



TECHNOLOGY FOR LIFE
FINLAND

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PROJECT PROPOSAL FOR NEW PROJECT

Applicant Organization

Name **Green Namibian Eco Centre (GNEC)**

Type **Namibian NGO**

Contact Person **Veijo Koskenkangas (GNEC)**

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Legal Status **GREEN NAMIBIA ECO CENTRE**
(INCORPORATED ASSOCIATION NOT FOR GAIN)

Register No: **2005/0100**

- Approved plans by LAs?
- Comm. Support - should not be fully commercial
- Infrastr. dev. - guarantee of usage?
- Need written commitment VTC involvement (MoAus.).

Approved

References and previous experience

Green Namibian Eco Centre

The GNEC was founded in the beginning of the Eighties in the refugee camp Nyango in Zambia. At that time the Finnish NGO "Technology for Life" began to cooperate with SWAPO. Right after the declaration of independence of Namibia the "Green Namibia Community Project" was founded and renamed 2001 to the actual name: Green Namibia Eco Centre;GNEC.

Since several years the GNEC works as an independent organization and has been registered as a Namibian NGO. "Technology for Life" supports the GNEC exclusively in a project-relating way.

Long-term targets of GNEC are poverty alleviation by an ecologically and socially sustainable development in Ongwediva, Northern Namibia. Main activities are measures in education for both, men and women, whose previous education was insufficient during school and the first jobs. Therefore decentralized places of learning were established and operated during the last eight years in five different municipalities. The work was focused on carpentry, welding technologies and masonry. In particular young women and men are in the middle of interests, who have no access to public places of learning. Furthermore the GNEC consults and demonstrates since several years in the matter of, reforestation, gray water treatment and building material production. The building materials are lightweight micro-concrete roofing tiles (MCR tiles) marked as "Cool Tiles" and cement bricks).

The GNEC offers:

- Education in several trades
- Promotion of the distribution of MCR tiles (Cool Tiles)
- Development and distribution of fitted technologies for energy saving purposes
 - Solar stoves
 - Wood-saving stoves
 - Photovoltaic operated charging apparatus
 - Hot water solar systems
- Water-saving measures
 - Rainwater collecting systems
 - Water filtration systems
 - Application of water-saving irrigation systems
 - Further utilization of gray water
- Operation of a tree nursery for cultivating fruit and shade-providing trees
- Recycling and utilization of waste

The GNEC is mainly financed by the Finnish Foreign Ministry but also gets support from Finnish NGO's. Its annual budget reaches 30.000 EURO. In 2005 the German Embassy supported the GNEC with two new MCR Equipments to extend the production according to the raising demand. Since 13 years Mr. Veijo Koskenkangas heads the GNEC.

His work is focused on project coordination and training. Since eight years the technician Mr. Marko Salminen supports the management of the center.

2. Project Location

The GNEC is in charge of a plot in the city center of Ongwediva. This plot has an area of 1,2 hectare. It was handed over by the Namibian Government to "Technology for Life" to build up the GNEC. Until now this area served as cultivation area for a tree nursery of indigenous tree species as well as for the production of MCR tiles and cement bricks.

Few buildings are already on this plot, which serve as offices and accommodations for the employed staff. Since several years the GNEC is in touch with the "Valombola Vocational Training Center" (in neighborhood). In this cooperation solar stoves are produced and commercialized. Later on the production was shifted on its ground.

3. Participants and stakeholders

- The GNEC will establish next to its close cooperation to the Clay House Project a stronger base of forward-looking technologies like building with clay and dry toilet systems against the problem of deforestation in Ovamboland. The interconnection of the GNEC to Ovamboland and its good contacts to relevant and important people within Ovamboland will help to reach a successful project operation.
- Local authorities of Ovamboland will be offered several relevant technologies focussed at one location. These technologies are of different branches, which all have a positive impact to main problems like provision of cheap and ecological house-building, alternatives cooking technologies to fight deforestation, sustainable and long-lasting sanitation concepts without wasting water.
- Individuals and members of NGO's and self-help groups like the Shack Dweller Federation will profit from the establishment of the Consulting and Demonstration Center. This location will provide a cheap alternative for holding conferences, seminars workshops, etc. Also these groups will make use of the presented technologies since it is directly implemented within the whole project complex by the clay buildings, the dry toilets, the solar restaurant, the local tile production, etc.
- The Clay House Project from Otjiwarongo will be able to strengthen its activities in the north with this extended GNEC base at Ongwediva through the expansion of its customers or interested persons, respectively. Publication materials and potential clientele can easily be presented and won through the purpose out of that the Consulting and Demonstration Center is built.
- Trainer and facilitator of the Clay House Project, who will give supervision during implementation of the project.
- Trainees from different Vocational Training Centres, who will profit from the establishment by learning to handle comprehensive construction plans and material lists.
- Trainees from the Shack Dweller Federation which will get certain skills useful for their own housing needs. While they are in training they get also an income which helps to accumulate some savings to become qualified for a Shack Dweller loan.

4. Statement of compliance with GEF and SGP Criteria

Reafforestation

Firewood for cooking is already merely available since surrounding areas are widely deforested. Capacity building of local self-help groups will take place within the Consulting and Demonstration Center in the exchange of traditional cooking behaviors by solar stoves. The establishment of a solar restaurant and the already present tree nursery will show to all its visitors and neighbouring settlement areas how easy the change in cooking facilities is. The permanent presence of these techniques and its application will intensify this influence. Also by the holding of conferences in the center.

Poverty Reduction

Especially low-income households of Ovamboland are faced by a tremendous scarcity of essential natural resources since this particular region is dense populated. The majority is poorly supplied with acceptable drinking water and shares additionally these sources of water with cattle. In this concern health risks are part of every ordinary situation besides Namibian's consternation by AIDS.

Poverty reduction takes place through the presentation of the drying toilet system and the clay house project as possible low-cost alternatives in house-building measures without the renunciation of an acceptable living standard.

Limited water resources

Due to the implementation of several show toilets for the restaurant and within the accommodation flats for conference participants once more the importance of a forward-looking change in sanitation technology will be shown. This change in mind will save the ground water resources against over-exploitation and leads to an alternative perspective for the relevant administrative institutions, which are responsible for the nationwide or local water supply. Even with the drying toilet system an increasing living standard can be realized.

Sustainable building technologies including high energy efficiency

The recent scarcity of fossil energies shows once more the importance of the dissemination of alternative construction materials like clay. Due to several clay searches done from the Clay House Project it is already proved that clay is almost everywhere available in Ovamboland. The combination of the local produced micro-concrete roofing tiles and the building itself out of clay leads to an 85% reduction of the embodied energy. There are less transports, less CO₂ emissions, smaller drain of money out of the neighbourhood due to less purchase of tin sheets and portland cement.

Although this project itself is not directly building houses for the poor population, the local presentation will have a deep impact to the future development of the house-building behavior and all issues related to presented renewable energy technologies.

5. Evidence of a participatory planning system and agreement by participants with project objectives and activities

In the preliminary stages of the development of the project ideas the Green Namibian Eco Centre, the Clay House Project and the Shack Dweller Federation developed the main objective to provide alternative house-building concepts, renewable energy utilization systems, water-saving measures and cheap but effective facilities for regional, nationwide or international conferences. The latter objective was planned since a lot of meetings, workshops, etc. of NGO's of other groups fail out of financial reasons. The plot of the GNEC was handed over by the Namibian Government to establish the GNEC itself. The GNEC and the Clay House Project consider the expansion of this center as an effective measure to spread further the main ideas of the GNEC and the CHP. Their cooperation and the establishment of the Consulting and Demonstration Center will have several additional synergy effects by the concentrated presence of all concerned technologies.

Other municipalities showed interests for the toilet systems and the clay house-building provided by the Clay House Project. Through the dissemination of the drying toilet, which is supported by GEF, too, the interest will increase. Also the center itself will attract relevant administrative institutions.

In the case of approval of the project further meetings with the stakeholders will be organized between local authorities, adjacent municipalities, local self-help groups, the GNEC and the CHP.

6. Baseline assessment of relevant environmental and, if possible, socio-economic conditions

Due to the combination of several sustainable building techniques, drying toilet systems and renewable energy technologies the following environmental conditions occur:

A. High energy-demanding building materials, an increasing housing demand and resulting local jobs

The utilization of the micro-concrete roofing tiles (Cool Tiles) and clay as the main building material will fulfill not only a presentation purpose, it is a change of paradigm. Urbanization takes place in Ovamboland, too, like in whole Namibia. High energy-demanding building materials like cement bricks and corrugated iron sheets will substitute clay and local produced cool tiles in the future. To oppose this development the presentation of low-energy housing with low-energy running costs is of great meaning.

Besides that corrugated iron sheets and portland cements is imported, need a high energy input and its international trading could cause short-term shortages and price fluctuations. Roofing realized with corrugated iron sheets leads additionally to uncomfortable conditions inside the house due to the daily temperature variation. In comparison clay is good climatic isolator and cares for housing conditions more independent to daily temperature fluctuations. It is locally available for low prices and its utilization brings also local jobs.

B. Rapid increase of water consumption

The arid climatic conditions and the growth in population will lead to an increase in water consumption, which can not be covered by the limited water resources and the negative relation of precipitations and evaporation rates. The relatively dense population in Ovamboland strengthens the demand of water-saving measures like drying toilets in particular in this region.

The water scarcity threatens to hinder the region- and nationwide development and the achievement of a higher living standard. Besides that local ecosystems would suffer through a dropping ground water level.

7. Clear statement of project goal, objectives, activities and expected results and how these results will be measured

For the logical framework, please see the attachment.

Project goal and objectives

The erection is planned of a consulting and demonstration center for socially and ecologically sustainable technologies. From the beginning trainees from Vocational Training Centers and members of the Shack Dweller Federation (SDF) shall be familiarized with building technologies and its local available construction materials. They will gain the knowledge of alternative technologies and later on they are put in the position to handle their own house-building ideas.

The project includes the realization of three pairs of semi-detached houses prepared for up-market house-building conditions and one solar restaurant built out of clay. The buildings are provided with drying toilets and roofed with self-produced Cool Tiles. All buildings are executed in a quality standard low-cost housing for the up-market.

The dimension of the interior space is 896 m³. Whereas the solar restaurant serves simultaneously as seminar facility the semi-detached houses offer cheap accommodations for participants.

Activities

The houses will be built according to the clay-building standards defined by the EcoSouth-Network: that means clay bricks are solely dried by the sun and walls are built with these bricks and mortar out of clay. The foundation is stamped out of clay. A reinforced concrete ring beam is used for the stabilization of the walls and the anchoring of the roof-truss. The roof-truss consists of a lightweight steel scaffold and will be covered with the mentioned tiles. Weatherproof walls are produced by plastering the brick walls with a mixture of lime, sand and clay. An insulating seal oil and a weatherproof paint seals this plaster. All semi-detached houses with a living space of 60 m² will be provided with an Otji-Toilet. A drying toilet system, which is designed by the Clay House Project. Its application is well proved. For the approach of up-market building standards the toilets are affiliated to the houses and equipped with electrical ventilation for an even more secure odorless operation. The solar restaurant itself gets two additional but separated higher standard Otji-Toilets. These are separated of the office and the restaurant. Grey water of sinks and showers will be directed to the garden and used for irrigation.

In July 2006 the preparation of the building measures take place. The involvement of the Shack Dweller Federation and trainees from different Vocational Training Centers, especially the neighbored "Valombola Vocational Training Center" is intended for the building process. At the whole 24 trainees will be involved. The course of events and the involvement of members of the SDF of Otjiwarongo will be appointed. They cooperate since three years in house-building issues with the Clay House Project. Under supervision of the Clay House Project an exchange takes place between different groups of the SDF. This is a common effect of several actions of the SDF. The roofing tiles are produced at the GNEC. In November and December 2006 the interior extension will take place. Publications will be produced dealing with the building technologies and the pilothouses as well as advertising for the solar restaurant and the accommodation facilities. These will be spread all over Namibia and some foreign countries.

Expected Results

The practical application of alternative concepts shall make the feasibility, the economic and technical efficiency more accessible to the members of local self-help groups and other interested and relevant social groups. A base for further distribution of these technologies will be established.

Ecological

In words of the energy balance a clay house save 85% of the energy in relation to a cement house. With respect to the worldwide energy consumption of civil engineering branches in the order of 60% of the worldwide consumption the clay house technology is a future technology. The Otji-Toilet is a separation toilet system, wherein the solid excrements are removed from the toilet after drying and hygienization. Fluid parts of the excrements evaporate. Evaporation takes place by an installed ventilation system. A black-painted lid box and chimney on the backside of the toilet care for evaporation. These devices are heated by the sun. This heating up and the underpressure due to the chimney-wind-system cause high ventilation. The running costs of the finished center will present on which low level energy consumption can coincide with a high living standard.

Economical

These buildings will be a concrete and realistic example that a clay house is 40% cheaper as a comparable cement house. In addition to that a certain cash flow will follow the utilization of cement and/or corrugated metal sheets. This cash flow is in the order of 80% of the actual costs, which will be directed to foreign countries of at least to not local areas. For clay house similar to such cement house the construction costs come to 20% of its amount. Instead of that clay building is more labor intensive what gain into a 30% increase in jobs.

As well the Otji-Toilet has a positive cost-benefit effect. The municipality of Otjiwarongo agreed to the naming of this certain drying toilet type. The toilet is developed in Otjiwarongo and until now praised by every user. The saved water costs are financing the investment of this hygienic and odorless drying toilet within three years. As from the fourth year the user save annually 1400,- N\$. The Otji-Toilet will implement an alternative sanitation system that enables local authorities to develop more economic housing.

The head of the GNEC Mr. Veijo Koskenkangas will coordinate the project in part-time work. A qualified supervisor of the Clay House Project will facilitate the building process. The office of the GNEC will be available for the making of publications and for administrative tasks.

Social

The center itself will provide cheap facilities for holding conferences and workshops of relevant and affected technologies. Especially NGO's and self-help groups as well as neighbored social activities will profit of this idea.

The solar restaurant will serve well-balanced meals rich in vitamins at a low price level. It will demonstrate the operation of solar stoves, teach in healthy food preparation and be rented as a seminar facility.

By the renting of the three semi-detached houses to seminar participants the GNEC and local workers will gain a regular income that will contribute to the existence of the center and create even in the follow-up local jobs.

Direct Beneficiaries

24 Trainees of Vocational Training Centers and the SDF will be engaged in the building process. These people will learn in the context of capacity building how to build clay houses and drying toilets realized in the form of the Otji-Toilet. They will be registrated in the database of the CHP for future building measures in Ovamboland.

Indirect Beneficiaries

Local authorities will be able to visit ecologically and economically attractive alternatives at the location of the center. The center itself with all its progressive and applicated technologies, the production of tiles and a northern base of the Clay House Project.

Local NGO's and self-help groups, which can use the facilities of the center for small fees in comparison to current prices for general assemblies, conferences and similar events. In the follow-up workers of the neighbourhood for the operation of the center, the restaurant and the housekeeping of the accomodations.

The neighbourhood itself due to planned measures to operate in the interim as an eco-touristical attraction including the available accomodations.

8. Technical assistance

There is the technical assistance from the Clay House Project of Otjiwarongo required.

9. Workplan

See attachemant

10. Budget

See attachment

11. Monitoring and Evaluation Plan

Monthly monitoring sessions with both facilitators from GNEC and CHP, management and administrator will help to discover early mistakes and correct the way to go. Monitoring plans about the working progress will be done after the sessions

An Eco South Network expert will do an internal evaluation in the month before the last month of the project with participants from local authorities, self help groups, supervisors and building teams.

12. Business Plan/Marketing Strategy if appropriate

N.a.

13. Sustainability Plan

Clay is a local available material and is thus independent from future energy shortages and transport cost increases. The production of cement needs large amounts of fossil energy and the production cost will rise with the increasing of fuel prices.

Local authorities trust the clay building technologies. Development of municipal building standards will ensure the quality of future buildings, not only in Ongwediva, but will serve as guidelines for other municipalities. Local authorities will open loan schemes for clay construction, thereby setting in motion sustainable housing delivery systems that reduce environmental damage.

Logical Framework for the project

	Intervention logic	Objectively verifiable indicators of achievement	Sources and means of verification	Assumptions
Overall Objectives	<p>Reducing the threat on the environment of overused scarce resources in Namibia (water, energy, wood....) by using eco and sustainable technologies</p> <p>Poverty reduction by using more affordable facilities</p>	<p>Reduction of traditional energy consumption</p> <p>Reduction of water consumption</p> <p>Reduction of deforestation</p> <p>Reduction of the running expenses</p>	<p>Cost comparison</p>	
Specific Objective	<p>Dissemination of sustainable technologies and renewable energy concepts</p>	<p>Demand from the public</p> <p>Municipalities destine funds for the technologies</p>	<p>Tangible realisation of presented concepts</p>	<p><u>External conditions</u></p> <p>Political stability</p>
Expected results	<p>Ecological awareness of communities members and local authorities on affordable alternative technologies that can lead to a sustainable development in their communities</p>	<p>Organisation of educational sessions, seminars, exhibitions, workshops on technically and financially feasible eco solutions.</p> <p>Applications on renewable energies</p>	<p>Advert & events</p>	
Activities	<ul style="list-style-type: none"> - Building of 3 double flats with 6 internal Otji-Toilets - Building of a solar restaurant - Building of 2 outside Otji-Toilets for the visitors of the centre and solar restaurant 	<ul style="list-style-type: none"> - Trained construction team - Buildings completed 	<p><u>Budget</u></p> <p>Presented separately</p>	<p><u>Preconditions</u></p> <ul style="list-style-type: none"> - Successful experience of CHP and expertise - Well established contact in the North by GNEC

10. Workplan

Project Number:		Project Name: Buiding of a consulting & demonstration center for sustainable technologies												
Name of Grant Recipient: Green Namibia Eco Centre (GNEC)														
Brief Description of General Objective of Project: Give access to the members of local self-help groups and other interested social groups to socially and ecologically sustainable technologies through demonstration of alternative concepts.														
GEF Focal Area : Reforestation/energy efficiency				GEF Operational Program:				Project Start and End Dates : 04/04/2006 - 31/12/2006						
Brief Description of Specific Objective : Positive impact to the future development of the house-building behavior and all issues related to presented renewable energy technologies.														
List the activities necessary to fulfill this objective. Indicate who is responsible for each activity and an indicator of activity accomplishment.										Duration of Activity in Months (or Quarters)				
Activity	Responsible Party	Indicator	1	2	3	4	5	6	7	8	9			
1. awareness (VTC & Shake dwellers) for recruiting the building team and trainees	CHP consultant & Facilitator	Constitution of the building team	X	X										
2. Clay search & transport of clay	CHP Facilitator	Proper clay available on the building site	X	X										
3. Building phase														
3.1 Brick production	Facilitators & trainers	The necessary bricks are available			X	X								
3.2 Building of flats	Facilitators & trainers	Flats achieved				X	X	X	X					
3.3 6 internal dry toilets	Facilitators & trainers	Toilets built				X	X	X						
3.4 2 outside dry toilets	Facilitators & trainers	Toilets built							X					
3.5 Building solar restaurant	Facilitators & trainers	Restaurant built					X	X	X					
4. Evaluation	Ecosouth Network	Report										X		
5. Publication	Management, CHP consultant	Leaflets								X	X			
Indicate persons responsible for monitoring and progress reports:										Monitoring Frequency / Reporting				
Monitoring and Record-Keeping	Management				X			X			X			
Progress Reports	Management, Administrator				X			X			X			

10. Budget

Item	N\$
4 local trainer (a 650 N\$) x 6 month	15,600.00
1 local facilitator (1.200 N\$) x 9 month	10,800.00
1 CHP facilitator (1.200 N\$ x 9 month)	10,800.00
24 local trainees x 3 month	32,400.00
Management (part time) 9 month	36,000.00
CHP consultant	9,000.00
Materials 3 dobbble houses	89,000.00
Ceilings for dobbble houses	15,000.00
Materials solar restaurant	41,000.00
8 Otji-Toilets	28,800.00
transports materials	40,000.00
transport local facilitator and trainers	5,000.00
transport CHP facilitator	5,000.00
transport and accomodation CHP consultant	10,000.00
Administration 9 month	9,000.00
Publications	5,000.00
Office costs	6,000.00
Evaluation	14,000.00
Total	382,400.00
Contribution GNEC	-66,000.00
Contribution CHP (consultant)	-9,000.00
Financed by SGP	307,400.00

Ceiling materials, Office costs, Management and Administration will be contributet from GNEC
 CHP consultant will be contributed from CHP

Monthly budget

Item	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	total
4 local trainers (@ 650 N\$) x 6 month			2,600.00	2,600.00	2,600.00	2,600.00	2,600.00	2,600.00		15,600.00
1 local facilitator (@ 1.200 N\$) x 9 month	1,200.00	1,200.00	1,200.00	1,200.00	1,200.00	1,200.00	1,200.00	1,200.00	1,200.00	10,800.00
1 CHP Facilitators (@ 1200 N\$) x 9 month	1,200.00	1,200.00	1,200.00	1,200.00	1,200.00	1,200.00	1,200.00	1,200.00	1,200.00	10,800.00
24 local trainees (@ 450 N\$) x 3 month			5,400.00	5,400.00	5,400.00	5,400.00	5,400.00	5,400.00		32,400.00
Management (GNEC)	4,000.00	4,000.00	4,000.00	4,000.00	4,000.00	4,000.00	4,000.00	4,000.00	4,000.00	36,000.00
CHP Consultant (CHP)	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	9,000.00
Materials 3 Double flats		10,000.00	10,000.00	20,000.00	20,000.00	10,000.00	10,000.00	9,000.00		89,000.00
Materials for ceilings					5,000.00	5,000.00	5,000.00			15,000.00
Materials solar restaurant					20,000.00	12,000.00	9,000.00			41,000.00
8 Otji toilets				9,600.00	9,600.00	9,600.00				28,800.00
Transport material		4,000.00	4,000.00	8,000.00	8,000.00	8,000.00	8,000.00			40,000.00
Transport local facilitator & Trainers		625.00	625.00	625.00	625.00	625.00	625.00	625.00	625.00	5,000.00
Transport CHP Facilitator	500.00	500.00	500.00	500.00	1,000.00	500.00	500.00	500.00	500.00	5,000.00
Transport & accomodation CHP consultant		2,500.00		2,500.00		2,500.00		2,500.00		10,000.00
Administration (GNEC)	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	9,000.00
Publication									5,000.00	5,000.00
Office costs (GNEC)	750.00	750.00	750.00	750.00	750.00	750.00	750.00	750.00		6,000.00
Evaluation									14,000.00	14,000.00
Total	9,650.00	26,775.00	32,275.00	58,375.00	81,375.00	65,375.00	50,275.00	29,775.00	28,525.00	382,400.00
Contribution GNEC	-5,750.00	-5,750.00	-5,750.00	-5,750.00	-10,750.00	-10,750.00	-10,570.00	-5,750.00	-5,000.00	-65,820.00
Contribution CHP	-1,000.00	-1,000.00	-1,000.00	-1,000.00	-1,000.00	-1,000.00	-1,000.00	-1,000.00	-1,000.00	-9,000.00
Financed by SGP	2,900.00	20,025.00	25,525.00	51,625.00	69,625.00	53,625.00	38,705.00	23,025.00	22,525.00	307,580.00