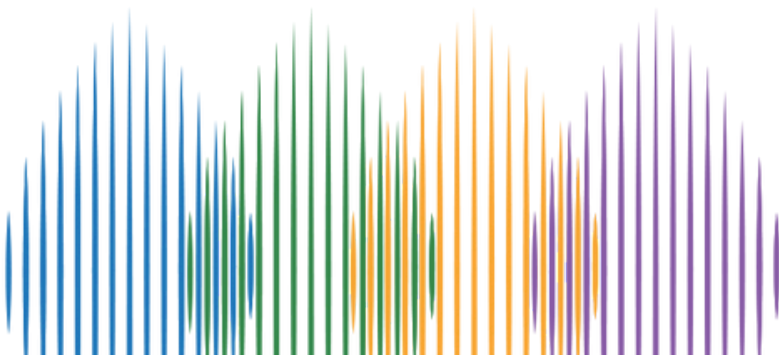


Transforming Bush Encroachment into Opportunity: The CARP+ Project's Sustainable Value Chains in Namibia

Omeva Consulting / African Wild Dog / University of Namibia



Namibia



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ABSTRACT

Namibia, distinguished by its arid climate, faces recurrent droughts that challenge local farmers heavily reliant on extensive livestock farming and rangelands. Bush encroachment, characterized by invasive woody species, exacerbates this issue, reducing grass availability, impacting biodiversity, and posing a threat to livestock production. This project addresses these challenges through value chains derived from encroacher bushes, focusing on sustainable production, gender equality, and poverty alleviation. Initiated by the University of Namibia, the CARP+ project investigates economic and environmental value chains to empower smallholder farmers.

The project aims to explore sustainable utilization techniques and develop product prototypes from encroacher bushes. It evaluates the effect of feeding livestock with encroacher bush silage on animal productivity, growth performance, and the quality of animal-based products. Additionally, a comprehensive cost-benefit analysis is conducted to evaluate the viability of different applications of the encroacher bush value chain. Capacity building within TVET institutions and communities is implemented through a 'train the trainers' approach to disseminate knowledge and skills relevant to the value chains. Furthermore, the CARP+ project holds the potential to boost research in bush value chains, alleviate poverty, reduce hunger, and enhance food security. It transforms bush encroachment from a problem into an opportunity in Southern Africa.

The project also focuses on developing value chains for oyster mushroom cultivation using post-harvest materials from encroacher bushes, with an emphasis on women farmers. Multi-stakeholder engagement within the value chains and the establishment of bush feed and mushroom incubation hubs to support and enhance community involvement are key components of the project. The expected outputs of this three-year project include the validation of methods, the development of business models, and the establishment of pilot products within various value chains, including feed, mushroom, fencing poles, charcoal, and biochar. The project addresses the limited commercial experience with encroacher bushes, offering income opportunities and enhancing food security.

TAPipedia tags

drought, sustainable management, biomass, agricultural value chains, agricultural innovation

keywords

value chains, bush feed, income generation

Context

Livestock plays a crucial role in Namibia's agricultural landscape, contributing significantly to the country's overall agricultural output. Beef production takes the lead, closely followed by sheep and goat farming. The livestock sector in Namibia predominantly relies on extensive farming practices, heavily dependent on rangelands for grazing. However, making recurrent droughts a severe challenge for local farmers. This challenging situation is further exacerbated by bush encroachment, a phenomenon characterized by the invasive growth of unwanted woody species, which reduces the availability of palatable grasses, disrupts biodiversity, and destabilizes ecosystems. A socio-economic survey conducted in 2015 by the Sustainable Management of Namibia's Forested Lands (NAFOLA) project in collaboration with the Directorate of Forestry

Namibia faces significant challenges impacting its natural resources, particularly for communities dependent on livestock for income. Drought periods exacerbate these issues, reducing land productivity, affecting nutrition and health, and causing financial stress. High unemployment (47% as of 2011) further complicates the situation. Extensive bush encroachment has affected over 45 million hectares of agricultural land, reducing rangeland carrying capacity, as noted in the National Rangeland Management Policy (2012). Despite these harsh conditions, more than half of Namibia's population still relies on agriculture, leading to annual economic losses.

Namibia faces extensive bush encroachment, with over 45 million hectares of agricultural land affected.

exceeding one billion Namibian dollars, particularly impacting the livestock and game industry. However, the abundant biomass resource derived from encroacher bushes offers a promising economic opportunity for Namibia. By converting de-bushed biomass into valuable products without competing with food production, Namibia can potentially stimulate economic

growth. Selective bush harvesting has led to increased grass cover, better grass seedling germination, improved water infiltration, and enhanced soil organic matter content. Economic studies suggest that a program focused on bush thinning and utilization in Namibia could yield significant economic benefits over time. Many Namibian farmers are now exploring bush biomass value chains to generate income for de-bushing. These value chains offer a variety of products, income opportunities, and employment prospects.

Common practices in Namibia include producing charcoal from bush trunks and creating bush-based feed from twigs and leaves. Emerging value chains such as biochar, wood chips, fence poles, and using wood chips to grow mushrooms are also being explored. While bush feed is popular among commercial farmers, its adoption in communal areas is limited. Research and support are needed to address the challenges faced by these communities. These value chains offer cost-effective solutions, particularly for unemployed and disadvantaged populations, especially women, by providing income opportunities.



Challenges addressed

- *Population and development dynamics, food and nutrition security, sustainable diets*
- *Climate change and disaster risks*

Key Problems

Bush Encroachment: The invasive growth of encroacher bushes in Namibia's rangelands is a significant problem. These bushes reduce the availability of palatable grasses, negatively impacting livestock feed resources.

Rangeland degradation in Namibia, exacerbated by the invasive encroacher bushes, has resulted in the deterioration of these vital ecosystems, diminishing their capacity to support livestock and native wildlife, and threatening the livelihoods of local communities.

Drought Resilience: Namibia's arid climate leads to recurrent droughts, which pose severe challenges to local farmers, especially those practicing extensive livestock farming. (continued on the page below...)



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Biodiversity and Ecosystem Disruption: Bush encroachment leads to a reduction in biodiversity and destabilization of the ecosystem, affecting the natural balance of the environment.

Economic Losses: The project aims to mitigate economic losses in the livestock and agricultural sectors caused by reduced carrying capacity, which is a direct result of bush encroachment.

Gender Inequality and Poverty: The project addresses the broader societal issues of gender inequality and poverty by focusing on sustainable production and income generation, particularly for women in farming communities.

Food and Feed Security: By developing value chains for feed and mushroom production, the project aims to enhance food and feed security in communities. **Lack of Research:** The project seeks to bridge the gap in research related to the utilization of encroacher bushes and create a knowledge base for informed decision-making.

Sustainable Resource Utilization: It promotes sustainable utilization of encroacher bushes, turning them into valuable resources rather than liabilities, thus contributing to environmental conservation.

Market Viability: Research on the market and acceptability of bush-based products by farmers will help determine the viability of the project and the potential for commercialization.

Capacity Building: The project focuses on building the capacity of both TVET institutions and communities, ensuring knowledge and skills are transferred effectively for long-term sustainability.

By addressing these key problems, the project aims to contribute to the sustainable development and resilience of farming communities in Namibia, enhance the conservation of natural resources, and empower both men and women through economic opportunities.

This holistic approach not only mitigates the ecological and economic challenges that result from bush encroachment, but strengthens food security and livelihoods within these communities, fostering a more resilient and sustainable future.

INNOVATIVE SOLUTIONS

Value Chains Derived from Encroacher Bushes:

Rather than viewing these invasive bushes as a liability, the project transforms them into valuable resources. By creating value chains for products such as feed, mushroom cultivation, fencing poles, charcoal, and biochar, the project ensures that different parts of the bush are utilized efficiently, minimizing post-harvest losses. This innovative approach maximizes the utility of encroacher bushes and opens new economic opportunities for local communities.

Sustainable Utilization and Product Prototypes:

The project explores innovative techniques for the sustainable utilization of encroacher bushes. By developing product prototypes, it aims to create a diverse range of marketable products and by-products from the bushes, ensuring that no part goes to waste. This approach fosters sustainable resource utilization and reduces the environmental impact of bush encroachment.

Mushroom Production from Encroacher Bush Materials:

An innovative solution is the cultivation of oyster mushrooms using post-harvest materials from encroacher bushes. This approach not only provides a valuable source of nutrition but also opens income opportunities, especially for women farmers presenting a sustainable and environmentally friendly alternative for food and economic security.

Multi-Stakeholder Engagement: The project emphasizes the importance of involving multiple stakeholders in value chains. By using innovative engagement strategies, it strengthens collaboration between communities, Technical and Vocational Education and Training (TVET) institutions, and stakeholders in the animal feed industry. This approach promotes knowledge exchange, skills development, and a collective commitment to the success of the value chains.

MCost-Benefit Analysis: To ensure the economic viability of the project, it employs a comprehensive cost-benefit analysis. This innovative tool evaluates the various uses of the encroacher bush along its value chain, helping to make informed decisions about the commercial potential of the project. It ensures that the solutions are not only environmentally sustainable but economically sound.

Capacity Building Through a 'Train the Trainers' Approach:

An innovative approach to capacity building is the 'train the trainers' model. By training individuals within communities and TVET institutions, the project creates a multiplier effect, enabling local experts to impart knowledge and skills related to the value chains. This approach empowers communities to become self-sufficient and self-reliant in managing and benefiting from the project's innovative solutions.

Market Research and Acceptability Studies:

An innovative research component of the project focuses on the market and acceptability of bush-based products by farmers. This research ensures that the solutions align with the needs and preferences of the target communities. By addressing market viability, the project can make informed decisions about the potential for commercialization.

Holistic Approach to Sustainable Resource Utilization:

The project's holistic approach is itself an innovative solution. By addressing multiple aspects of the bush encroachment challenge, from resource utilization to economic development and capacity building, it ensures that solutions are comprehensive and sustainable. This multifaceted approach maximizes the positive impact on affected communities.

The project also adopts a unique approach to research. Students and researchers are placed directly in communal areas while conducting their studies. This approach enriches their academic experiences and allows them to work closely with community members, gaining valuable hands-on insights.



KEY AND MEASURABLE OUTCOMES

- Establishment of Bush Value Chain Pilots:** The project successfully established three bush value chain pilots, focusing on mushrooms, bush feed, and fencing poles. These pilots serve as practical models for sustainable resource utilization, offering economic opportunities to the community while mitigating bush encroachment. These pilots provide tangible results and examples of how encroacher bushes can be transformed into valuable products.
- Development of Academic Talent:** The project has made significant contributions to academic talent development. It has supported two Ph.D. students, five M.Sc. students, and over ten B.Sc. students in their research and studies. This investment in education not only enhances the academic capacity of the region, but ensures the sustainability of the project's goals by fostering future experts in the field.
- Improved Livelihoods:** The project has significantly improved the livelihoods of local communities by creating income-generating opportunities through the various bush value chain pilots. Farmers engaged in mushroom cultivation, bush feed production, and fencing pole manufacturing have seen an increase in their income, thereby enhancing their overall quality of life.
- Training of Over 100 Farmers:** The project has directly impacted the lives of over 100 farmers by providing them with training and knowledge related to bush value chains. This training equips farmers with the skills to actively participate in and benefit from the project's initiatives, fostering economic sustainability within their communities.

“

I am Salomo Kauari, and I am the chairperson of the conservancy. We have several value chains at our biomass processing center such as timber, droppers, bush feed, etc. Farmers bring the raw materials, and we process them for a small fee so that they can sell products with added value. We also have a mushroom training center, and we train community members. What I liked the most about this project was to learn from the researchers., I did not know I could formulate my own feed for the cattle!

”

SALOMON KAUARI
CHIEF OF AFRICAN WILD DOG CONSERVANCY

“

We Farmers engaged in mushroom cultivation, bush feed production, and fencing pole manufacturing have seen an increase in their income, thereby enhancing their overall quality of life. “Honestly, we had no idea mushrooms could be grown, we used to see them growing on ant hills, but that was all. The training process was nice and easy, the boiling step was long, but other than that it was easy to follow. The mushrooms grew a lot. We split the first batch among ourselves and ate them. This time we are growing more as we would like to sell them. Mushrooms are healthy and so nice., I would encourage youth people to do these things, and also women, because when you teach women, you teach the whole household.

”

HIISANE RUKERO, ONDJOMPOJORUKUNE
VILLAGER AT AFRICAN WILD DOG CONSERVANCY

Challenges encountered

Technology and Local Suppliers: At the project's onset, a significant challenge was limited availability of technology and equipment due to the lack of local suppliers. This made it difficult to access the necessary resources for certain project activities.

Community Engagement: Initially, engaging the community was a complex process. Multiple outreach methods were tried and tested to effectively communicate the project's goals and encourage community participation.

Access to Remote Areas: Many project sites were in remote areas with limited infrastructure. Thus, ensuring that the team could reach these locations and involve all community members posed logistical challenges.

Diverse Stakeholders: The project involved many stakeholders from various sectors, each with its interests and priorities. Aligning these diverse stakeholders required considerable effort.

EFFICIENCIES GAINED

Concentrated Communication: Focusing on both external and internal communication was instrumental in overcoming challenges. Clear and consistent communication helped bridge the gap between stakeholders, including community members, and facilitated a better understanding of the project's objectives.

Innovative Outreach: Innovative outreach methods were adopted to address community engagement issues. These approaches were tailored to the specific needs and preferences of the communities, resulting in increased participation.

Collaboration for Technology: Collaborative efforts were made to address the technology and equipment challenge. Partnerships and collaborations with local suppliers and organizations were established to ensure a steady supply of resources.

Community Inclusivity: Efforts were made to ensure that all community members, even those in remote areas, were included in the project. Community leaders and local champions played a crucial role in reaching and involving every member.

Cross-Sectoral Coordination: The project's coordination efforts were streamlined to manage the involvement of diverse stakeholders. This resulted in more efficient collaboration and alignment of objectives.



FACTORS FOR SUCCESS

Community Engagement and Inclusivity: The project prioritized actively involving all community members, even in remote areas, fostering a sense of ownership and trust.

Strong Partnerships and Collaboration: Collaborating with local entities, organizations, and community leaders expanded the project's resources and overcame technology and resource challenges.

Customized Communication Strategies: Tailored communication and outreach efforts addressed the diverse needs and preferences of community members, enhancing engagement.

Use of ICT for Remote Engagement: Leveraging Information and Communication Technology (ICT) enabled the project to reach and engage with remote rural areas efficiently.

Efficient Coordination and Alignment: Successful coordination among diverse stakeholders with aligned objectives streamlined project activities towards a common goal.

Adaptability and Innovation: The project's flexibility in addressing challenges through innovative solutions played a crucial role in its success.

Systematic Inclusion of TVET Institutions: The deliberate involvement of TVET institutions empowered students and community members and ensured the smooth operation of project activities.

These collaborative research initiatives are effective in addressing challenges related to bush encroachment, biodiversity loss, and food and feed security, making them applicable to similar projects worldwide. The CARP+ project demonstrates that research can be a powerful tool for community empowerment and sustainable development and can serve as a model for similar initiatives globally.

CRITICAL CAPACITIES

Technical expertise: The wide range of researchers and students contributing to the project possess a broad range of skills and knowledge spanning agriculture, environmental science, and community development. The experience in data collection, analysis, and experimental design has played a pivotal role in conducting robust research and experiments at village level.

Technological adaptation: The project team displays prowess in integrating and adapting technology to suit the unique needs of communities. This capability allows for the utilization of advanced equipment for bush control and biomass management, enhancing project efficiency and impact.

Community Engagement and Communication Skills: Project members excel in interpersonal and communication skills and have a wealth of experience engaging with local community members. This has enabled us to interact efficiently with community members and stakeholders, which has been fundamental in establishing trust, comprehending community needs, and transparently conveying project objectives.

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Adaptive and Innovative Thinking: Our team's ability to adapt to evolving challenges and devise innovative solutions has been instrumental. Our open-mindedness to explore new approaches and methods empowers the project to overcome a myriad of obstacles, particularly in remote and resource-constrained settings.

Partnership Building and Resource Mobilization: Project leaders have proven their ability to initiate and sustain partnerships with local suppliers, research institutions, community leaders, and organizations like MAWF and GIZ. These partnerships are instrumental in providing essential resources, funding, and technical support.

Project Management and Coordination: Proficient project management capacities ensure the effective planning, organization, and execution of project activities. Leaders adeptly align diverse stakeholders and uphold focus on project goals, ensuring the timely achievement of milestones.

Capacity Building and Knowledge Transfer: The project prioritizes the capacity building of TVET institutions and local communities, focusing on skill transfer, training, and education in areas directly relevant to the project. This knowledge transfer empowers community members and students to participate in project activities actively and effectively.

Lessons learned and applicability

Tailored Communication and Outreach

Lesson Learned: Innovative and tailored communication and outreach strategies were crucial in engaging local communities. Recognizing the diverse needs and preferences of community members, the project experimented with various approaches to ensure effective participation.

Applicability: This lesson can be applied in any context with similar characteristics, especially in remote or culturally diverse areas. Customized communication strategies can enhance community engagement and participation in various development projects.

Collaboration and Partnerships

Lesson Learned: Building partnerships helped overcome resource limitations. Collaborative efforts with local suppliers, organizations, and community leaders were essential in addressing challenges related to technology and resource access.

Applicability: Collaboration and partnerships are universally applicable. Similar challenges may arise in various regions, and forming alliances with local entities can help mitigate these challenges and ensure resource availability.

Inclusivity and Community Involvement

Lesson Learned: The project leveraged community leaders and local champions to reach and engage every individual, including those in remote areas.

Applicability: Inclusivity and community involvement are fundamental principles applicable in any context with similar characteristics. Projects and initiatives that aim to benefit communities should prioritize reaching all members, especially in remote or marginalized areas.

Streamlined Coordination

Lesson Learned: Efficient coordination among diverse stakeholders facilitated smoother project implementation. Aligning the objectives and priorities of various partners contributed to the project's success.

Applicability: Effective coordination is a lesson that can be applied universally. Projects involving multiple stakeholders and sectors can benefit from streamlined coordination, ensuring everyone is working towards a common goal.

Adaptation and Innovation

Lesson Learned: The project's ability to adapt and innovate in response to challenges was a critical factor. It continuously sought creative solutions to address specific issues, demonstrating the value of flexibility.

Applicability: Adaptation and innovation are relevant in any context with similar characteristics. Challenges and unexpected obstacles are common in development projects, and the ability to adapt and innovate is an asset.

ICT Integration for Outreach

Lesson Learned: The project also effectively harnessed Information and Communication Technology (ICT) for community engagement. The use of video manuals, creation of video campaigns, and the utilization of social media to disseminate the benefits of bush value chains deserves special mention. This digital approach facilitated outreach and knowledge sharing, contributing to the project's overall success.

Applicability: Adaptation and innovation, along with the strategic use of ICT, are relevant in any context with similar characteristics. Challenges and unexpected obstacles are common in development projects, and the ability to adapt and innovate is a valuable asset. The integration of ICT enhances project outreach and communication capabilities, making it particularly adaptable to various settings.

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CONTACTS

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LINKS TO ADDITIONAL MATERIALS

[YOUTUBE](#)

[OMEVA CONSULTING](#)

Key actors and stakeholders

University of Namibia (UNAM), as the country's premier institution of tertiary education, is deeply involved in the project. They conduct research at the community and various campuses, such as the Neudamm Campus, which is known for its research in plant and livestock production, agricultural economics, food science, and veterinary medicine. UNAM provides expertise in areas such as animal nutrition, livestock production, and food science, contributing to the project's research efforts.

Okakarara Vocational Training Centre aligns with the project's goals of providing effective and efficient training services. They support the project with technical expertise, involve students, and play a key role in the design and construction of the production site.

African Wild Dog Conservancy and Community Forest, located in the Okakarara District, provides opportunities for community members to actively manage forest and wildlife resources.

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Omeva Consulting is committed to bringing cutting-edge solutions to rural areas, and they actively engage in research and large-scale piloting of innovative solutions. They are currently involved in exploring the use of AI in livestock production, which aligns with the project's goals of enhancing sustainable agriculture.

MAWF-GIZ Bush Control and Biomass Utilisation (BCBU) project is a collaborative effort between the German International Cooperation Agency (GIZ) and the Namibian Ministry of Agriculture, Water and Forestry (MAWF).

MAWF's mission is to practice and promote the sustainable and participatory management of forest resources and woody vegetation. The Ministry plays a critical role in creating an enabling environment for various partners to work together and mobilize communities for the project.

THE TROPICAL AGRICULTURE PLATFORM

The Tropical Agriculture Platform (TAP) is a G-20 initiative launched in 2012 to promote agricultural innovation in the tropics. TAP has formed a coalition of more than 50 partners, led by the Food and Agriculture Organization of the United Nations (FAO) and generously supported by the European Union (EU). The main goal of TAP is to strengthen agricultural innovation systems (AIS) in developing countries through coordinated multi-stakeholder interventions.



CONTACTS

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MORE INFORMATION

 www.fao.org/in-action/tropical-agriculture-platform
 www.fao.org/in-action/tap-ais
 [TropicalAgriculturePlatform](https://www.youtube.com/TropicalAgriculturePlatform)
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Global Call for Agrifood System Innovations and Stories of Capacity Development for Innovation

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