

Mr Hailwa  
Vincent Louis!  
Study and advice as per our  
telephonic conversation  
W. Nghitila



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**MINISTRY OF ENVIRONMENT AND TOURISM**

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17<sup>th</sup> October 2017

**OFFICE OF THE ENVIRONMENTAL COMMISSIONER**

The Permanent Secretary  
Ministry of Agriculture, Water and Forestry  
Private Bag 13184  
Windhoek

Dear Mr Misika

**Request for transfer of funds from NaFoLa project to support the Summer Drylands Programme 21**

A concept to implement approved activities under the "Sustainable Management of Namibia's Forested Lands (NaFoLa) project" has been developed by the Gobabeb Research and Training Centre, which operates under a joint venture agreement with this Ministry.

It is proposed to implement these activities under the successful Summer Drylands Programme (SDP) internship model. Some 12 emerging scientists will be afforded an opportunity to conduct transdisciplinary research in the field, under the guidance of local and international experts. The deliverables at the end of the two-month research methodology training will be scientific reports and public presentations regarding the use of fuelwood, and its impacts on the environment and human health and wellbeing. Provision is also made for one Masters student to be supported through this particular intervention. The concept and budget, as endorsed by UNDP, MET and the project management team, are attached to this correspondence. In line with the documentation provided, it is hereby requested that the amount of **N\$712,000** be transferred to the Gobabeb Research and Training Centre in order to execute this programme.

SDP 21 will not only generate science-based information that is directly aligned to the objectives and targets of NaFoLa regarding sustainable forest management (SDG 15 – Life on land), but will promote research capacity development and potentially inspire young Namibian scientists to seek further career opportunities in the forestry sector. Understanding indoor pollution, a novel component of the work, will furthermore make a contribution to meeting SDG 3 (Good health and well-being).

Your assistance in facilitating this request is greatly appreciated.

Yours sincerely,

**Teofilus Nghitila**  
Environmental Commissioner



PROPOSAL FOR PROMOTING SUSTAINABLE FOREST MANAGEMENT

*Name of organisation:* **Gobabeb Research and Training Centre**

*Type of organisation:* **Educational Trust, operating as a Joint Venture between the Ministry of Environment and Tourism (MET) and the Desert Research Foundation of Namibia (DRFN)**

*Registration number:* **T53/98**

*Programme:* **Gobabeb's Summer Drylands Programme (SDP): Capacity building in critical thinking for emerging Namibian scientists**

*Project Title:* **Home Fires Burning: Community Forests, Wood Fuel and Indoor Air Pollution in the Omaheke Region**

*Location:* **Omaheke Region and Gobabeb Research and Training Centre**

*Contact Person/s:* **Martin Handjaba (Coordinator); Gillian Maggs-Kölling, Eugene Marais (Training Supervisors)**

*Postal Address:* **P.O. Box 953, Walvis Bay**

*Physical Address:* **Gobabeb Research and Training Centre, 1 Kuiseb River Road, Namib-Naukluft Park**

*Tel:* **064 694198**

*Mobile:* **081 5636317 (Handjaba)**

*Amount requested:* **N\$ 712,000**

*Estimated total project cost:* **N\$ 1,402,000**

*Duration of project:* **October 2017 – September 2018**

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## 1. PROJECT TITLE

Gobabeb's Summer Drylands Programme (SDP): Capacity building in critical thinking for emerging Namibian scientists

Home Fires Burning: Community Forests, Wood Fuel and Indoor Air Pollution in the Omaheke Region

## 2. BACKGROUND AND PROBLEM

Globally, some 3 billion people still burn traditional fuels like wood inside their homes. The resulting indoor air pollution causes more than 1.5 million deaths per year, and condemns millions to suffer from chronic respiratory problems. Despite this obvious threat to human health, prevailing since the dawn of mankind, indoor air pollution is seldom acknowledged in development agendas. Around 10% of the global energy supply is derived from wood fuel, particularly in rural areas, where it is anticipated that wood-based biomass will continue to fill the bulk of energy needs. Consumption of wood fuel is expected to increase in line with population growth. At the same time, global forest cover is reducing at an unprecedented rate, some 7 million hectares per year in tropical regions. These concerns have been embraced in the Sustainable Development Goals (SDGs) and targets, particularly SDG 15 ("Life on Land") and SDG 3 ("Good health and well-being"). Through the 17 integrated and indivisible SDG goals, it is intended that by 2030, no one will be left behind in the restoring of balance between human needs and the environment.

Although Namibia is not currently afflicted with high levels of air pollution, indoor air quality may actually be of serious concern. The majority of Namibians do not have access to electricity and rely on solid fuels for cooking, lighting and warmth. In rural communities, almost 90% of households use wood fuel for domestic energy. With limited alternative energy sources available, increasing pressure is being exerted on forest resources, resulting in unsustainable harvesting, deforestation and land degradation. It is estimated that Namibia is currently losing about 1% of forest cover per year. The preferred fuelwood species, with high calorific values, are mostly protected and are important ecological keystone species in Namibia's dryland forests. In addition to these environmental consequences, indoor burning has insidious impacts on human health, which is unquantified in Namibia and consequently remains unaddressed.

The Omaheke Region has fairly low forest cover, consisting predominantly of camelthorn savannas and mixed shrublands, with isolated forest and woodland savannas. With a scarcity of water and infertile soils, land use options are somewhat limited. While commercial livestock ranching dominates in 50% of the region, inhabitants in communal areas are dependent on the woody vegetation for fodder, construction materials, fuel and food. As there are no wooded areas formally managed as community forests, currently utilisation is unchecked, but an acute shortage of wood fuel is reported. The potential health impacts of burning wood and other fuels inside homesteads are unknown, although pulmonary diseases are documented as being the most severe ailments affecting poorer communities in Omaheke.

### The Project Framework – Sustainable Management of Namibia's Forested Lands (NaFoLa)

The overall objective of the NaFoLa project is to reduce pressure on forest resources by facilitating the policy and capacity enabling environment for the uptake of improved practices within agriculture, livestock and forestry management in the community forest areas. By the end of the project, NaFoLa will have, *inter alia*, implemented Sustainable Forest Management technologies in selected Community

Forest hotspots, including addressing overharvesting of fuelwood and aiming to reduce consumption of wood fuel by 20%.

Two target areas have been identified for gazetting as Community Forests (CFs) in Omaheke: Epukiro and Otjombinde, and inventories and preparation of dossiers are already advanced. Otjombinde constituency has the highest incidence of poverty within the region, at 37%, while Epukiro is third highest at 31%. Applying the correlation that the poorest communities are also those most reliant on forest resources, it is anticipated that these prospective CFs are heavily utilised. Baseline data on consumption of forest resources for energy, for example, is rather coarse and specific localised information regarding wood fuel is not available for these hotspots. No quantified data exist as to levels of particulate matter concentrations generated as a result of indoor fires. Established negative impacts of indoor air pollution on human health will be a key factor in supporting the shift to alternate energy sources for domestic use.

This project is designed to address three critical issues:

1. developing an understanding of utilisation of forest resources for energy needs in the two CFs through socio-economic surveys in selected households;
2. determining availability of preferred wood fuel resources through rapid vegetation assessment protocols; and
3. quantifying exposure to particulate matter concentrations (indoor air pollution) through robust scientific methods and specialised technology.

#### The Capacity Building Component – the Summer Drylands Programme (SDP) approach

The project will provide up-to-date knowledge and understanding of the importance of dryland forests to households, but also how specific types of interventions may reduce pressure and improve living conditions in those most vulnerable. Such evidence is critical to inform regional and national decision-makers and planners. In addition to developing relevant information to promote sustainable management of community forests, this project will also contribute towards capacity building by training young, emerging researchers.

In Namibia, most young professionals entering the work-force have limited practical experience and knowledge of the Namibian environment and how relevant environmental issues might be addressed. Part of this project is to supplement the academic knowledge of tertiary level students with concrete experience of Namibian environmental concerns. Participation in the project will impart hands-on experience of environmental issues, including land degradation and climate change, which are of vital concern for sustainable development. Gobabeb's approach is to encourage early-career professionals to apply critical thinking and theory when confronted with environmental and development challenges. That encourages holistic thinking and integration of environmental awareness, technical skills and research methodologies, scientifically sound analysis and interpretation, and appropriate participatory dissemination of information at different levels of society. The engagement of trained young professionals in hands-on environmental investigations and problem solving, just before they complete their studies or take up permanent positions, allows for well-rounded completion training for Namibia's future technical cadre and policy-makers.

Gobabeb has developed and adapted this graduate training approach for over twenty years by engaging final year UNAM and NUST students to investigate specific environmental challenges and development issues. Gobabeb's capacity building initiative has led to greatly increased skills, critical thinking ability and appropriate attitudes relating to sustainable development. The more than 220 alumni that

participated in such two-month courses now play major roles in government, academia and the private sector. A 2008 tracer study of 147 graduates who completed such courses revealed that alumni contribute in a positive and dynamic manner to Namibia's development.

Current positions (2008)	Number	Comments
Government	66	Several at Director level
Private Sector	37	Consultants and researchers
Academic	42	Staff and students
Unknown	2	

In addition, and in line with a strategy to promote sustainability of the training function at Gobabeb, alumni from SDP, now equipped with the skills and understanding of the approach, have actively participated and been instrumental in the execution of other training offered by Gobabeb. Over the past three years, eight SDP alumni were pivotal in mentoring trainees undergoing Gobabeb's six month in-service research training initiative and Gobabeb's outreach programme for environmental education of Grade 11 learners. In addition, Gobabeb has further adapted its approach by giving young professionals and opportunity to gain practical project implementation and management experience, under the mentorship of senior Gobabeb staff, by engaging them in the managerial aspects of developing and implementing these courses.

### 3. GOALS AND OBJECTIVES

**Overall goal:** Assess and report on household utilisation of wood as an energy source from dryland forest hotspots in the Omaheke Region through participatory vulnerability assessments; assessment of air quality and particulate matter inside homesteads; and resource exploitation assessments. In addition, the project will develop the professional capacity of early career scientists to assess environmental aspects related to development goals; raise awareness on options to use renewable energy and improve fuel efficiency in remote households through hands-on experience with participatory rural assessment techniques; measuring indoor air quality as a consequence of using wood as an energy source; and determining dryland forest resources and degree of utilisation. The project will provide a baseline for monitoring the potential reduction in household consumption of wood and increased use of more fuel-efficient technology and alternative energy sources.

**Objective 1:** Socio-economic baseline information on household consumption of wood in two community forest hotspot areas in the Omaheke Region through participatory rural assessments are provided to ensure vulnerable and marginalised households are integrated in outreach and development initiatives for improving sustainable forest management. The data will also provide a datum for measuring participation and impact of specific development interventions.

**Objective 2:** Utilisation of wood as an energy source and impact on dryland forest areas are quantified by determining resource availability at increasing distance from rural communities in two community forest hotspot areas in the Omaheke Region. The data will provide independent means to monitor successful implementation of sustainable community forest management and reduction in wood consumption for energy in areas where development interventions are taking place.

**Objective 3:** Measuring indoor air quality, with specific reference to airborne particulate matter from wood fuel burning, in representative households within rural communities in two community forest hotspot areas in the Omaheke Region. Airborne particulate matter is a major cause of respiratory

diseases and is a primary health care issue, thus may contribute to greater rollout and increased adoption of more fuel efficient technologies or alternative energy sources in rural households. The data may also provide compelling evidence for integrating development outreach from various sectoral initiatives to complement each other.

The main rationale and purpose of the project therefore focuses on enhancing the implementation of sustainable forest management technologies. An integrated part of the participatory assessments would be to distribute information on alternative energy sources and fuel efficient technologies, with a specific focus on particularly vulnerable and marginalised households, thus contributing to raising awareness of the importance of sustainable utilisation and management of communal resources. At the same time, future decision-makers will have increased knowledge and skills and the appropriate attitudes to apply their professional training to solve environmental and development challenges in Namibia.

#### 4. ACTIVITIES

Gobabeb will recruit a registered Masters degree student and twelve (12) appropriate, recent UNAM, NUST and IUM graduates and provide initial orientation and training on the context of the project and appropriate assessment and measuring techniques. In addition, a trainee project manager has been identified and assigned responsibility for coordination and implementation of the programme of work. The tasks include: advertising, short-listing, interviewing and selecting students; preparation and implementation of an orientation programme involving a variety of experts in the requisite fields; project planning, including compiling and designing participatory assessment questionnaires and data recording protocols and enumeration sheets; elaboration of questions and processes to be used at Gobabeb when analysing the data that has been gathered. The expected outcome would be students with awareness and knowledge of the challenges involved in generating baseline information and interpreting such information for a variety of users and stakeholders.

Gobabeb staff, and local as well as international experts associated with the training initiative, will elaborate and train the selected graduates in the techniques to be used and assemble equipment needed for this project. The expected outcome would be to ensure adequate field equipment, academic reference information, and expertise is available to support the implementation and analysis of project results by the student participants.

Project stakeholders – student participants, Gobabeb staff, supporting experts – will undertake field assessment in several steps. During the first weeks of the assessment (December) students will further elaborate investigation techniques, finalise locations, and undertake data gathering and field assessments. After preliminary analysis of the information and a review of initial results (December and January), a supplementary field session may be undertaken (January), if required. The expected outcome would be a well-documented report on household reliance, impact and consequences of using wood for energy in the relevant hotspot areas of the Omaheke Region. In addition, enhanced knowledge and capacity of the young professionals to undertake integrated participatory rural assessments and quantitative environmental monitoring procedures would be a key outcome of these activities.

Project stakeholders, supported by Gobabeb staff and identified experts, would draft materials for disseminating information to target audiences; regional and national decision-makers; secondary schools; rural development activists; and the public at large. In particular, student participants will explain their activities and major results at organised information events. The outcome is to ensure that the information that has been produced are available and communicated to major stakeholders; that targeted publications and information products are available for dissemination to identified recipients;

and that student participants gain experience in various processes to present and communicate the results from environmental investigations to various types of audiences.

A Masters degree student will utilise the results from the initial field assessments to identify particular issues that need further intensive investigation, with particular reference to elucidating linkages between household poverty and vulnerability to utilisation of low-quality fuels and increased exposure to poor indoor air quality and the associated health risks. The outcome is to ensure local Namibian expertise to assess and evaluate household utilisation of dryland forest products and the associated environmental and development issues within rural communities. Such expertise will improve overall understanding of linkages between cultural practices, various aspects of household vulnerabilities, and environmental resource harvesting practices in Namibia, with specific reference to dryland forests as a traditional source of energy.

## 5. EQUIPMENT AND METHODOLOGY

Gobabeb's graduate training initiatives emphasise the use of appropriate, yet industry-standard, equipment and protocols to investigate and explain environmental and development issues. During the course of project implementation, the combination of readily available and low-cost yet information-rich assessment procedures, innovative use of standard research equipment, and judicious selection of technologically appropriate and accurate measurements to develop quantitative information will be emphasised. During the preparation and consideration of potential projects, Gobabeb widely consults knowledgeable experts and identifies partners that can advise on achievable outcomes and appropriate technology.

This project will be carried out with basic field equipment such as measuring tapes, quadrats of different size, compass, clinometer and rulers, e.g. assessing woodland resources and exploitation at increasing distances away from rural household centres. Participatory assessment questionnaires will guide semi-quantitative household consultation in the home language of respondents, with rapid recording and translation through the use of digital recorders, cameras and smart phones. Indoor air quality, with specific reference to particulate matter, will require the deployment of thermochron i-buttons and continuous particulate monitors to determine particulate pollution from indoor use of wood or other fuel for cooking, heating or lighting.

Gobabeb has ensured the loan of particulate monitors from North-West University, South Africa, for such indoor air quality assessments and has other cutting-edge technological equipment in place for project implementation. It also has information materials on alternative energy options and fuel efficient technology that can be used for awareness raising during participatory assessment activities. The efficacy of the approach – involvement of dynamic and interested students supported by experts and interested stakeholders – has proven many times to be more effective than a simple consultant-based approach to investigating environmental questions of all types.

6. PROJECT BUDGET

Item	Description	Unit	Unit Cost*	Quantity	Total Costs	Amount requested	Matching funding (other sources)	Matching Funding Source
<b>GOAL:</b> Assess and report on household energy consumption of wood in two community forest hotspot areas of the Omaheke Region through participatory vulnerability assessments, quantification of resource exploitation, and measuring indoor airborne particulate matter								
1.	Identify, organise and train tertiary student group to implement project	Day	12,000	12	144,000	80,000	64,000	Gobabeb
2.	Supply and maintain equipment to record and measure household data, ambient conditions, air quality and dryland forest resources	Day	20,000	18	360,000	60,000	300,000	Gobabeb, North-West University
3.	Student group undertakes participatory rural assessments in the Omaheke Region	Day	14,000	20	280,000	140,000-	140,000	Gobabeb
4.	Student group compiles information, undertakes analysis and writes draft reports at Gobabeb	Day	9,000	20	180,000	90,000	90,000	Gobabeb
5.	Project manager completes information document for MAWF, MET and MHSS on wood utilisation and environment	Day	500	24	24,000	6,000	6,000	Gobabeb
6.	Outreach and information on alternative energy and fuel-efficient technologies for rural communities	Day	8,250	8	66,000	36,000	30,000	Gobabeb
7.	Information dissemination events for stakeholders and the general public	Day	30,000	6	180,000	120,000	60,000	Gobabeb
8.	Masters degree student	Year	90,000	2	180,000	180,000		
<b>TOTAL</b>					<b>1,402,000</b>	<b>712,000</b>	<b>690,000</b>	

\* Unit cost refers to transport, subsistence and accommodation for 12 students, 4 community informants/interpreters and up to five staff members for any one activity.