dry slices in the sun on raised nets to avoid sand contamination.
	• Pack slices in clean, cooperative-provided bags (avoid plastic).
	• Keep drying nets a few meters away from sleeping, eating, or smoking areas.
	• Do not store chemicals (pesticides, fertilizers) near processing area.
Ximenia	• Avoid contact between nuts and water to prevent fungal contamination.
	• Do not dry nuts in direct sunlight; dry them in the field, not indoors.
	• Use clean bags for packaging; avoid rooms treated with Dichlorodiphenyltrichloroethane (DDT).
	• Disqualify any product in contact with DDT.
	• Do not use old salt bags or bags previously used for chemicals/fertilizers for packaging Ximenia nuts.
	• Label bags with collector numbers and association for traceability.
Marula kernels	• Avoid contact between nuts and water to prevent fungal contamination.
	• Do not dry nuts in direct sunlight; dry them in the field, not indoors.
	• Use clean bags for packaging; avoid rooms treated with DDT.
	• Disqualify any product in contact with DDT.
	• Do not use old salt bags or bags previously used for chemicals/fertilizers for packaging Ximenia nuts.
	• Label bags with collector numbers and association for traceability.

6.1.3 Trading mechanisms for INPs in Namibia

Commercialized INPs are traded by centralizing products for traders to buy from collectors or by organizing transport systems to collect from various local harvesting sites. This is effectively managed by Community Based Organizations (CBOs), which can take the form of community forests, conservancies, cooperatives, trusts, or associations. These CBOs can implement various models for trading INPs.

Cooperatives owned by producer associations for commercializing INP products

INPs can be traded through a cooperative model registered under the Cooperative Act (Act 23 of 1996) in Namibia. These cooperatives, owned by producer associations from various regions, aim to enhance market access, add value to products, and provide education. Their governance is participatory, with decisions made during annual meetings. Notable cooperatives include Eudafano Women Cooperative for marula oil and Tulongeni Twahangana Cooperative for Ximenia oil.

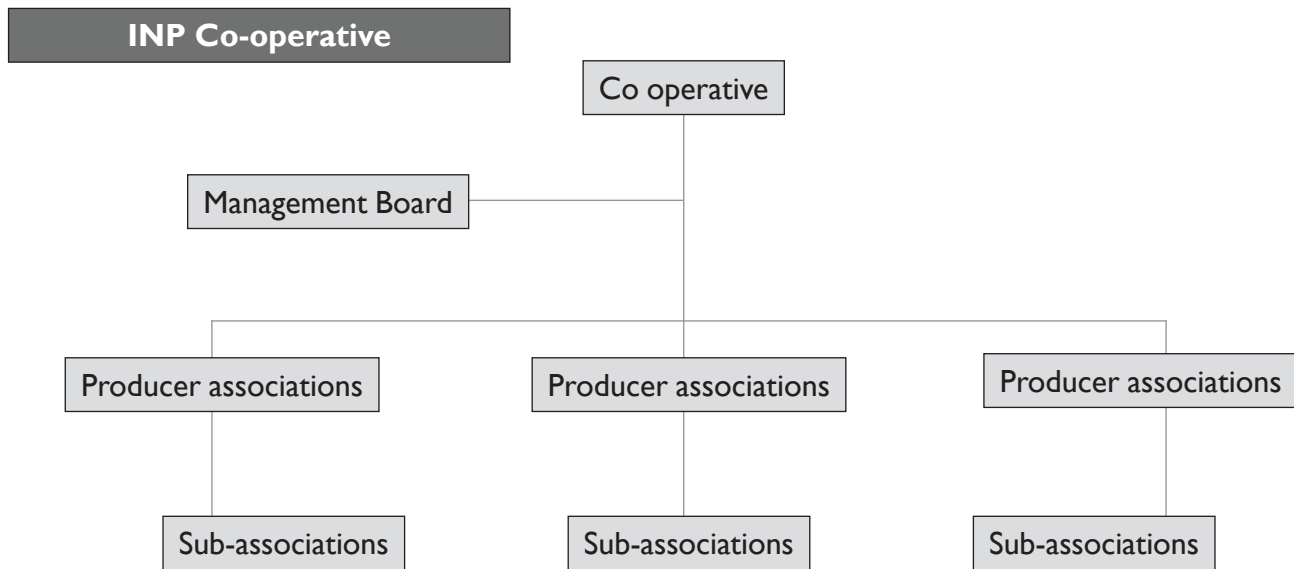


Figure 6: Organizational structure of INP Co-operatives

The cooperative can obtain donor funding to train beneficiaries in essential skills for managing its operations, including sustainable harvesting, product quality, bookkeeping, leadership, and understanding the cooperative model. This model is easily adoptable by any CBO.

Trust with a board of trustees for commercializing and trading INPs

The Kunene Conservancies Indigenous Natural Product Trust (KCINP Trust) is a legal entity established in the Kunene region to facilitate the processing, sale, and marketing of natural products from participating conservancies and community forests. The Trust manages commercial activities, such as client relations and contract negotiations, while also owning a processing facility for essential oils derived from local resources. Profits from sales are shared according to individual benefit-sharing plans, and sustainable resource management is overseen by the conservancies, which issue harvesting permits. Only members with traditional knowledge of specific resources are allowed to sell products through the Trust, and an access fee is incorporated into the negotiated prices.



Producer Association linked to private traders and exporters

The trading model for INPs involves producer associations that have contractual agreements with private exporters, directly connecting harvesters to the market and eliminating middlemen traders, which often leads to better prices for harvesters. This arrangement provides guaranteed market access and allows for annual price renegotiations. It is seen in areas like Nyae Nyae Conservancy and several Resettlement Farms in the Omaheke region, supported by NGOs such as Centre for Research-Information-Action for Development in Africa (CRIA) and the Nyae Nyae Development Foundation. Exporters pay a management fee to CBOs when they meet sustainable practices and quotas. This model not only ensures secure market access and higher prices than unorganized chains but also allows for products to meet organic certification standards, enabling premium pricing.

6.2 How can CBOs get involved in the INP business enterprise?

CBOs need secure land tenure, resource assessments, and established community-based management structures. Organizing harvesters into producer associations, securing reputable buyers with purchase agreements, and continuous capacity building are critical steps.

STEP1 Secure land tenure, conduct resource assessment and establish a community based organisation.

To establish an /NP business enterprise, secure land is necessary where natural products will be harvested. Land tenure security can be achieved by forming a Community-Based Organization (CBO) that devolves access and management rights. Key milestones for registering CBOs, such as community forests and conservancies, include securing land and assessing resource availability. The Traditional Authority allocates land and provides consent for CBO establishment, and a suitable resource assessment method must be used based on the target natural product.

STEP2 Establish a management structure and organise harvesters in producer associations

A management structure, such as a CBO, facilitates the sustainable use and trade of natural products. These organizations enable activities like issuing harvesting permits, training harvesters, and negotiating with buyers. Local harvesters can be organized into producer associations, which do not require government registration if they have a founding meeting, constitution, and at least three members. Guidance on developing a voluntary association is provided by the Legal Assistance Centre. This document is available at: <https://www.lac.org.na/projects/grap/Pdf/non-profit.pdf>.

STEP3 Look for a reputable buyer and develop a purchase agreement

Once the management body is established, it can begin activities to operate the INP business. Key tasks include finding reputable buyers for specific INPs and signing purchase agreements to protect harvesters. These agreements should confirm annual quotas and sale prices for the harvested products.

STEP4 Ensure continuous capacity building

Ongoing training for harvesters and management is essential. Capacity building should focus on themes like sustainable harvesting, product processing, financial management, and bookkeeping.



6.3 Key stakeholders in the INP business enterprise

Stakeholders include MEFT, MAWLR, Ministry of Industrialization and Trade (MIT), cooperatives (Eudafano Women Cooperative), trusts (e.g., Kunene Conservancy INP Trust), private companies (Neema Cosmetics, ECOSO Dynamics), NGOs, (Integrated Rural Development and Nature Conservation - (IRDNC), Namibia Nature Foundation - NNF), trade networks, Namibia Network of Cosmetics Industry - (NANCI), Namibian Devil's Claw Exporters Association Trust - (NDCEAT), and international market facilitators such as Phytotrade Africa.

Table 24 List of key stakeholders in INPs enterprise and their roles

Stakeholder	Key roles
Government: MEFT, MAWLR, MIT-SMED (formerly known as MTI),	The government facilitates business by enforcing laws and providing a supportive environment. MEFT issues permits for harvesting and trading devil's claw and registers traders. MIT issues export permits and provides processing machinery to SMEs through an equipment aid scheme, which organized groups can also access. MEFT manages the Competent National Authority for genetic resource access as per the Nagoya Protocol, while the Namibia Botanical Research Institute (NBRI) issues Material Transfer Agreements under this protocol.
Indigenous Plant Task Team (IPTT)	IPTT, under MAWLR, has primarily relied on donor funding and has been inactive for a while. It previously contributed to INP business enterprises through processing, technology development, product research, and marketing.
Eudafano Women Cooperative, Tulongeni Twahangana Cooperative, Kunene Conservancy INP Trust Oontanga oils Producers, Neema Cosmetics	Cooperatives and Trusts coordinate the trade of INPs. They assist in oil extraction and provide training on proper harvesting practices. They negotiate prices for collectors and facilitate product certification to improve quality and access to niche markets. These entities include private companies that deal in Kalahari melon oil and <i>Ximenia</i> oil, selling bulk oil to processors while also producing small-scale products.
ECOSO Dynamics cc	A private company specializes in devil's claw, holding Purchase Agreements with conservancies in Zambezi, Otjozonjupa, and Kavango Region. It also produces devil's claw tea and supplements for body cleansing and joint inflammation relief, particularly beneficial for elderly individuals.
CRIAA-SADC IRDNC and NNF	The text highlights the importance of supporting INP business enterprises through resource assessments, training in sustainable harvesting, business feasibility, bookkeeping, and financial management.
Namibia Network of Cosmetic Industries (NANCI); (NDEAT)	The text outlines efforts to support INP business enterprises by providing networking platforms like NANCI for cosmetics and NDCEAT for devil's claw. It also highlights the development of sustainable harvesting standards for devil's claw and aims to protect traders and exporters regarding product pricing.
Phytotrade Africa	Facilitated market access for various INPs from Namibia and developed best practices for processing them to meet market standards.

6.4 Activities in setting up the business

In summary, the following activities need to be part of the setting up an INP business enterprise:

- Ensure security of land tenure
- Conduct resources assessment for the INP in question
- Assess feasibility of INP quantity if enough for meeting market demand
- Establish management structures e.g. CBO and producer associations
- Continuous capacity building
- Looking for a reputable buyer and developing a purchase agreement
- Budgeting and business planning for INP

6.5 Legal and institutional requirements for the INP enterprise

INPs are regulated under the Access to Biological and Genetic Resources and Associated Traditional Knowledge Act (2077). and harvesting is controlled via permits where applicable (e.g ., devil's claw). Traditional authorities and CBO bylaws govern resource access. Compliance with CITES and Forest Act regulations apply to some species.

Table25: Key contact addresses for stakeholders in the BCBU business enterprise

Namibia Nature Foundation (NNF)

76 & 78 Frans Indongo Road
Windhoek West
Windhoek, Namibia
Tel: +264 61 248345
Email Address: info@nnf.org.na

CRIAA-SADC

22 Johann Albrecht Street, Windhoek
Tel.: +264 61 220717 or
Office cell: 081 122 3892
e-mail: info@criaasadc.org /
criaawhk@africaonline.com.na

Eudafano Women Cooperative

Portion 38, Ondangwa Main Road,
Ondangwa, Namibia,
Tel: +264 65 240 068
Email: info@eudafano.org

Tulongeni Twahangana Cooperative

Contacted at Ohangwena Regional
Council P/Bag 88071 , Eenhana,
Ohangwena region, Namibia
Tel 065 264 300

Integrated Rural Development and Nature Conservation (IRDNC)

7 Rossini Street, Windhoek West
P.O. Box 24050, Windhoek
Namibia Tel: +264 61 228506/9
e-mail address: info@irdnc.org.na

ECOSO Dynamics cc

P.O. Box 363, Okahandja
Tel: +264 61 256115
e-mail: ecoso.process@iway.na

Namibia Network of Cosmetic Industries (NANCI)

22 Johan Albrecht Street
Tel.: +264 61 220717 or
Office cell: 081 122 3892
e-mail: info@nanci.biz

Namibian Devil's Claw Exporters Association Trust (NDCEAT)



7. BUSH TO FEED PRODUCTION AS A BUSINESS

Bush encroachment affects 4.5 million hectares in Namibia, reducing grazing capacity and water recharge. However, bush biomass can be harvested and converted into livestock feed, offering a business opportunity for CBOs. Main activities include biomass quantification using transect plots, bush control and selective harvesting, chipping/milling, feed formulation with supplements (urea, molasses), pelleting, and marketing.

CBOs can operate independently or via joint ventures, to leverage grants. Key stakeholders include MEFT, MAWLR, EIF, Namibia Biomass Industry Group (N-BiG), research institutions, and advisory services. Legal requirements include bush control permits, environmental clearances for large-scale operations, and compliance with forest act regulations.

7.1.1 Quantification of bush biomass

The bush control and biomass utilization business enterprise quantifies biomass available for livestock feed using a manual developed by GIZ in collaboration with the Ministry of Environment, Forestry and Tourism. To assess biomass, the total area is divided into stratified survey areas that represent the overall region. Each stratum has at least four designated plots, typically in a transect layout of 50 x 2.5 m (725 m²), which can be adjusted based on vegetation heterogeneity. The text discusses a method for measuring biomass in thornbush shrublands by assessing variables like bush stem diameter and tree height, using an Excel model specifically designed for shrubs like *Acacia*. A modified model is needed for broadleaved woodlands like those dominated by *Terminalia sericea*. Community-Based Organizations can utilize this method to assess and monitor bush biomass and can train their members on the quantification process.

7.1.2 Bush control and harvesting methods

Different equipment and methods can be used to control and harvest bush biomass, and it's advisable to consult de-Bushing Advisory Services for suitable options based on economic feasibility and environmental impact. For feed, harvest small twigs (less than 20mm in diameter), pods, and leaves, avoiding larger stems due to high lignin content. The best harvesting time is from September to April when shrubs blossom, and selective harvesting is recommended, with shrub retention based on the bush clearing purpose.

7.1.3 Bush chipping, milling, and drying

After harvesting wood chips and leaves, they are processed into fluffy roughage to enhance livestock digestibility, using methods like a hammer mill or "Bos-tot-Kos" equipment. Chemical treatment with Sodium Hydroxide (NaOH) can further improve digestibility by lowering nitrogen content. Large operations should test the nutritional components of bush roughage to identify necessary supplements.

7.1.4 Feed formulation

Bush fiber can be supplemented with products like urea, molasses, camelthorn pods, and agricultural by-products such as sorghum residues and oil cake. It's advised to limit bush roughage to 20-40% of the feed mixture. Incorrect feed formulation can harm livestock, hence CBOs should seek expert guidance. Resources include the de-bushing advisory service in Namibia and Farm4Trade's free bush feed formulation app. The University of Namibia (UNAM) also offers research support for effective feed formulation.

7.1.5 Pelleting bush-based feed

Pelleting is the process of converting mixed livestock feed into compact pellets, which is crucial for long-term storage. It's important to choose the right pelleting machine based on the available roughage. The bush control and utilization industry offers advisory services for related information, and there are networking opportunities like biomass fairs and conferences for information exchange.

7.2 How CBOs can get involved in the enterprise

CBOs with rights to manage bush resources should assess the feasibility of starting a bush to feed business by quantifying available biomass. They must decide on a business model, such as running the operation themselves, forming a joint venture, or hiring a private company. Some conservancies, like African Wild Dogs and Ozonahi in the Otjozonzupa region, have begun pilot projects, with support from the Environmental Investment Fund for funding.

7.3 Stakeholders in the Bush to Feed business enterprise

Table 26 highlights key stakeholders in the BCBU business enterprise and outlines their specific roles.

Stakeholder	Key roles
The authorities: Ministry of Agriculture Water and Land Reform (MAWLR); Ministry of Environment Forestry and Tourism (MEFT) and Ministry of Industrialization Trade and SME Development (MITSD)	The Directorate of Forestry issue Bush control permits. The Directorate of Environmental Affairs issue Environmental Clearance Certificate (ECC). when the scale of the enterprise reaches a threshold that requires an environmental impact assessment. MITSD has an equipment Aid Scheme supporting individuals, SME and CBOs.
Environmental Investment Fund	EIF has a grant funding option targeting environmentally friendly projects like the BCBU. The CBO needs to develop a proposal for the grant.
Namibia Biomass Industry Group (N-BiG) and De-bushing Advisor Service	A membership organization for both private and public organizations. N-BiG offer technical expertise on biomass value chains, training and mentoring, exploring market opportunities and promoting diversity in the BCBU
National Commission on Research Science and Technology (NCRST)	Can provide funding for research and development.
Institutions of High Education: University of Namibia (UNAM). Seinajoki University of Applied Sciences (SeAMK)	Conduct research in bush utilization and provide innovations and solutions for farmers and CBOs.

7.4 How CBOs could set up a bush to feed business enterprise

7.4.1 Source funding

The main investment for bush-based businesses is machinery for harvesting and processing feeds. Community-Based Organizations (CBOs) can choose to buy or hire machinery. Additionally, funding may be needed for feasibility studies and obtaining Environmental Clearance Certificates.

7.4.2 Other key activities in setting up the business

- Adhere to regulatory requirements (e.g., bush thinning permit, ECC).
- Provide training for capacity building.
- Ensure worker safety and proper equipment use.
- Perform detailed business planning.
- Develop standards for sustainable management (e.g., FSC, SBP, SURE).

7.5 Legal and institutional requirements for the enterprise

The Forest Act 72 of 2007 regulates the harvesting, transportation, marketing, and export of forest produce, managed by the Directorate of Forestry. A bush control permit, valid for 3 months, can be obtained by visiting their office. In 2017, the Ministry of Agriculture and the Ministry of Environment developed guidelines outlining environmental laws for bush harvesting and value addition.

If bush thinning occurs on an area larger than 750 ha, an Environmental Clearance Certificate (ECC) is

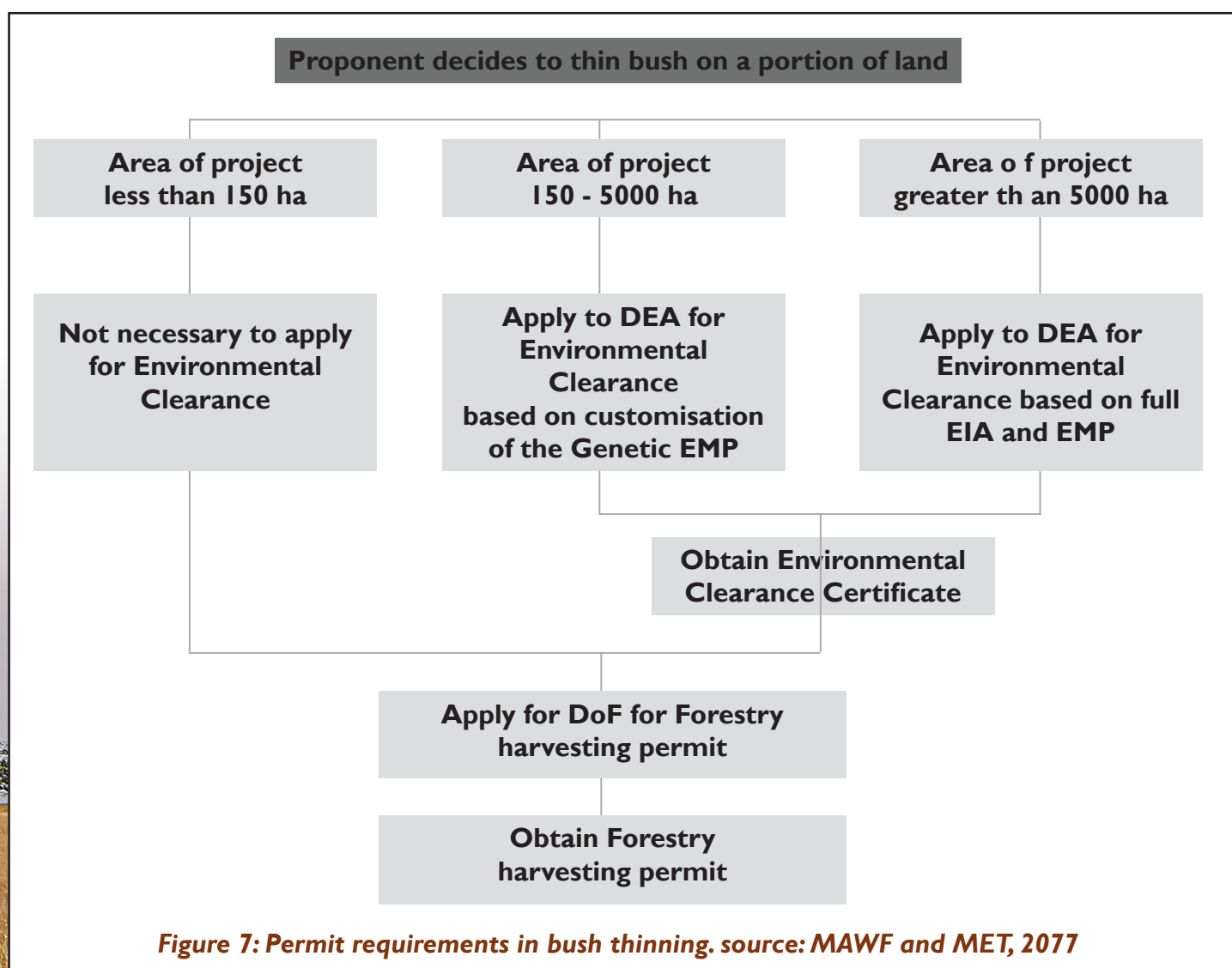


Figure 7: Permit requirements in bush thinning, source: MAWF and MET, 2017

needed before starting. The CBO must apply for the ECC through the Directorate of Environmental Affairs, facilitated by an independent Environmental Assessment Practitioner. Once both the ECC and bush thinning permit are obtained, the operation can begin. The bush thinning permit is valid for 3 months, while the ECC lasts for 3 years. Other relevant permits include transport, marketing, and export permits from the Directorate of Forestry.

Table 27: Relevant contacts

Ministry of Environment, Forestry and Tourism

Department of Environmental Affairs and Forestry

Directorate of Forestry

Windhoek

Tel: (MEFT to share contact number for the Department)

Namibia Biomass industry Group (N- BiG)

5 von Braun Street, Southern Industrial Area

Windhoek, Namibia

E-mail: info@n-big.org

Tel: +264 61 242 949

Environmental Investment Fund of Namibia

C/O Heinitzburg and Dr Theo Ben Gurirab

Street, Klein Windhoek, Windhoek, Namibia

Tel: +264 61 431 7700 or +264 61 240339





8. CRAFT PRODUCTION

Craft production includes traditional and contemporary handmade products such as baskets, mats, woodcarving, pottery, beadwork, and leatherwork. It evolved into a commercial activity supporting income generation and cultural preservation. Women typically undertake basketry and pottery, men focus on woodcarving.

CBO involvement steps: resource assessment, sustainable harvesting, organizing craft makers in producer groups, establishing craft outlets, and product development for quality improvement. Payment models vary from direct payment to revolving funds. Intellectual property protection is recommended to safeguard traditional knowledge.

Key stakeholders include Rossing Foundation, IRDNC, Ministry of Industrialization, Trade and SME Development, Omba Arts Trust, Arts and Craft Centres, and training institutes. Legal requirements include registration with relevant ministries and adherence to handicraft industry guidelines.

8.1 Description of the enterprise

8.1.1 How conservancies can get involved in the enterprise

For conservancies to get involved in craft production as a business enterprise, there are key governance structure and resource management systems that need to be established.

Tapping from the basket making business enterprise in Kunene region the following is key:

STEP 1 Ensuring availability of resources

Before starting a craft production business, the CBO should assess resource availability. For woodcrafts, use Namibia's National Forest Inventory to evaluate species and sizes. For basket making, focus on areas dense with palm trees and reeds.

STEP 2 Establish a sustainable harvesting method for resources used in craft making

Craft products are often sustainably made, but sourcing raw materials, especially for basket weaving and woodwork, needs attention. Promoting selective harvesting and tree planting can help replenish resources, while community resource monitors can assess environmental impacts.

STEP 3 Organizing craft makers in producer group

Organizing local craft makers into groups enables better training and support. Registration with an association or relevant ministry enhances systematic assistance for craftsmen.

STEP 4 Establish a craft outlet/ market

A craft production business requires a strategically located outlet, ideally near tourist destinations or at a CBO office for bulk sales. Producers and the CBO must agree on payment terms, membership fees, transport contributions, and commission fees to support operational activities. Unlike trophy hunting, income from craft products goes directly to individual makers, despite using common resources. Payment methods include immediate cash for products purchased directly or a system where products are sold with delayed payment to producers. A revolving fund can be established through donor funding to pay makers instantly and replenish it after sales.

STEP 5 Product development to improve product quality

To enhance the quality of craft products, training is provided by experienced craft makers. Competitions and exhibitions organized by NGOs help showcase skill and establish quality standards. Additionally, protecting craft products through intellectual property rights ensures that only the original creators can produce and sell their work, requiring others to obtain access rights to the traditional knowledge and cultural heritage.

8.1.2 Stakeholders in the enterprise

The craft production industry in Namibia has faced stagnation due to fragmentation, isolation of producers, and lack of coordination. Many communities rely on handicraft products for their livelihoods. Support from stakeholders such as the government, NGOs, and donor organizations is crucial for the industry's growth.



Stakeholder	Key roles
Rossing Foundation (RF)	RF purchases craft products from producers and supports craft weavers by funding training, organizing competitions, and exhibitions, which enhances the quality of the baskets (Suich and Murphy, 2002).
IRDNC, The Community Conservation Fund under the MEFT	Support crafters to exhibit their skills and products at exhibition shows e.g. Tourism Expo, Trade Fairs etc.
Ministry of Industrialization, Trade and SME Development	May provide equipment to craft makers, through the equipment aid scheme
Omba Arts Trust	Buy art from rural communities, support product development, and train in horticulture for diverse livelihoods.
The Arts and Craft Center (e.g. Tsumeb and Windhoek, Ohandje Craft Centre; Mashi Craft Centre etc.)	Craft centers, which can serve as a hub of knowledge and lesson learning, also facilitate training for their members.
College of Arts (CoTA)	Can provide professional Certificates to craftsmen

Table 28: Key stakeholders which provide support services in the craft production enterprise

8.2 How CBOs could set up a Craft Production business enterprise

8.2.1 Required investments

Establish a craft market outlet at a strategic place where it can be reached, not only by local buyers but also by tourist.

8.2.2 Activities in setting up the business

To establish craft production as a business, a Community-Based Organization (CBO) should:

- Assess the capacity for production based on skills, available techniques, and local community expertise.
- Ensure essential raw materials, like palm trees for basket weaving, are accessible.
- Consider daily usage, functionality, practicality, and pricing to ensure the product generates income.
- Focus on sustainably sourced raw materials and the potential use of recycled materials.
- Familiarize with regulations of target export markets.
- Access assistance for business and entrepreneurial skill development.

8.3 Legal and institutional requirements for the enterprise

8.3.1 Identify the legal and institutional requirements

- Growth and Strategy for Namibia's Handicraft Industry and Associated Value Chain
- Registration of Craft by the Ministry of Industrialization, Trade and SME Development
- Organizing craftsmen into informal associations

8.3.2 Sustainability measures need to be in place to guarantee business operations in the long-term.

- Exhibition of craft products at trade fairs and tourism expo
- Resource monitor to ensure sustainability e.g . palm leaves for basket weaving and timber for wood crafts

Table27: Relevant contacts

Om ba Art Trust
sales@omba.org.na
+ 264 67 242799

Rossing Foundation
360 Sam Nujoma Drive,
Klein Windhoek
Tel : + 264 61 211721





9. RENEWABLE ENERGY

9.1 *Independent Power Production (IPP)*

9.1.1 *Definition and Role of IPP in Conservancies*

IPPs are private producers generating and selling electricity, vital for rural energy access in conservancies. They support economic growth, reduce carbon emissions, and provide community benefits via revenue sharing, employment, and skills development. Challenges include regulatory barriers, high capital costs, community opposition, infrastructure deficits, and market risks. Success depends on trust-building, transparent communication, community support, and capacity building.

9.1.2 *Benefits and Challenges*

Economic Returns

Renewable energy projects in conservancies create revenue, reduce dependence on fossil fuels, and foster job creation. They support financial sustainability through electricity sales and attract eco-conscious tourists, enhancing sustainable tourism.

Community Investment in Conservancies

Renewable energy projects in conservancies improve infrastructure, enhance education and healthcare, and create economic opportunities. They generate local revenue, support training programs for skill development, and foster partnerships with NGOs.

Potential Obstacles

Renewable energy projects in conservancies encounter challenges like complex regulations, high capital costs, community opposition, poor infrastructure, and environmental concerns. These issues complicate funding and implementation while market uncertainties jeopardize the viability of Independent Power Producers (IPPs).

Conditions for a successful IPP

- Build trust and understand community needs.
- Communicate openly with stakeholders.
- Align project with local socio-economic goals.
- Offer training to enhance skills and employability.
- Define roles and benefits to avoid conflicts.

9.2 *Small-Scale Energy Plants*

9.2.1 *Overview and Types of Small-Scale Projects*

Small-scale renewable projects (1 kW to 10 MW) include solar mini-grids, biomass plants, and hybrid systems addressing rural energy needs. Community involvement, capacity building, and diversified funding from local and international sources support implementation.

9.3 *Implementation Strategies for IPP and Small-Scale Energy Plants in CBOs*

9.3.1 *Community Involvement*

Active participation is key to project success and sustainability. Engaging the community early builds trust and identifies needs. Cooperative ownership models empower locals and create jobs while awareness programs align projects with local priorities for long-term benefits.

9.3.2 Capacity Building

Developing skills in technical, financial, and leadership areas is vital for sustainable renewable energy projects in Namibia. Training from the Namibia Energy Institute, alongside support from NGOs and development agencies, helps communities manage projects effectively, ensuring long-term economic and environmental benefits.

9.3.3 Funding and Resource Allocation

Renewable energy projects in conservancies can secure funding from local sources such as the GIZ Namibia, EIF, and N-BiG, as well as banks like Development Bank of Namibia (DBN) and Bank Windhoek. International support comes from Green Environment Fund (GEF), GCF, and UNDP, African Development Bank (AfDB), United States AID (USAID), EU Development Funds, and SEFA provide large-scale funding for studies and assistance. NamPower facilitates grid integration through Power Purchase Agreements (PPAs), while Ministry of Mines and Energy (MME) offers grants for off-grid and mini-grid projects.

9.4. Synthetic Fuels and Green Hydrogen

9.4.1 Structure and Benefits of Joint Ventures

a) How Do These Joint Ventures Come About?

Joint ventures in renewable energy involve local authorities focused on energy security and sustainable development and private investors seeking opportunities. Namibia's supportive government policies enhance this collaboration.

b) How Can Joint Ventures Be Benchmarked to Other Regional Councils?

Benchmarking joint ventures involves comparing performance across regions and considering factors like project scale and community involvement. Utilizing platforms like the Interreg Europe Policy Learning Platform helps share best practices.

c) How can Both Parties Benefit from Joint Ventures?

Local Authorities: Gain improved energy infrastructure, job creation, and progress toward sustainability goals. Private Entities: Access new markets, investment returns, and opportunities to showcase renewable technologies.

d) What Are the Potential Sources of Income?

Income sources include electricity sales, power purchase agreements, and carbon credits, with Namibia's Nam Power engaging in agreements for renewable energy.

9.4.2 Opportunities for Stakeholder Engagement

Income can be earned by selling electricity to the grid, entering power purchase agreements, and obtaining carbon credits. NamPower, Namibia's national utility, has established power purchase agreements with private entities for renewable energy projects.

9.5. Synthetic Fuels Plants

9.5.1 Overview of Synthetic Fuels and Their Role

Synthetic fuels offer carbon-neutral alternatives for decarbonization, though costly. Green hydrogen projects create jobs and infrastructure, enhancing socio-economic development and connectivity.

9.5.2 Focus on Green Hydrogen Plants

Green hydrogen projects like Hyphen Hydrogen, Daures Green Hydrogen, Clean Energy, and Hylron

Oshivela are creating jobs, boosting local businesses, and stimulating economic growth in conservancies such as !Khoadi //Hoas, Dau res, and Arandis Constituency.

- **Direct Benefits:** Employment for local communities, increased business activity, and economic circulation.
- **Indirect Opportunities:** Growth in housing, services, supply chains, construction, maintenance, and transport.
- **Industry Development:** Expansion of renewable energy, environmental consulting, and training programs.

9.5.3 Technological Innovations

Green hydrogen technology enhances conservancy areas by creating essential infrastructure and improving communication networks. This leads to better access to digital services, ultimately boosting quality of life and economic growth for local communities.

9.6. How CBOs Can Get Involved in Renewable Energy Enterprises

Conservancies can develop renewable energy projects to improve local energy access while supporting conservation.

Key Steps for Participation:

- **Partnerships & Funding** - Collaborate with various stakeholders for land leasing and PPAs; seek financial support from organizations like Nam Power and GIZ.
- **Capacity Building**- Train local experts in renewable energy and partner with universities for skills development.
- **Sustainable Business Models** - Focus on eco-friendly projects, reinvest in conservation and community development, and leverage carbon credits for income.

9.7. How to set up renewable energy projects for CBOs

9.7.1 Required investments

(a) Initial Capital Investment

Upfront costs for renewable energy include site preparation, permits, and major expenses like solar panels and wind turbines. Solar mini-grids require less investment, whereas large-scale hydrogen projects need more capital due to advanced technology.

(b) Operational Costs

Sustaining renewable energy projects involves costs for maintenance, staff salaries, energy distribution, and compliance, with smaller projects being less expensive than large hydrogen or solar farms. Many conservancies also invest in community development.

9.7.2 Activities in setting up the business

(a) Feasibility Study

Before launching an RE business, a feasibility study must be conducted to assess the technical, financial, and environmental viability of the project.

(b) Business Planning

After confirming feasibility, a comprehensive business plan must be developed to outline the operational and financial strategy of the RE business.

(c) Acquiring Permits and Licenses

A renewable energy business must comply with legal and regulatory requirements before starting operations.

(d) Establishing Operations

Once all approvals are in place, the business can move into the construction and operational phases.

9.7.3. Conditions to successfully manage the renewable energy business enterprise

(a) Management Structure

A governance structure is vital for managing a renewable energy enterprise in a conservancy, outlining roles and responsibilities. Key components include a Board Committee, Project Management Team, Financial Oversight Committee, and Community Liaison Officers.

(b) Human Resource Requirements

A skilled workforce is vital for renewable energy businesses. Training should equip locals with necessary skills, including roles like Technicians, Financial Staff, Project Managers, Sales Teams, and Environmental Officers.

(c) Financial System

A solid financial system ensures accountability and supports conservation and community development through effective revenue management, budgeting, grant management, profit-sharing, and auditing.

9.8. Legal and institutional requirements for the renewable energy enterprise

There are different legal requirements for setting up a renewable energy project which CBOs need to observe.

Licensing and Permits:

- **Generation License:** Required by the Electricity Control Board for large electricity projects.
- **Environmental Clearance Certificate (ECC):** Needed to assess environmental impacts per the Environmental Management Act (2007).
- **Land Use Permits:** Required for projects in conservancies, needing approval from MEFT and local management.
- **Water Use Permits:** Necessary for hydrogen projects using water, requiring approval from the Namibia Water Resources Management Authority.
- **Land Ownership and Lease Agreements:** Renewable energy developers must secure lease agreements with conservancies and ensure alignment with conservation objectives in National Parks.
- **PPAs and Grid Access:** Developers are required to sign PPAs with Nam Power or regional distributors under the Modified Single Buyer framework for project compliance.
- **Labor and Employment Laws:** Projects must follow Namibia's Labor Act (2007), ensuring proper employment rights, fair wages, and safety standards, with potential local employment quotas.

Environmental and Best Practices

Renewable energy projects need to follow industry standards and regulations, using practices like EIAs, sustainable land use, and community benefit agreements to ensure sustainability. Supporting Policies for Community Engagement Government policies and donor initiatives promote inclusive development in renewable energy projects such as National Energy Policy (2017), CBNRM Policy, IPP Policy (2018) and Green Hydrogen Strategy (2021).

9.9 Sustainability/ long-term measures to guarantee business operations in the long term.

(a) Ensuring Economic Viability of Renewable Energy Projects

To ensure financial stability, conservancies should diversify revenue and secure Power Purchase Agreements (PPAs) for steady income. They can leverage government incentives, grants, and private investments to manage costs, as well as explore carbon credits and green financing for additional funds. Regular maintenance and upgrades are essential for cost reduction and efficiency.

(b) Future Trends and Adaptation Strategies for Resilience

For long-term financial stability, conservancies should diversify revenue through PPAs, incentives, and private investments. They can also explore carbon credits and green financing, while focusing on maintenance to boost efficiency and reduce costs.





10. MINING

10.1 Small-Scale Mining

10.1.1 Definition and Characteristics

Small-scale mining uses simple tools to extract gemstones, mostly in Erongo, Karas, and Kunene. It offers income, job creation, and skills development but requires responsible practices for environmental and health safety. Community-based management committees facilitate governance.

10.1.2 Economic opportunities for conservancies

Income Generation for Local Communities

Communities can generate income by trading unprocessed minerals, gemstones, and jewellery, as well as through lapidary products, which involves cutting and polishing rough stones. Small-scale miners can sell directly to buyers, including Chinese buyers, or through middlemen. For instance, Matrix Investments in northern Namibia purchases various minerals based on quality and size. Additionally, small-scale miners have the option to rent stalls at markets like Kristal I Galerie in Swakopmund to sell their products to tourists.

Job Creation and Skills Development

Individuals in conservancies can find employment in small-scale mining, lapidary, and jewellery making. Skills development is available at training centers such as the Jacobus Meyer Centre in Keetmanshoop, Keetmanshoop Gemstone Center, Opuwo Cutting Center, Karibib Gemstone Center, and Jewelry A. Bock in Windhoek.

10.1.3. Sustainable practices

Best Practices for Responsible Mining

Small scale miners should adopt environmentally friendly practices, manage toxic substances, protect water resources, and wear protective clothing to safeguard their health and the community.

Community-Based Management Models

A mining committee should connect miners, government, and the community for decision-making on mining issues and conflict resolution.

10.2. Full-Scale Mining

10.2.1 Overview and types of full-scale mining

Full-scale mining (LSM) involves multinational companies extracting minerals or metals at large sites using advanced technology. In Namibia, this sector significantly contributes to GDP, exports, and tax revenue, with private companies operating under a government framework that encourages investment. The Mines Directorate at the Ministry of Mines and Energy oversees mineral regulations, including royalties, metal sales assessments, and mine inspections, while coordinating with other ministries on labor, health, and environmental issues.



10.2.2 Economic impacts on CBOs

Revenue Generation and Resource Allocation Community-based organizations (CBOs) may not own large-scale mines, but they can generate revenue through services like catering and cleaning, and mining companies should prioritize local people for semi-skilled job positions.

Infrastructure Development and Community Benefits

When multinational companies operate in communities, they build schools, clinics, roads and telecommunications from which the community can benefit. This is evident from places like Roshpinah, Karibib, Tsumeb and Arandis.

10.3. Stakeholders in the enterprise

- Community leaders • Ministry of Mines and Energy
- Local authorities • Ministry of Trade & Industrialization
- Locals • Ministry of Health
- Landowners • Church leaders
- Heritage Council of Namibia, • Mining associations
- Ministry of Environment and Tourism • Chamber of Mines

10.4. How CBOs can get involved in the enterprise

CBOs can engage in mining activities either directly or indirectly. Direct involvement is recommended through the formation of small-scale mining groups due to lower capital investment requirements. CBOs should assess their area's mineral potential and apply for mining claims through the Ministry of Mines & Energy. Joining mining associations, such as ERSMA and KUNSMA, can provide support with mining claims and resources.

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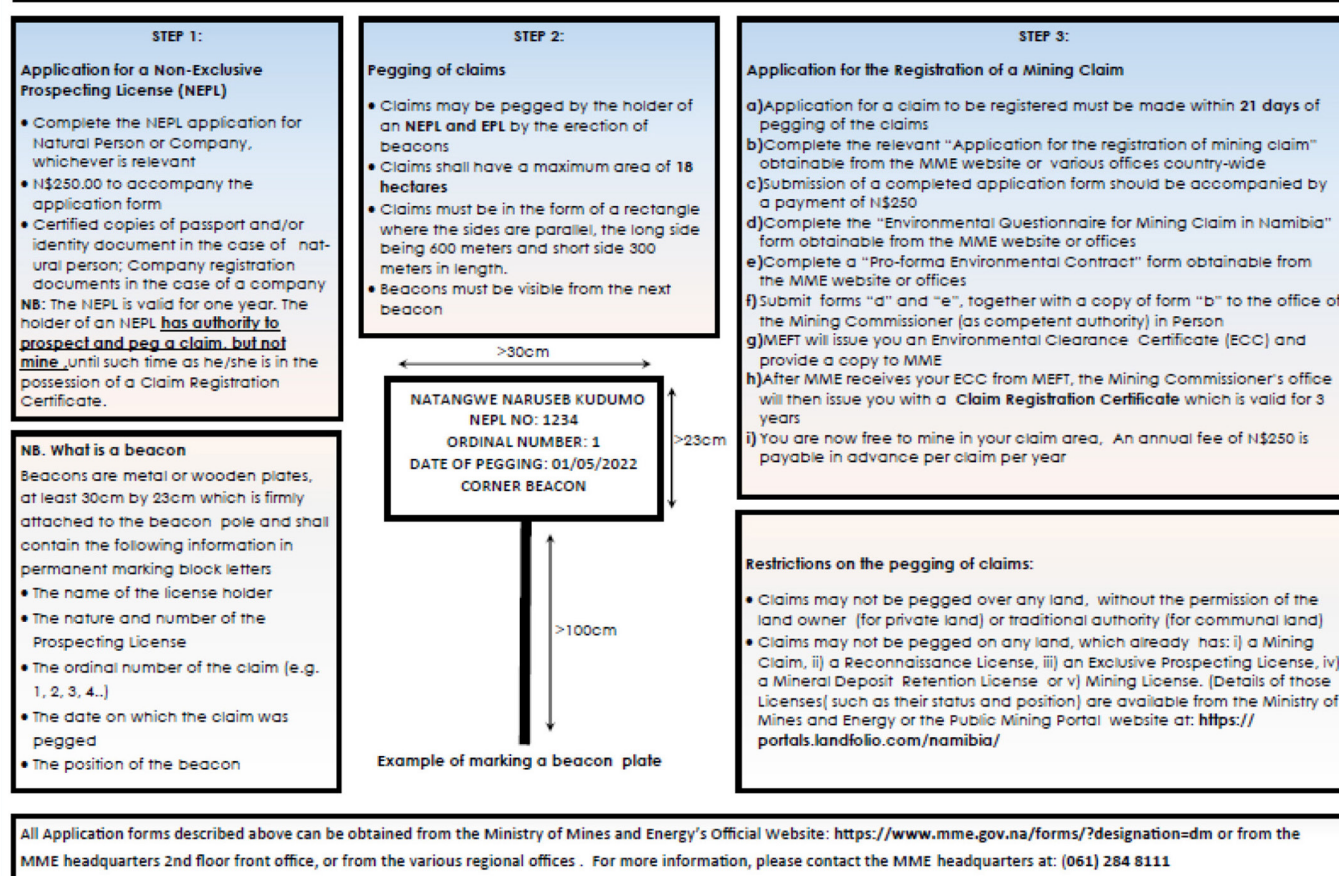


Figure 8: Step by step guide on how to apply, peg and register mining

10.5. How CBOs could set up a small-scale mining and full-scale enterprise

10.5.1 Required investments

- Small-scale miners can enhance their skills through training programs and benefit from government financial support.
- Large-scale mining financing can be secured through banks, requiring detailed reports on projected profits.

10.5.2 Activities in setting up the business

- Conduct market research to assess demand for minerals.
- Create a comprehensive business plan with goals and strategies.
- Secure funding through loans, grants, or partnerships.
- Obtain necessary permits and licenses.
- Hire and train required personnel.
- Prepare to start operations and resource extraction.

Main sources	Geologic setting	Gems	Collectors specimen	Main sources
Quartz: 1. Smoky quartz 2. Rose quartz 3. Amethyst 4. Bergkristall 5. Agate 6. Jasper	Pegmatites Basaltic miaroles {geodes}	X	X	1. Karibib 2. Hoffnungsstrahl and Roselis deposits / Erongo, Karasburg 3. Brandberg
Opal	Basaltic miaroles {geodes}	X	X	Khorixas
Beryll: • Aquamarin • Heliodor • Morganite	Pegmatites	X	X	Kleine Spitzkoppe, Ai-Ais and Gaibes on the Fish River
Tourmaline: • Schorl, • Coloured tourmalines	Pegmatites	X	X	Erongo, Spitzkoppe, Neuschwaben,
Chrysocolla	Copper vein type deposits	X	X	
Diopase	Lead/zinc/copper vein type deposits	(X)	X	
Garnet: • Demantoid • Mandarin garnet	Metamorphic deposits	X	X	Green Dragon Mine and Oropembe area
Topas	Granitic miaroles (geodes)	X	X	Spitzkoppe
Cuprite	Copper vein type deposits	(X)	X	
Fluorite	Basaltic miaroles (geodes)		X	Okoruso
Sodalite	Pegmatites		X	
Feldspar	Pegmatites		X	
Siderite	Pegmatites		X	
Cassiterite	Pegmatites		X	Uis, as well as metallic mineral
Ferrotantalite	Pegmatites		X	Uis, as well as metallic mineral
Jerernejevite		X	X	
Shattuckite	Copper vein type deposits		X	
Malachite	Copper vein type deposits		X	
Wuifinite	Lead vein type deposits		X	
Cerussite	Lead vein type deposits		X	Rosh Pinah
Smithonite	Lead vein type deposits		X	Rosh Pinah
Prehnite	Basaltic miaroles (geodes)		X	Khaaras
Pietersite		X	X	Outjo

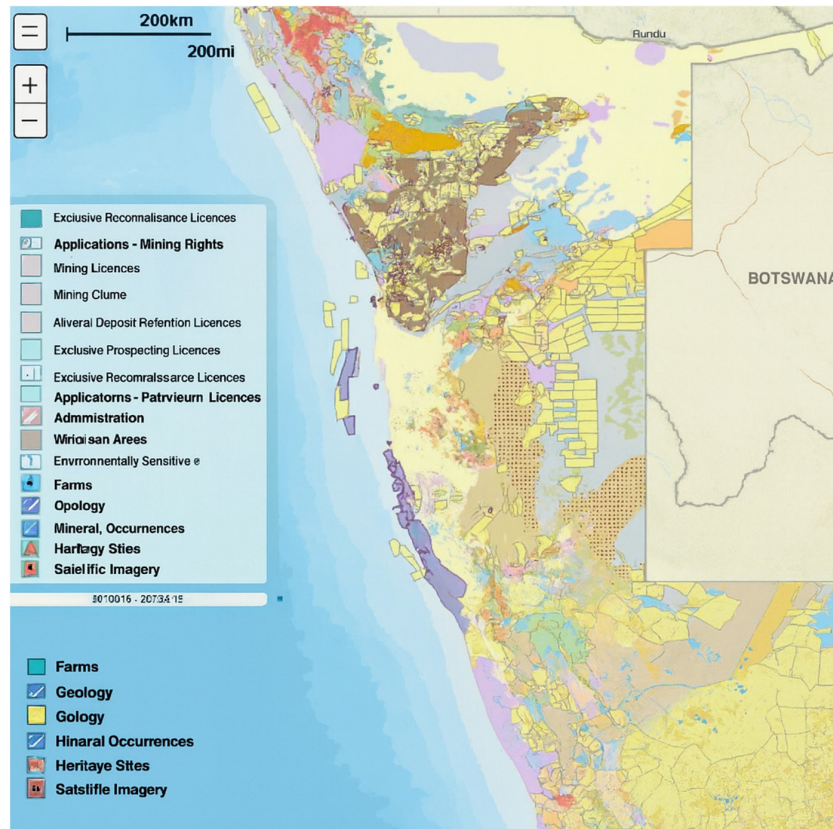


Figure 9: Mineral license map of Namibia. Source: <https://www.mme.gov.na/ednl/>

10.5.3. What needs to be in place to successfully manage the business

Small Scale Mining

- Mining claim owner
- Team of Miners

Large Scale Mining

- Experienced managers
(HR managers, finance managers, mining managers, processing managers)
- Geologists
- Accountants
- Engineers

10.6. Legal and institutional requirements for the enterprise

10.6.1. Navigating Legal Requirements for Mining

Mining in Namibia is regulated by the Namibia Minerals (Prospecting and Mining) Act 33 of 1992, managed by the Ministry of Mines and Energy. The Act governs exploration, extraction, and control of minerals in the country, along with associated matters.

Non-Exclusive Prospecting Licenses (NEPL)

For individuals 78+, valid for 6 months, non-renewable.

Mining Claims (MC)

For Namibian citizens, valid for 3 years with possible 2-year extensions. A maximum of ten claims allowed.

Reconnaissance License (RL)

Valid for 6 months for regional exploration, non-renewable.

Exclusive Prospecting Licenses (EPL)

3-year exclusive exploration right for up to 7,000 km², extendable with progress.

Mineral Deposit Retention License (MDRL)

Retains exploration rights for 5 years without mining obligations, with regular reviews required.

Mining Licenses (ML)

25-year exclusive mining rights, renewable for 75 years; financial and technical capability required.

Environmental Clearance Certificate

Required certificate from the Ministry of Forestry and Environment to obtain licenses.

10.6.2 Ensuring Compliance and Community Participation

To ensure long-term mining operations, implement the following measures:

- Compliance with relevant laws and regulations.
- Setting monthly targets to boost profitability.
- Regular exploration for new mineral resources.
- Offering competitive salaries to local workers to enhance community involvement.

10.6.3. Creating a Balance Between Mining and Conservation

Mining activities within conservancies should prioritize sustainable practices to minimize environmental harm. Key strategies include:

Renewable Energy: Utilizing solar and wind power to reduce fossil fuel dependence.

Water Recycling: Implementing systems to recycle and reuse water in mining operations.

Biodiversity Conservation: Avoiding destruction of local flora and fauna.

10.6.4 Strategies for Post-Mining Rehabilitation

- Mine closure for Large-Scale Mining (LSM) must ensure a sustainable, stable post-mining landscape.
- Closure plans should involve stakeholder and community consultation throughout the mine's life.
- Closure should foster long-term economic and social stability, creating post-mining opportunities.
- Small-scale miners must rehabilitate their pits and caves after mining.

10.6.5 Long-Term Economic Planning for Community Resilience

Since mineral resources are finite, it is important for communities to have long-term plans for community resilience to ensure survival for its inhabitants in the long run.

- Money earned from mining activities should be invested in other businesses that may be operated even after the mining has stopped.
- The community should be involved in post mining land use, to ensure that the land is converted to something beneficial to the community once mining activities have stopped.

II. CROSS-CUTTING ASPECTS/ SUPPORT



11.1. Enterprise Development

Success depends on resource assessment, community engagement, market research, business planning, marketing, capacity building, networking, and legal compliance.

Understanding Enterprises: Assess resources and evaluate existing businesses to identify community priorities.

- **Identifying Opportunities:** Conduct market research, explore diversification, and assess the feasibility of new ventures.
- **Business Planning:** Create business plans aligned with community needs and ensure legal compliance.
- **Marketing:** Build a brand for the conservancy, promote through various channels, and partner with tourism operators.
- **Capacity Building:** Provide training in key business skills and promote sustainable resource management.
- **Networking:** Collaborate with NGOs, engage the private sector, and seek government support for development goals.

11.2. Negotiation on investments

CBOs require clear goals, stakeholder engagement, expert advice, risk mitigation, inclusive negotiations, impact assessments, and well-drafted contracts to secure sustainable investments with equitable benefit sharing.

11.3. Communication / Liaison

Effective communication includes identifying stakeholders, regular engagement, appointing liaison officers, using appropriate channels, culturally sensitive messaging, and establishing feedback mechanisms for continuous improvement.

- Effective communication between CBOs and stakeholders
- Liaison strategies with Government Agencies and NGOs
- Developing communication channels with community
- Public relations and promoting CBOs initiatives
- Cultural sensitivity in communication with local communities
- Establishing feedback mechanisms for continuous improvement

11.4. Legal Advice Facilitation

CBOs must understand relevant laws, access legal resources (e.g., NACSO, Legal Assistance Centre),

ensure compliance in projects, manage land rights and contracts legally, and promote accountability with professional legal support.

- Understanding Legal requirements for conservancies
- Accessing legal resources for project management
- Facilitating legal compliance in CBOs initiatives
- Navigating land rights and ownership issues
- Managing contracts and disputes legally
- Ensuring legal accountability in investment agreements

11.5 Access to Markets

CBOs should identify market opportunities, build networks, deploy marketing strategies for eco-friendly products and wildlife tourism, leverage e-commerce, establish fair trade partnerships, ensure sustainable harvesting, and pursue certifications for broader market access.

- Identifying market opportunities for CBOs products and services
- Building networks with local and international markets
- Marketing strategies for wildlife tourism and eco-friendly products
- Leveraging e-commerce for CBOs goods
- Establishing fair trade partnerships
- Sustainable harvesting and market supply chains
- Certification and standards for market access

11.6 Administration and Record Keeping

Establish administrative procedures, maintain organized records, manage human resources, adopt technology tools, ensure data security, and conduct periodic reviews to enhance efficiency and transparency.

- Establish an administrative procedure
- Record keeping and documentation
- Managing human resources
- Using technology for administration
- Data management and security

11.7 Conflict Resolution

Understanding conflict causes and impacts is essential. Strategies include inclusive dialogue, mediation, consensus building, trust development, and formal policies for grievance handling and dispute resolution to maintain community harmony.

- Understanding conflicts in communities
- Community strategies for conflict resolution
- Mediation and negotiation techniques
- Building consensus and collaboration
- Developing conflict resolution policies

12. CONCLUDING REMARKS

Nature-based enterprises in Namibia's CBOs offer pathways to diversified livelihoods, poverty alleviation,



skills development, and climate resilience while promoting biodiversity conservation. Success hinges on continuous education, capacity building, good governance, financial management, market access, and strategic partnerships with government, NGOs, and private sector. Despite challenges, these enterprises restore community-nature connections and foster sustainable development for present and future generations.

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List of Appendices for cross cutting services

Appendix A1: Business opportunity identification

Criteria	Details
Resource or asset available	
Potential use	
Market demand	
Required investments	
Feasibility assessment	
Environmental impact	

Appendix A2: Basic business plan

Section	Context
Enterprise name	
Objectives	
Target Market	
Products/services	
Operational Plan	
Marketing Strategy	
Financial projections	
Risks and mitigation	

Appendix A3: Training and capacity-building log

Date:	Training Topic:
Facilitator	
Participants	
Outcomes/feed back	

Appendix A4: Partnership agreement outline

Parties involved:	Roles and responsibilities:
Conservancy [The enterprise]	
Partner	
Resource Contributions	
Revenue Sharing	
Duration and Termination	
Environmental impact	

Appendix B1: Negotiation checklist

Step	Key Questions	Actions to Take
Preparation	What are our goals?	Research and strategy sessions
Stakeholder Involvement	Who should be involved?	Identify and inform stakeholders
Agreement Drafting	Are all terms clear?	Review with legal advisors
Risk Assessment	What risks are evident?	Identify and outline mitigation

Appendix B2: Stakeholder engagement plan

Stakeholder	Role/Interest	Engagement Method	Timeline
Conservancy Members		Community Meetings	
Local Government		Formal Consultations	
Investors		Workshops, Negotiations	
NG Os/Experts		Advisory Sessions	

Appendix B3: Project impact evaluation

Category	Positive impacts	Negative impacts	Mitigation measures
Social			
Economic			
Environmental			

Appendix B4: Draft contract outline

Section	Details
Parties Involved	Names and roles of stakeholders
Project Description	Scope, objectives, and timeline
Financial Terms	Revenue sharing and investment
Environmental Compliance	Responsibilities and legal obligations
Dispute Resolution	Arbitration or mediation clauses

Appendix B5: Risk mitigation plan

Risk	Likelihood	Impact	Mitigation strategy
Financial instability			
Environmental Degradation			
Community Conflicts			

Appendix C1: Stakeholder communication log

Date	Stakeholder	Mode of Communication	Topic Discussed	Follow-Up Action

Appendix C2: Community meeting agenda

Meeting Date (Agenda)	Time	Venue
1. Welcome and introductions		
2. Updates on conservancy activities		
3. Discussion on community concerns		
4. Feedback collection		
5. Closing Remarks		

Appendix C3: Communication strategy outline

Target Audience	Message	Communication Channel	Frequency	Person

Appendix C4: Feedback form

Name (Optional)	Feedback category	Details of Feedback	Suggesttions

Appendix D1: Legal compliance checklist

Requirement	Agency	Status	Deadline
Conservancy Registration	MEFT	Complete/Incomplete	
	MEFT	Complete/Incomplete	
Land Rights Agreement	Ministry of Land Reform	Complete/Incomplete	

Appendix D2: Legal resource access plan

Resource	Description	Contact Information	Frequency
LAC	Legal aid for environmental issues	info@lac.org.na	
NACSO	CBNRM support	nacso@nacso.org.na	
MEFT	Permits and compliance	info@meft.gov.na	

Appendix D3: Draft contract outline

Section	Details
Parties	Names and roles
Scope of Work	Description of activities
Financial Terms	Revenue-sharing and expenses
Dispute Resolution	Mediation/arbitration procedures
Termination Clauses	Conditions for contract end

Appendix D4: Dispute resolution plan

Dispute Type	Stakeholders Involved	Resolution Mechanism	Responsible Person/Agency
Land Use Conflict	Conservancy, Land Board	Mediation/arbitration procedures	Traditional Authority
Contract Breach	Conservancy, Investor	Arbitration	Lawyer/Legal Expert
Conflict of interest	Enterprise members & Other stakeholders	Neutral Mediators	Local Leaders or external experts, to mediate dispute

Appendix D5: Feedback on legal service

Date	Service used	Provider	Feedback/

Appendix E1: Market opportunity assessment

Product/Service	Market Demand	Potential Buyers	Revenue Potential	Person
			a	

Appendix E2: Networking contact log

Organization Partner	Contact Person	Purpose of Engagement	Outcome	Follow-Up Date

Appendix E3: Marketing plan

Target Audience	Message	Marketing Channel	Timelune	Budget

Appendix E4: E-commerce setup checklist

Task	Description	Status	Deadline	Responsible Party
Create Product Listing	Write descriptions, upload images	Pending/In Progress/Completed		
Set Up Payment System	Integrate secure payment methods			

Appendix E5: Supply chain management plan

Product	Source	Harvesting Method	Logistics	Sustainability

Appendix E6: Certification checklist

Certification Type	Requirements	Status	Deadline	Agency/Contact
Fair Trade	Meet fair trade standards	Pending/In Progress/Completed		

Appendix F1: Administrative procedure checklist

Task	Steps	Assigned Person	Completed Date
Schedule Meetings	Notify members, prepare agenda	Administrative Assistant	
Update Financial Records	Reconcile accounts, file receipts	Treasurer	

Appendix F2: Record-keeping log

Date	Record Type	Location (Physical/Digital)	Retention period

Appendix F3: Human resources record

Employee Name	Position	Contract start date	Performance review date

Appendix G1: Conflict assessment form

Certification Type	Parties involved	Root Cause	Impact	Resolution attempted
Grazing rights	Community members A and B	Lack of clear boundaries	Reduced livestock health	None

Appendix G2: Conflict resolution policy framework

Policy area	Guidelines	Responsible Person/Communittee
Grievance handling	Issues must be reported within 14 days of occurrence	Conflict management committee
Mediation process	Neutral mediators mustbe assigned within 7 days	Conservancy board

THE END.

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